

**WORLD TELECOMMUNICATION INDICATORS MEETING**

Geneva, March 19-21, 1996

**WORKING DOCUMENTS**



INTERNATIONAL TELECOMMUNICATION UNION

**World Telecommunication  
Indicators Meeting, 1996**



# **World Telecommunication Indicators Meeting, 1996**

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## FOREWORD

The first World Telecommunication Indicators Meeting, organised under the auspices of the ITU's Telecommunication Development Bureau's (BDT) indicators programme, was held in Geneva from 19 to 21 March 1996. It was attended by 142 participants from 63 countries.

Participants included providers, collectors and users of telecommunication statistics including telecommunication ministries, regulators, and operators, national statistical offices, international organizations, consultants, financial institutions and researchers.

Twenty-five speakers made presentations covering various subjects including tariffs, traffic, regional indicator collection, benchmarking, electronic dissemination, national statistical agency work and convergence.

This report includes proceedings of the meeting, list of participants, speakers' presentations as well as a summary of the survey on ITU/BDT indicators.

The meeting highlighted the importance of telecommunications indicators by demonstrating the areas in which statistics can be applied. Furthermore, the meeting succeeded in raising the level of awareness of policy makers, regulators,

operators and others about the importance of the statistics. A spirit of cooperation was demonstrated among all which is necessary to overcome the existing limitations on the availability of telecommunications indicators. As collaboration grows, the availability of telecommunication indicators will improve, enhancing understanding of one of the world's most dynamic and important industries.

The meeting recognised that the availability of timely and meaningful telecommunications statistics is becoming more and more important. There has been on-going restructuring of the telecommunication industry in a growing number of countries since the early 1980s. There is a vital need for indicators to analyze the changes in order to inform countries about the impact of various policy options.

The participants manifested the desire and the need for more frequent indicator meetings and for additional discussion time in future meetings.

The discussions raised during the meeting provide a set of guidelines for the ITU Telecommunication Development Bureau to work in this context.

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Indicators Meeting, 1996**



INTERNATIONAL TELECOMMUNICATION UNION



INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION  
DEVELOPMENT BUREAU  
INFORMATION SYSTEMS UNIT**

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WORLD TELECOMMUNICATION INDICATORS MEETING:  
GENEVA, 19 - 21 MARCH 1996

## World Telecommunication Indicators Meeting

### Final list of documents

Doc. No.	Source	Title	Language
1	ITU, Switzerland	Provisional list of document	E/F/S/R
2	ITU, Switzerland	List of announced participants	E/F/S
3	ITU, Switzerland	Agenda	E/F/S/R
4	ITU, Switzerland	Note from the coordinator	E/F/S/R
5	ITU, Switzerland	World Telecommunication Indicators database on ☆STARS☆ (diskette)	E
6	Mr. M. Minges, ITU/BDT	The state of telecom statistics world-wide	E/F/S/R
7	ITU, Switzerland	Survey on ITU/BDT Indicators	E/F/S/R
8	Mr. T. Kelly, ITU/SPU	Performance indicators for PTOs: An update	E/F/S/R
9	Mr. P. Laidler, CSMG (UK)	International Traffic Modelling	E/F/S
10	Mr. M. Duckworth, OFTEL (UK)	Telecommunication Market Report	E/F/S/R
11	Mr. R. Worthington, Pomona College	A performance assessment framework for the global telecommunications industry	E/F/S
12	Mr. F.D. Gault, Statistics Canada	Industrial classification and data collection	E/F/S/R
13	Mr. E. Reik, EITO	What is the European Information Technology Observatory - EITO	E/F/S/R
14	Mr. G. Staple, Telegeography	The new demand for telecoms traffic data: from MiTTS to maps	E/F/S
15	Mr. J. Houghton, BIE	Country policy use of telecommunications performance indicators in Australia	E
16	Mr. Yuji Kato, OECD	Telecommunication Pricing Indicators by the OECD	E
17	Mr. R. Martínez I., SCT (Mexico)	Quarterly Telecommunication Report: a strategic approach to foster competition through transparency	E
18	Mr. G. Zongo, ATO (Senegal)	Essai d'analyse des causes de faiblesse de la télédensité et de la productivité du secteur africain des télécommunications	E/F
19	Mr Geoffroy & Verlynde, OMSYC	Convergence between telecommunication and audiovisual industries and markets: deregulation and double counting	E
20	Mr. T. Kelly, ITU/SPU	Using tariff comparison models for international telephone services	E

<b>Doc. No.</b>	<b>Source</b>	<b>Title</b>	<b>Language</b>
21	Mr. V. Sivoraksha, RCC (Russia)	Regional statistics	E/F/S/R
22	Mr. E. Reik, EITO	What is the EITO ? (text)	E
23	Mr. O. Gardin, EUROSTAT	European Telecommunication Statistics	E
24	Mr. Sam Paltridge, OECD	Telecommunication Quality of Service Statistics	E
25	OECD	Communication Outlook 1995, chapter 6	E/F
26	Mr.A. Dickson, BT	Tariff comparisons and monitoring	E
27	Mr. C. Pereira de A., TELEBRAS	Customer Satisfaction measurement	E
28	Mr. R. Shaw, ITU	Disseminating Information via the Internet	E
29	ITU, Switzerland	Global Telecoms Database	E
30	RCC, Russia	Statistical Report	E
31	Mrs. M. Okumura, MPT, Japan	Global Inventory and International Telecommunications Inventory	E

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**World Telecommunication  
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**World Telecommunication  
Indicators Meeting, 1996**

*Survey on ITU/BDT Indicators*



INTERNATIONAL TELECOMMUNICATION UNION

# SURVEY ON ITU/BDT INDICATORS

In order to help guide the ITU Telecommunication Development Bureau's (BDT) indicator programme, a questionnaire was circulated to the participants. It solicited comments about the following subjects:

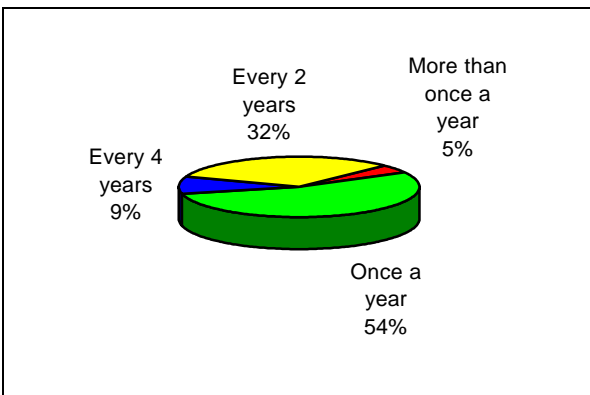
- *indicator meetings*
- *ITU indicator publications*
- *the list of indicators used by the ITU*

Almost 50% of participants responded to the questionnaire. The results are summarized below.

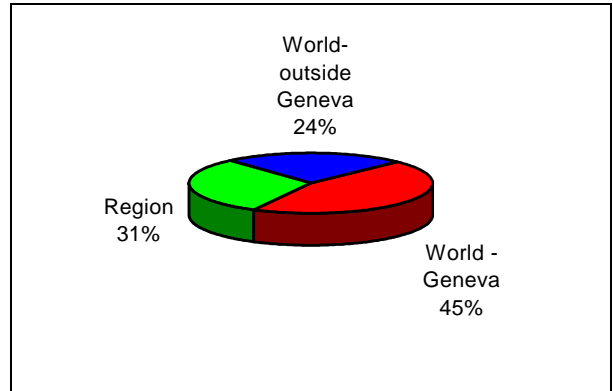
### ***Indicator meetings***

The level of participation for the first World Telecommunication Indicator Meeting suggests that there is a considerable interest for indicators. In particular, the participants expressed the desire for continued indicator meetings (54% of the responses indicated that the frequency of indicator meetings should be once a year). Also 45% expressed preference to hold world meetings in Geneva, as opposed to regional and world meetings elsewhere.

#### **What should the frequency of indicator meeting be?**



#### **Format of the meeting (a world meeting or regional meetings):**



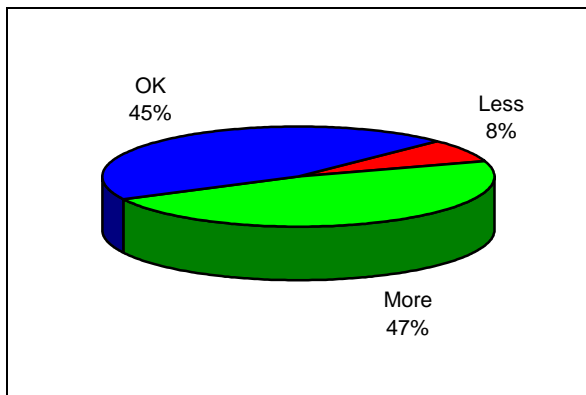
### ***BDT Indicator Reports***

The BDT regularly publishes indicator reports such as the World Telecommunication Development Report, regional indicator and topical reports (e.g., Direction of Traffic covering international telephone traffic). An analysis of the questionnaires confirmed the demand for a deeper analysis of the statistics to be included in the reports (47%). Also 45% are satisfied with the extent of analysis already present. In comparison, there was no significant preference between topical and regional reports.

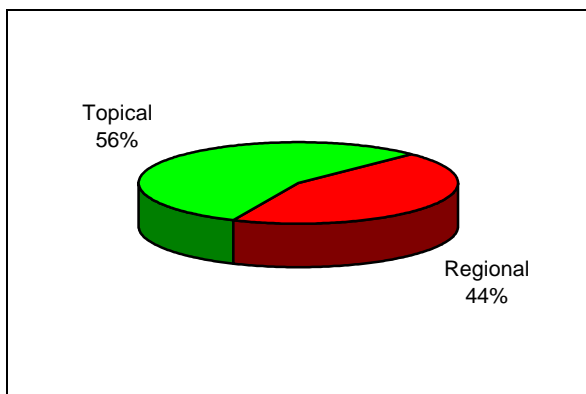
A majority of participants expressed a desire for indicators to be collected by both operator and by country.

The ITU also publishes a Yearbook of Statistics showing telecommunication data for the previous ten years. The responses to the questionnaire did not indicate a preferred method to present indicators: 57% preferred the presentation of telecommunication statistics by topic against the 43% which preferred by country.

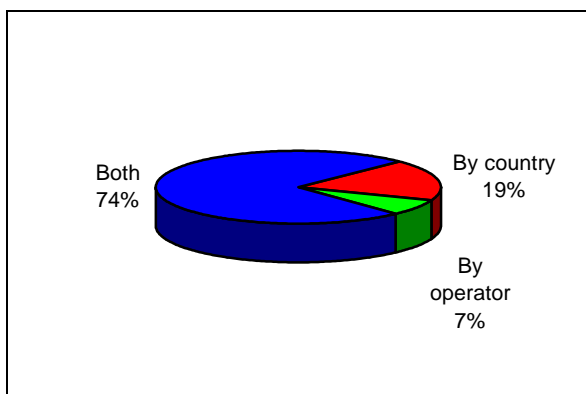
**Level of analysis in BDT Indicator Reports**



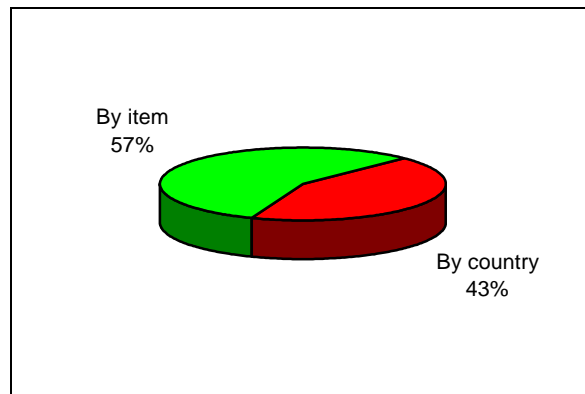
**Regional (covering all telecommunication areas for one region in detail) or topical (covering one subject such as telephone traffic) reports:**



**Prefer indicators by country or by operator or both:**



**ITU Statistical Yearbook should show indicators by topic or by country (country pages):**



***The list of indicators used by the ITU***

The ITU/BDT actively collects, compiles and disseminates a core set of telecommunication indicators. The meeting’s participants were asked to rank the importance of the indicators used by the ITU. In terms of the statistics regularly published in BDT reports, traditional indicators such as international telephone traffic, main lines and revenue were ranked high. National traffic and cellular subscribers were also considered high priority. At the opposite end of the scale, indicators covering older services such as telex subscribers and telex and telegram traffic were considered low priority.

Other indicators not regularly published by the ITU and considered important include the percentage of international direct dialled calls and mobile traffic and tariffs. Low priority indicators included teletex, videotex and bureaufax.

Non-telecom indicators considered important include population, GDP and Internet hosts while radio broadcasting indicators were ranked low priority.

## Results of ITU/BDT Indicator Survey

4a. List of indicators Ranked by priority		Replies	Priority		
			Low	Medium	High
i132m	International outgoing telephone traffic	42	2%	5%	93%
i112	Main telephone lines in operation	42	0%	10%	90%
i75	Total revenue from all telecom services	42	0%	14%	86%
i1312m	National trunk telephone traffic (minutes)	41	0%	15%	85%
i71	Total income from telephone service	42	2%	14%	83%
i271	Cellular mobile telephone subscribers	42	5%	17%	79%
i1311m	Local telephone traffic (minutes)	42	2%	19%	79%
i76	Total expense for telecom services	41	5%	17%	78%
i152	Monthly subscription for telephone service	42	7%	17%	76%
i412	Private leased circuits	42	7%	19%	74%
i151	Connection fee for telephone service	42	10%	17%	74%
i7133	Income from international calls	42	0%	26%	74%
i713	Income from telephone calls	41	0%	27%	73%
i741	Mobile communication revenue	42	5%	24%	71%
i51	Full-time telecommunication staff	42	10%	21%	69%
i141	% of telephone faults cleared by next working day	41	10%	22%	68%
i28	Total number of ISDN subscribers	40	8%	25%	68%
i761	Operational expenditure	42	7%	26%	67%
i1142	Percent of main lines connected to digital exchanges	41	5%	29%	66%
i413	Total subscribers to public data networks	40	5%	30%	65%
i142	% of unsuccessful calls - local network	40	5%	33%	63%
i732	Leased circuit revenue	42	5%	33%	62%
i82	Annual investment (not incl. land & buildings)	42	2%	36%	62%
i1431	Total number of main line faults for year	41	5%	34%	61%
i712	Income from telephone subscription charges	42	7%	33%	60%
i81	Annual investment in telecom (incl. land & buildings)	42	2%	38%	60%
i116	% of residential main lines	41	2%	39%	59%
i84	Annual investment in switching equipment	41	0%	41%	59%
i1112	Public pay phones	42	14%	29%	57%
i711	Income from telephone connection charges	42	7%	36%	57%
i145	Number of complaints per 1000 customer bills	41	5%	39%	56%
i762	Depreciation	42	12%	33%	55%
i117	Total line capacity of local exchanges	41	7%	39%	54%
i763	Net interest paid / received	42	7%	40%	52%
i1162	% of main lines in urban areas	41	7%	41%	51%
i275	Radio paging subscribers	41	12%	37%	51%
i123	Waiting list for main lines	42	19%	31%	50%
i764	Income tax	42	14%	38%	48%
i144	% of operator assistance calls answered in 15 seconds	39	10%	46%	44%
i731	Income from data transmission	42	5%	55%	40%
i765	Other expenditure	42	14%	45%	40%
i74	Other income (facsimile, videotex, etc.)	42	19%	45%	36%
i262	Videotex subscribers	40	33%	38%	30%
i73	Income from telex service	42	48%	31%	21%
i72	Income from public telegram service	42	50%	31%	19%
i322m	International outgoing telex traffic (minutes)	42	45%	38%	17%
i21	Number of national paid telegrams (messages)	42	62%	24%	14%
i22	International outgoing telegrams (messages)	42	57%	29%	14%
i321m	National telex traffic (minutes)	42	60%	31%	10%
i311	Telex subscribers	40	58%	35%	8%

## Results of ITU/BDT Indicator Survey

4b. Other telecommunication statistics		Replies	Priority		
			Low	Medium	High
Ranked by priority					
i134m	International direct dialled calls (minutes)	43	2%	16%	81%
i134	% of international direct dialled calls	43	2%	21%	77%
i131mw	Total national mobile outgoing traffic (minutes)	43	2%	23%	74%
i83	Annual investment for telephone service	42	2%	31%	67%
i1423	% of unsuccessful calls due to technical faults & other	43	2%	33%	65%
i151d	Digital cellular connection charge	43	7%	28%	65%
i152d	Digital cellular monthly subscription	43	7%	28%	65%
i131mc	Total national mobile outgoing traffic (calls)	43	2%	35%	63%
i153d	Digital cellular - cost of local 3 minute call	43	7%	33%	60%
i122	Total demand for main lines (including transfer)	41	5%	37%	59%
i1111	Percentage of households with a telephone	43	2%	40%	58%
i151c	Analog cellular connection charge	43	7%	35%	58%
i1191	International telephone circuits	42	5%	38%	57%
i121	New applications for main lines	41	7%	37%	56%
i152c	Analog cellular monthly subscription	43	7%	37%	56%
i85	Total fixed assets	42	2%	43%	55%
i71331	Outpayments to administrations	42	10%	38%	52%
i71332	Inpayments from administrations	42	10%	38%	52%
i84	Annual investment in switching equipment	42	7%	40%	52%
i153c	Analog cellular - cost of local 3 minute call	43	9%	40%	51%
i1110	Number of local public switching exchanges	42	14%	36%	50%
i274	Personal Communication Service (PCS) subscribers	38	11%	39%	50%
i7611	Wages, salaries and other personnel expenses	42	7%	43%	50%
i842	Annual investment in transmission equipment	42	10%	40%	50%
i850	Total assets	42	5%	45%	50%
i1181	Total km of fibre optic cable in network	43	16%	35%	49%
i1186	% of fiber optic cable in national transmission network	41	15%	37%	49%
i115	% of main lines equip. for direct int'l dialling	42	14%	38%	48%
i7613	Research and development expenses	42	10%	43%	48%
i841	Annual investment in external plant	42	10%	43%	48%
i851	Other assets	40	8%	45%	48%
i86	Total liabilities and equity	40	8%	45%	48%
i1421	% of unsuccessful calls due to called number busy	43	19%	35%	47%
i153co	Analog cellular - cost of local 3 minute call (off-peak)	43	7%	47%	47%
i4132	Packet switched network subscribers	41	10%	44%	46%
i114	Percent of main lines connected to automatic exchanges	41	7%	49%	44%
i1185	Km of fiber optic cable in national transmission network	41	15%	41%	44%
i265	Number of Freephone subscribers	41	20%	37%	44%
i291	Number of VSAT subscribers	40	15%	43%	43%
i276	Non-cellular mobile subscribers	38	18%	39%	42%
i1422	% of unsuccessful calls due to no answer	43	26%	33%	42%
i2811	Int'l earth stations	41	17%	41%	41%
i4131	Circuit-switch network subscribers	41	15%	44%	41%
i1187	Km of fibre optic cable in local network	42	14%	45%	40%
i1144	% of main lines equipped for ISDN	40	8%	53%	40%
i264	Number of mailboxes MHS F.400 / X.400	40	15%	45%	40%
i1143	% of main lines equipped for SS7	38	16%	45%	39%
i273	CT2 (telepoint) subscribers	38	21%	39%	39%
i861	Equity	41	5%	56%	39%
i119	Trunk telephone circuits	42	5%	57%	38%
i862	Long-term debt	40	5%	58%	38%
i1121	Main lines in largest city	41	15%	51%	34%
i4133	Data modems in operation	41	27%	39%	34%
i272	Trunked mobile subscribers	36	25%	42%	33%
i863	Other liabilities	41	10%	61%	29%
i111	Telephone stations (sets)	43	30%	42%	28%
i251	Bureaufax stations	42	43%	31%	26%
i292	Number of teleports	39	26%	49%	26%
i7612	Non-income taxes	42	17%	60%	24%
i113	Main lines connected to PBX	43	5%	72%	23%
i2512	National Bureaufax traffic (paid pages)	41	41%	37%	22%
i2513	Outgoing international Bureaufax traffic (pages)	41	41%	41%	17%
i261	Teletex subscribers	40	60%	28%	13%
i263	Videotex information providers	41	44%	44%	12%
i1131	Number of private branch exchanges (PBX)	43	12%	77%	12%

## Results of ITU/BDT Indicator Survey

<b>4c. Derived indicators</b>		<b>Replies</b>	<b>Priority</b>		
<b>Ranked by priority</b>			<b>Low</b>	<b>Medium</b>	<b>High</b>
i91	Main telephone lines per 100 inhabitants	42	2%	10%	88%
i93	Telecommunication investment as a % of GDP	41	2%	22%	76%
i96	Telecom investment as a % of revenues	42	10%	17%	74%
i95	Telecommunication revenues as a % of GDP	42	5%	24%	71%
i971	Main telephone lines per employee	42	14%	19%	67%
i951	Telecommunication revenues per main line (US\$)	42	5%	31%	64%
i97	Telecommunication staff per 1'000 main lines	42	12%	26%	62%
i952	Telecommunication revenues per employee (US\$)	42	12%	26%	62%
i94	Telecommunication investment as a % of GFCF	42	10%	38%	52%
i9511	Operating cash flow per main line (US\$)	42	5%	48%	48%
i92	Telephone sets per 100 inhabitants	42	26%	45%	29%

## Results of ITU/BDT Indicator Survey

<b>4d. Non-telecom indicators</b>		<b>Priority</b>			
<b>Ranked by priority</b>		<b>Replies</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
i61	Population	41	2%	15%	83%
i63	Gross domestic product (GDP)	41	0%	17%	83%
i421	Internet networks	38	10%	17%	66%
i4211	Internet host computers	38	7%	20%	66%
i62	Households	41	0%	29%	71%
i66	Consumer price index (1987=100)	41	5%	25%	73%
i652	Average annual exchange rate per US\$	40	8%	26%	69%
i422	Number of personal computers	40	13%	20%	68%
i65	National currency per US\$ (end of year)	39	7%	29%	59%
i6721	Imports of telecommunication equipment (US\$)	41	5%	39%	56%
i965c	Cable TV subscribers	41	17%	27%	56%
i6111	Urban population percent	41	2%	44%	54%
i64	Gross Fixed Capital Formation (GFCF)	40	8%	40%	53%
i965h	Households passed by cable television	41	18%	35%	50%
i422s	Personal computer shipments	39	24%	24%	46%
i6711	Exports of telecommunication equipment (US\$)	41	15%	41%	49%
i966	Percent of population covered by TV broadcasting	42	24%	34%	44%
i612	Population of largest city	41	17%	41%	41%
i965s	Home satellite antennas	42	13%	53%	45%
i965	Television receivers	41	21%	40%	36%
i956	Percent of population covered by radio broadcasting	40	31%	33%	31%
i9651	Television receivers per 100 inhabitants	39	24%	47%	32%
i965L	Television licences / households	38	26%	50%	24%
i955L	Radio receivers (licenses)	40	33%	55%	13%
i955	Radio receivers	41	31%	62%	13%



## Survey on ITU/BDT Indicators

### 1. BDT Indicator Reports

The BDT regularly publishes indicator reports such as the *World Telecommunication Development Report*, regional indicator reports and topical reports (e.g., *Direction of Traffic* covering international telephone traffic). There has been a trend to more analysis of the statistics in the reports.

a). Would you prefer:

- Less analysis       More analysis       OK as is

b). Do you prefer:

- Regional reports       Topical reports

c). How might the reports be improved:

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(use a separate page if needed)

### 2. Telecommunication Indicators for Public Telecommunication Operators

The majority of the ITU/BDT telecommunication indicator publications are maintained at a country level.

a). Would you also like to see indicators maintained by operator?

- Prefer indicators by country       Prefer indicators by operator       Both

### 3. Yearbook of Statistics

The ITU publishes a yearbook of telecommunication statistics showing data for the last ten years.

a). Do you prefer that the Yearbook show the statistics by item or by country (Note that the World Telecommunication Development Report already shows statistics by item including regional and world totals):

- Statistics by item (see Attachment 1)       Statistics by country (see Attachment 2)

b). Do you have any comments on the Yearbook might be improved?

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(use a separate page if needed)

Name / Organization / Country of person completing the survey:

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## Survey on ITU/BDT Indicators

### 4a. List of indicators

The ITU/BDT actively collects, compiles and disseminates a **core set of telecommunication indicators**. Could you please rank the importance of these indicators:

			PRIORITY		
TELEPHONE NETWORK			Low	Medium	High
1	i112	Main telephone lines in operation			
2	i117	Total line capacity of local exchanges			
3	i1142	Percent of main lines connected to digital exchanges			
4	i116	% of residential main lines			
5	i1162	% of main lines in urban areas			
6	i1112	Public pay phones			
<b>OTHER SERVICES</b>					
7	i311	Telex subscribers			
8	i271	Cellular mobile telephone subscribers			
9	i275	Radio paging subscribers			
10	i412	Private leased circuits			
11	i413	Total subscribers to public data networks			
12	i262	Videotex subscribers			
13	i28	Total number of ISDN subscribers			
14	i123	Waiting list for main lines			
<b>QUALITY OF SERVICE</b>					
15	i141	% of telephone faults cleared by next working day			
16	i142	% of unsuccessful calls - local network			
17	i1431	Total number of main line faults for year			
18	i144	% of operator assistance calls answered in 15 seconds			
19	i145	Number of complaints per 1000 customer bills			
<b>TRAFFIC</b>					
21	i1311m	Local telephone traffic (minutes)			
22	i1312m	National trunk telephone traffic (minutes)			
23	i132m	International outgoing telephone traffic (minutes)			
24	i21	Number of national paid telegrams (messages)			
25	i22	International outgoing telegrams (messages)			
26	i321m	National telex traffic (minutes)			
27	i322m	International outgoing telex traffic (minutes)			
<b>TARIFFS</b>					
28	i151	Connection fee for residential telephone service			
29	i152	Monthly subscription for residential telephone service			
<b>STAFF</b>					
35	i51	Full-time telecommunication staff			
<b>REVENUE, EXPENSE, INVESTMENT</b>					
36	i75	Total revenue from all telecom services			
37	i71	Total income from telephone service			
37.1	i711	Income from telephone connection charges			
37.2	i712	Income from telephone subscription charges			
37.3	i713	Income from telephone calls			
37.4	i7133	Income from international calls			
38.1	i72	Income from public telegram service			
38.2	i73	Income from telex service			
39	i731	Income from data transmission			
40	i732	Leased circuit revenue			
41	i741	Mobile communication revenue			
42	i74	Other income (facsimile, videotex, etc.)			
43	i76	Total expense for telecom services			
44	i761	Operational expenditure			
45	i763	Net interest paid / received			
46	i764	Income tax			
47	i762	Depreciation			
48	i765	Other expenditure			
49	i81	Annual investment in telecom (incl. land & buildings)			
50	i82	Annual investment (not incl. land & buildings)			
50.1	i84	Annual investment in switching equipment			

Name / Organization / Country of person completing the survey:

## Survey on ITU/BDT Indicators

### 4b. Other telecommunication statistics

The ITU/BDT also collects **other telecommunication statistics**. Could you rank the importance of these statistics and add any other telecommunication indicators that are not shown that should also be collected and their definition.

	OTHER INDICATORS	PRIORITY		
		1= low	2 = medium	3=high
	<b>INFRASTRUCTURE</b>			
i111	Telephone stations (sets)			
i1110	Number of local public switching exchanges			
i1111	Percentage of households with a telephone			
i1121	Main lines in largest city			
i113	Main lines connected to PBX			
i1131	Number of private branch exchanges (PBX)			
i114	Percent of main lines connected to automatic exchanges			
i1143	% of main lines equipped for SS7			
i1144	% of main lines equipped for ISDN			
i115	% of main lines equip. for direct international dialling			
i1181	Total km of fibre optic cable in network			
i1185	Km of fibre optic cable in national transmission network			
i1186	% of fibre optic cable in national transmission network			
i1187	Km of fibre optic cable in local network			
i119	Trunk telephone circuits			
i1191	International telephone circuits			
i121	New applications for main lines			
i122	Total demand for main lines (including transfer)			
	<b>TRAFFIC</b>			
i131mc	Total national mobile outgoing traffic (calls)			
i131mw	Total national mobile outgoing traffic (minutes)			
i134	% of international direct dialled calls			
i134m	International direct dialled calls (minutes)			
	<b>QUALITY OF SERVICE</b>			
i1421	% of unsuccessful calls due to called number busy			
i1422	% of unsuccessful calls due to no answer			
i1423	% of unsuccessful calls due to technical faults & other			
	<b>TARIFFS</b>			
i151c	Analogue cellular connection charge			
i151d	Digital cellular connection charge			
i152c	Analogue cellular monthly subscription			
i152d	Digital cellular monthly subscription			
i153c	Analogue cellular - cost of local 3 minute call			
i153co	Analogue cellular - cost of local 3 minute call (off-peak)			
i153d	Digital cellular - cost of local 3 minute call			
	<b>OTHER SERVICES</b>			
i251	Bureaufax stations			
i2512	National Bureaufax traffic (paid pages)			
i2513	Outgoing international Bureaufax traffic (pages)			
i261	Teletex subscribers			
i263	Videotex information providers			
i264	Number of mailboxes MHS F.400 / X.400			
i265	Number of Freephone subscribers			
i272	Trunked mobile subscribers			
i273	CT2 (telepoint) subscribers			
i274	Personal Communication Service (PCS) subscribers			
i276	Non-cellular mobile subscribers			
i2811	Int'l earth stations			
i291	Number of VSAT subscribers			
i292	Number of teleports			
i4131	Circuit-switch network subscribers			
i4132	Packet switched network subscribers			
i4133	Data modems in operation			

Name / Organization / Country of person completing the survey:

## Survey on ITU/BDT Indicators

### 4b. Other telecommunication Indicators (continued)

	FINANCIAL	PRIORITY		
		1= low	2 = medium	3=high
i71331	Outpayments to administrations			
i71332	Inpayments from administrations			
i7611	Wages, salaries and other personnel expenses			
i7612	Non-income taxes			
i7613	Research and development expenses			
i83	Annual investment for telephone service			
i84	Annual investment in switching equipment			
i841	Annual investment in external plant			
i842	Annual investment in transmission equipment			
i85	Total fixed assets			
i850	Total assets			
i851	Other assets			
i86	Total liabilities and equity			
i861	Equity			
i862	Long-term debt			
i863	Other liabilities			

	Please add any other indicators you feel are important below (including the definition)	Definition

Name / Organization / Country of person completing the survey:

## Survey on ITU/BDT Indicators

### 4c. Derived indicators

The ITU/BDT also regularly calculates a set of **derived indicators** to enhance comparisons. Could you rank the importance of these indicators and add any other derived indicators and the formula for calculating them:

	DERIVED INDICATORS	PRIORITY		
		1= low	2 = medium	3=high
i91	Main telephone lines per 100 inhabitants			
i92	Telephone sets per 100 inhabitants			
i93	Telecommunication investment as a % of GDP			
i94	Telecommunication investment as a % of GFCF			
i95	Telecommunication revenues as a % of GDP			
i951	Telecommunication revenues per main line (US\$)			
i9511	Operating cash flow per main line (US\$)			
i97	Telecommunication staff per 1'000 main lines			
i971	Main telephone lines per employee			
i952	Telecommunication revenues per employee (US\$)			
i96	Telecom investment as a % of revenues			

*	Add any other derived indicators and the formula for calculating them:	Formula

Name / Organization / Country of person completing the survey:

## Survey on ITU/BDT Indicators

### 4d. Demographic, economic, broadcasting and information technology indicators

The ITU/BDT also collects **broadcasting, information technology, demographic and macroeconomic indicators**.

Could you rank the importance of these statistics and add any others and the definition.

	DEMOGRAPHY, ECONOMY	PRIORITY		
		1= low	2 = medium	3=high
i61	Population			
i6111	Urban population percent			
i612	Population of largest city			
i62	Households			
i63	Gross domestic product (GDP)			
i64	Gross Fixed Capital Formation (GFCF)			
i65	National currency per US\$ (end of year)			
i652	Average annual exchange rate per US\$			
i66	Consumer price index (1987=100)			
i6711	Exports of telecommunication equipment (US\$)			
i6721	Imports of telecommunication equipment (US\$)			
<b>BROADCASTING</b>				
i955	Radio receivers			
i955L	Radio receivers (licenses)			
i956	Percent of population covered by radio broadcasting			
i965	Television receivers			
i9651	Television receivers per 100 inhabitants			
i965c	Cable TV subscribers			
i965h	Households passed by cable television			
i965L	Television licences / households			
i965s	Home satellite antennas			
i966	Percent of population covered by TV broadcasting			
<b>INFORMATION TECHNOLOGY</b>				
i421	Internet networks			
i4211	Internet host computers			
i422	Number of personal computers			
i422s	Personal computer shipments			

	Add any other indicators of this nature and their definition:	Definition

Name / Organization / Country of person completing the survey:

## Survey on ITU/BDT Indicators

### 5. World Telecommunication Indicators Meeting

This is the first time this kind of meeting has been held.

a) Do you think it should be held again?

- Yes     No

b) If yes, what should be the frequency:

- More than annually     Annually     Every 2 years     Every 4 years

c) Should the format be:

- As is (presentations with less discussion)  
 Equally divided between presentation/discussion  
 Discussion only  
 Other (Please specify)

d) Shoud the meeting be global or regional and / or held only in Geneva and/or other places:

- World meeting in Geneva (like now)  
 Regional meetings held in the region (e.g., Europe, Americas, etc.)  
 World meeting but held outside Geneva

e) Any other comments about the meeting (subjects you liked / did not like / proposals for future meetings)

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(use a separate page if needed)

☺ **Thank you very much for your cooperation in completing this survey!**

Name / Organization / Country of person completing the survey:

**World Telecommunication  
Indicators Meeting, 1996**

*Speakers' Presentations*



INTERNATIONAL TELECOMMUNICATION UNION



## Opening

*Ahmed Laouyane*, Director,  
Telecommunication Development Bureau  
(BDT), International Telecommunication  
Union, ITU

## Session 1: Overview

A review of the state of telecom statistics world-wide including comparability, definitions, the effect of liberalization on data availability, collaboration with national statistics offices, and the effect of convergence and liberalization.

**“The state of telecom statistics world-wide”**  
*Michael Minges*, Head, Information Systems  
Unit, ITU/BDT

**“Performance indicators for PTOs: An update”**  
*Tim Kelly*, Head, Operational Analysis,  
ITU/SPU

## **OPENING REMARKS**

It is with great pleasure that I welcome you to the first World Telecommunication Indicators meeting. This reunion arises from resolutions of different regional telecommunication development conferences—endorsed by the 1994 World Telecommunication Development Conference—to convene a global meeting dealing with the main indicators used to analyze worldwide telecommunication developments.

We are all aware of the growing importance of telecommunications and the need for relevant, up-to-date and comparable statistics for analyzing the industry. This includes measurements for comparing network progress and performance as well as macro-economic measurements to gauge the impact of telecommunications on social and economic development.

There is also an urgent need to gauge the benefits and costs of liberalization, privatization, competition and globalization taking place in the sector in order to inform policy makers and others about the effects of the growing number of options. Ironically, these same trends are complicating the availability and comparability of the statistics. This meeting might want to consider how to improve the coverage of the statistics in an era of growing liberalization.

Convergence is blurring the boundaries of the telecommunications, broadcasting and computing industries, making it difficult to determine exactly what it is to be measured. Perhaps telecommunication indicators should be expanded to cover information-communication indicators. Here too, this meeting might want to provide some guidelines.

The ITU's involvement with telecommunication statistics goes back a long way. The exchange of

statistics goes back through the ITU's preceding organizations to the beginning of international telegraph networks in 1848. The ITU's mandate for disseminating telecommunication information is outlined in the International Telecommunication Convention as well as the ITU's agreement with the United Nations. However it is really since the establishment of the Telecommunication Development Bureau (BDT) that the ITU has begun to regularly use statistics in an analytical way in order to gauge network developments worldwide.

The BDT is intimately involved in telecommunication indicators. It launched the telecommunication indicator series in 1990. These publications, including the World Telecommunication Development Report, as well as regional and topical studies, have become the global source for comparable telecommunication indicators. The BDT also works closely with national, regional and international organizations on the definition, exchange and collaboration of telecommunication indicators. Indeed the BDT has collaborated on several of the indicator projects to be presented over the next few days at this meeting. The BDT has also organized regional telecommunication indicator meetings which serve as the foundation for this global encounter. Finally, the BDT has initiated several projects for assisting developing countries to improve the collection, dissemination and presentation of telecommunication indicators.

I wish you utmost success in this first World Telecommunication Indicators meeting. Furthermore, I can assure you that the BDT remains firmly committed to this area and will endeavor to assist implement whatever goals arise from your deliberations over the next few days

**Ahmed Laouyane**

**Director**

**Telecommunication Development Bureau, BDT  
INTERNATIONAL TELECOMMUNICATION UNION (ITU)**



INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION  
DEVELOPMENT BUREAU  
INFORMATION SYSTEMS UNIT**

**Document WTIM96/6-E  
18 March, 1996  
Original: English**

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**World Telecommunication Indicators Meeting  
(Geneva, 19 - 21 March 1996)**

SOURCE: ITU/BDT, Michael Minges

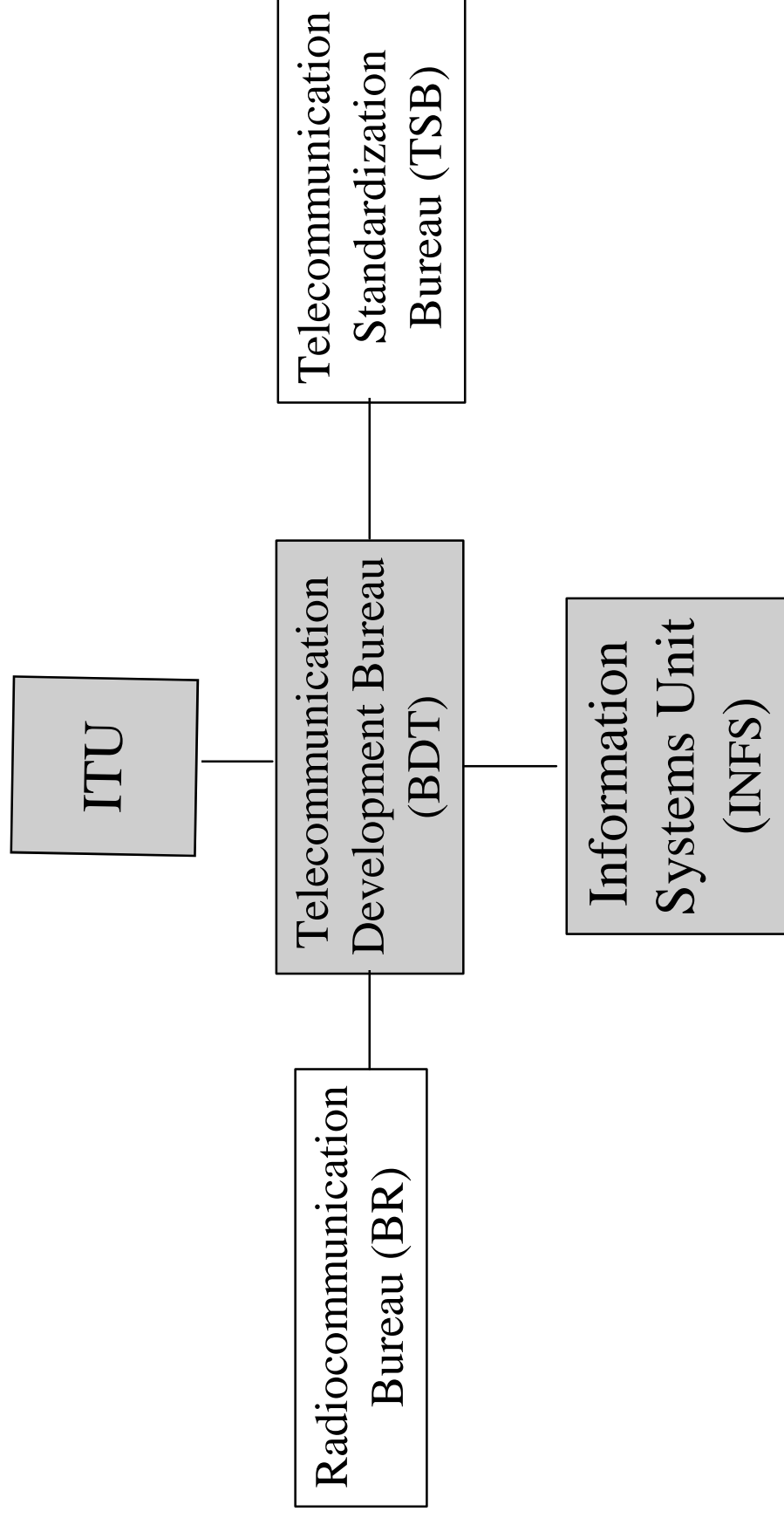
TITLE: THE STATE OF TELECOM STATISTICS WORLD-WIDE

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# The state of telecommunication statistics world-wide

Michael Mingès  
World Telecommunication  
Indicators Meeting  
Geneva 19-21 March 1996

# ITU & Telecommunication indicators

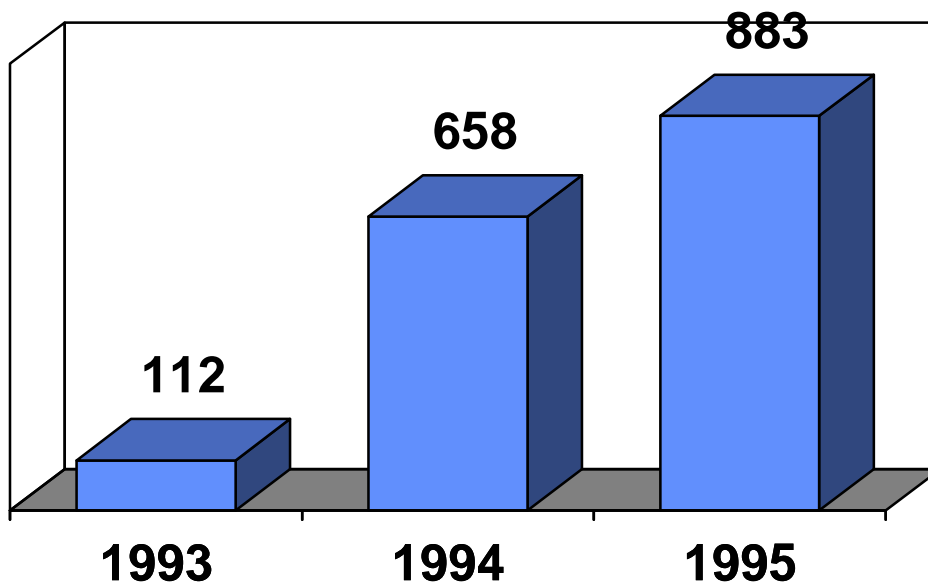


# ITU Telecommunication indicators activities/products

- Collecting statistics from 200+ countries
- Harmonizing, correcting and entering into databases
- Adding value via derivations / calculations and analysis
- World Telecommunication Development Report
- Regional telecommunication reports
- Electronic databases
- External requests

# Demand for telecommunication indicators growing

**External requests for information about ITU  
telecommunication indicators**



# Factors driving interest in telecommunication indicators

- Policy changes
- Importance of telecoms in economy
- Commercialization of operators
- Regulation



# Performance indicators

“As policy-makers come to review the first round of changes, and perhaps plan a second round, they need some yardstick by which to evaluate the success or failure of their policies. This means that policy-makers must try to define a set of indicators which permit comparison with other international PTOs.”

25 indicators covering:

- tariff comparisons
- tariff structure
- Quality of service
- Productivity & Efficiency

OECD. *Performance Indicators for Public Telecommunications Operators*. OECD, Paris, 1990. ICCP # 22.

# Country comparisons

“The underlying aim of the Bureau of Industry Economics’ report is to compare Australian performance in the provision of telecommunications infrastructure and services with international best practice.”

Australian Bureau of Industry Economics.  
*International Performance Indicators: Telecommunications 1995*. Australian Government Publishing Service, Canberra, March 1995.

<u>Australia, Best and Worst Observed</u>		
<u>Indicator</u>	<u>Best</u>	<u>Worst</u>
<u>Australia</u>		
-Business Charges 18/28	US	Canada
-International Charges 14/24	Norway	Japan
-Fault clearance 15/19	Neth.	Taiwan
-Mobile Penetration 8/30	Sweden	Turkey
-Digitalisation 23/30	Hongkong	Austria
-Cardphones 2/25	Japan	Norway
-Revenue p. Employee 19/27	Switzerland	Turkey
-Lines p. Employee 26/30	S. Korea	Thailand
-Partial Labour Productivity	US	Aust.

# Benchmarks

“...the need for new approaches to performance assessment and benchmarking for best practice in the dynamic global telecommunication industry. The metrics traditionally used in this industry are based on a regulated and monopolistic model. New metrics for a competitive global industry should focus on customer requirements. Moreover, the metrics and indicators should be part of a framework which is structured around a discrete set of issues or concerns that are of continuing interest to stakeholders in the industry.”

8 performance attributes of telecommunication firms:

1. Customer satisfaction
2. Service quality & reliability
3. Cost & price structure
4. Speed and responsiveness to market
5. Global access & interoperability
6. Technology & innovation
7. Fulfillment of franchise requirement
8. Productivity of resources & assets

*CTM. Benchmarking for Best Practice: A Performance Assessment Framework for the Global Telecommunications Industry.* University of Southern California, forthcoming (1996).

# Statistics for regulators

“For OFTEL to make progress towards meeting its goal of providing the best possible deal for the customer ... it was felt that a better and more detailed understanding of the telecoms market in the UK was needed. To assist with this, an exercise was undertaken to obtain authoritative market statistics on telecoms services.”

**PSTN retail call minutes, by type of call and customer (shown in million of minutes)**

**1993-94**

Local calls	
Business	22341
Residential	44839
National calls	
Business	14665
Residential	16338
International calls	
Total	3221

Office of Telecommunications. *The UK Telecommunications Industry: Market Information*. OFTEL, London, February 1995.

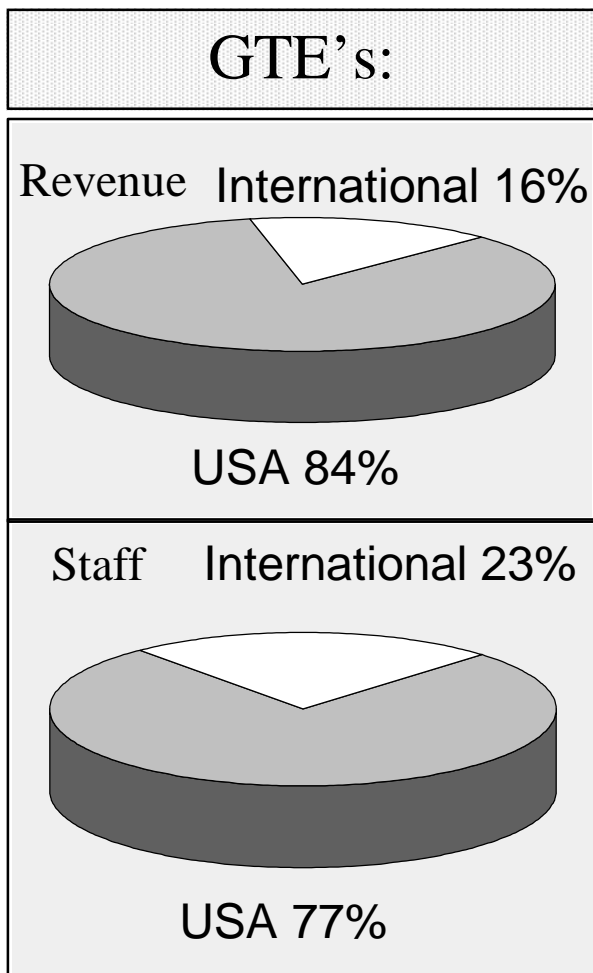
# Issues

- Industry transition
- Specialization
- Globalization
- Convergence

# Confidentiality

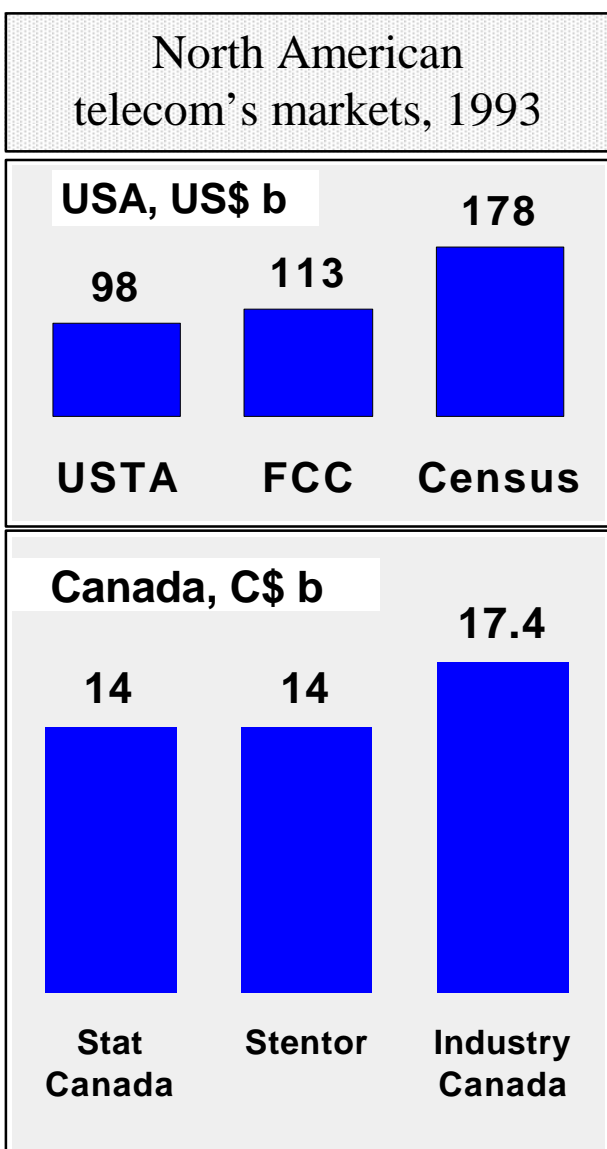
“The data which you seek for the Report is not available to us in the Department. All ITU requests for data are of course circulated to operators, but on this occasion they are unable to assist.”

# Globalization



“A decade ago, telecom statistics listed in a company’s report would have generally referred to activities within the country. Since then, telecommunication operators have branched out from their purely locally markets to establish a presence in different countries.”

# Specialization



“The specialization problem arises from too narrow an interpretation of the telecommunication sector. This is an issue in North America where telecommunication statistics tend to be a function of regulatory practices. As a result, it is difficult to establish an **overall picture** of the industry.”



# Convergence

“The distinction between telecommunications, broadcasting and computing is blurring. Telecom companies provide cable television as well as data transmission and online services.”

# Optimism

- Regulators more involved
- Operators less sensitive
- Statistical agencies interested
- International, regional and quasi-official initiatives
- Government interest
- Collaboration growing



INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION  
DEVELOPMENT BUREAU**

**INFORMATION SYSTEMS UNIT**

**Document WTIM96/8-E  
18 March, 1996  
Original: English**

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**World Telecommunication Indicators Meeting  
(Geneva, 19 - 21 March 1996)**

**SOURCE:** ITU/SPU, Tim Kelly

**TITLE:** PERFORMANCE INDICATORS FOR PTOS: AN UPDATE

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# Performance Indicators for Public Telecommunication Operators: An update

Tim Kelly, ITU

“World Telecommunication Indicators”,  
Geneva, March 19th 1996



In the beginning, defining telecommunication  
performance indicators was relatively simple ...



**But then life got complicated ...**



***In 1988, OECD launched a new work programme on comparative costs of telephone calls.***

***Programme extended in 1989 to cover other telecommunication performance indicators***

***In 1990, OECD report published: "Performance Indicators for Public Telecommunication Operators"***

## ***Performance Indicators: Then and now ...***

- Performance indicators mainly concerned with tariffs networks & QoS
- Indicators mainly used by PTO managers and regulators
- Indicators mainly presented historical trends
- Operators happy to share data

- Indicators needed for market opportunities, policy evaluation and regulation
- Indicators also used by users, shareholders, consultants, investors & journalists
- Major interest is in forecasts and market opportunities
- Operators regard much data as commercially confidential

## ***Tariff comparisons: Then and now ...***

- Similar tariff structure applied to all customers
- Most countries had only one supplier
- Telephony service relatively simple (vanilla flavour only)
- Tariff changes introduced infrequently
- Limited options for international service

- Many users eligible for some type of discount scheme
- Many countries have multiple suppliers
- Many optional features available (e.g. itemised billing, call forward etc)
- Tariff changes and new options introduced regularly
- Multiple options for international service (e.g. callback, ISR)

## ***Tariff baskets: Then and now ...***

### **Six baskets defined:**

- **Business telephony**
- **Residential telephony**
- **International telephony**
- **Mobile communications**
- **X.25 data communications**
- **Leased lines at 9.6 kbit/s, 56/64 kbit/s and 1.5/2.0 Mbit/s**

**Comparisons between countries**

- **Additional telephony baskets to take account of usage discounts (e.g. small businesses, multinationals, elderly)**
- **Combined national and international telephony basket**
- **Additional baskets needed for Internet, ISDN, digital mobile (roaming), PCS, ATM etc**

**Comparisons between operators within countries**

## ***National telephone tariff basket: Then and now ...***

### **November 1989:**

**Business basket = US\$931, 2'634 calls**

**Residential basket = US\$346, 920 calls**

### **Business basket:**

**Iceland, 1st**

**Sweden, 2nd**

**France, 10th**

**Italy, 11th**

**UK, 13th**

**Japan, 14th**

**Germany, 17th**

**Spain, 18th**

**USA, 19th**

### **January 1995:**

**Business basket = US\$908, 2'646 calls**

**Residential basket = US\$387, 964 calls**

### **Business basket**

**Iceland, 1st**

**Sweden, 3rd,**

**UK, 8th**

**France, 9th**

**Japan, 10th**

**USA, 12th**

**Germany, 15th**

**Italy, 20th**

**Spain, 21st**

## ***Changing paradigm for international telephony***

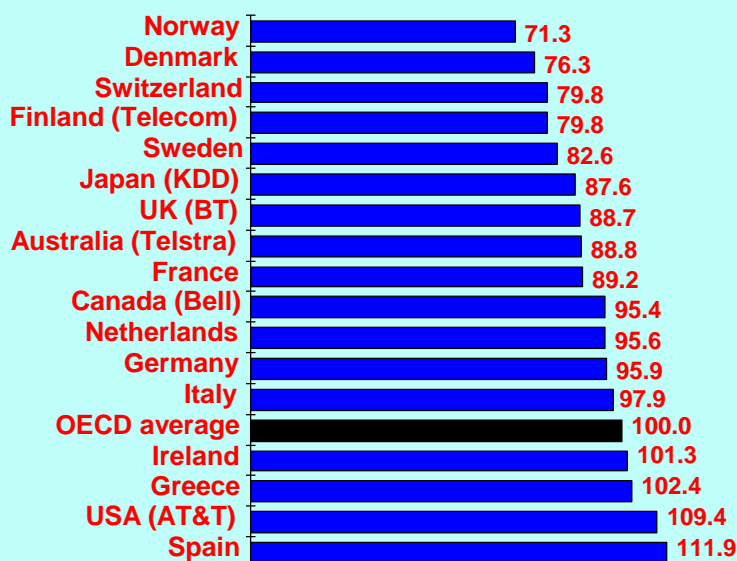
### ***Old regime (pre 1970)***

- International telephony a jointly-provided service
- Monopoly service provision
- Traffic travels mainly over Public Switched Telephone Network (PSTN)
- Voice traffic dominant
- Balanced traffic flows
- Exchange rate stability

### ***New regime (post 1990)***

- International telephony a traded service
- Competitive Service Providers (CSPs)
- Traffic over PSTN, leased lines, private nets, Internet, ISR, CSP networks etc
- Multimedia traffic
- Imbalanced traffic flows
- Exchange rate instability

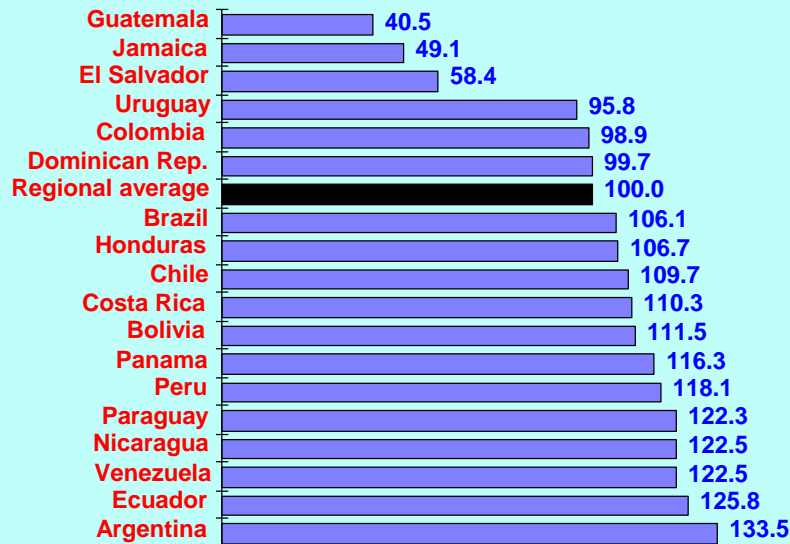
## ***Tariff imbalances: OECD International tariff basket, January 1995***



Source: OECD. Based on call-pair methodology and expressed in Purchasing Power Parities.



## ***Extending methodology to other regions: Americas, January 1995***



Source: ITU, based on OECD call-pair methodology and expressed in US\$ exchange rates

## ***Quality of service indicators: Then and now ...***

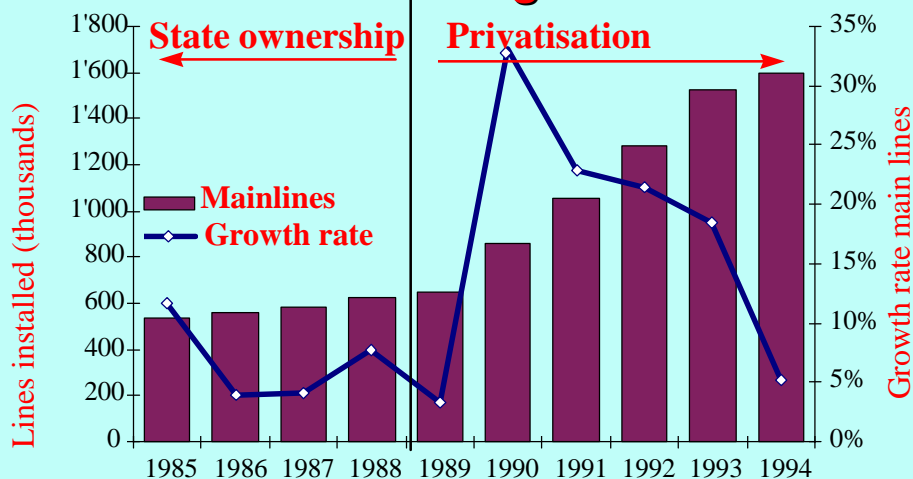
- Six main indicators selected covering: waiting lists, payphones, call failure rates, faults per line, fault repair time, and operator service
- Additional features: customer satisfaction, transmission quality, account queries, accuracy of directory services

- Key measure is customer satisfaction measured by level of "churn" between operators
- Technical network quality important as data compression grows (esp. mobile)
- Bundling of features in basic price
- Low probability/high magnitude events (e.g. fire, software crash)

## Information requirements of regulators

- For policy analysis
  - ⇒ Comparisons before and after policy change
  - ⇒ Aggregation of national statistics to allow comparison with other countries
- For regulatory purposes
  - ⇒ Tariff rebalancing including facilities charges to other service providers
  - ⇒ Market share, growth rates
- For customers
  - ⇒ Quality of service indicators
  - ⇒ Handling of account queries

## Performance indicators for policy evaluation: Network growth in Chile



Main lines installed and growth rate, Chile

Source: ITU World Telecommunication Indicators Database.

## ***Objectives of performance measurement: Then and now ...***

**In 1990 OECD publication, objective of performance indicators defined:**

**“How can the performance of a public telecommunications operator be measured, by what standards should it be judged, and how does it compare with similar companies in other countries?”**

**1996 World Telecommunication indicators Conference, proposed objective:**

**“Which performance indicators should telecommunication regulators and PTO managers monitor, with what frequency, for which types of user, and what reporting requirements should be imposed?”**