

Helping the world communicate



International good practices in data collection and comparison

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L I R N E *asia*

Learning Initiatives on Reforms for Network Economies

IDRC



CRDI

**Workshop on benchmarking
performance in network and
services development**

Delhi, 1-3 March 2006

The views expressed in this paper are those of the authors and do not necessarily reflect the opinions of the ITU or its Membership. Dr Tim Kelly can be contacted at tim.kelly@itu.int.



Agenda

- **ITU's contribution to global ICT data collection and comparison**
 - **History**
 - **World Telecom Indicators Database**
 - **World Telecom Indicators Meeting**
 - **Tariff comparisons**
 - **[Partnership: see OECD presentation]**
- **Specific data requirements of WSIS**
 - **Measuring 10 WSIS commitments**
 - **Developing a composite index: Digital Opportunity Index (DOI)**
- **Issues for discussion**



150 years of data collection

- **1865: Creation of International Telegraph Union (ITU)**
- **1871: First data publication (data from 1849 onwards)**
- **1974: First edition of “ITU statistical yearbook”, published annually since that date**
- **1985: “Maitland report” on Missing Link**
- **1994: First edition of “World Telecommunication Indicators” and “STARS” database on diskette**
- **1995: Joint ITU/OECD World Telecommunication Indicators Handbook**
- **1997: World Telecommunication Indicators online**
- **12 January 2006: 9th edition of WTI database online, covering 1960, 1965, 1970, 1974-2004**

Statistical data reporting in 19th Century ...

Etats de l'Union	1865			
	Service intérieur	Service international	Télégrammes de service	Total
Grande-Bretagne	^{2a)} 8 337 920	^{2a)} 1 500 000	—	^{2a)} 9 837 920
Grèce	75 733	8 233	1 491	85 457
Hongrie	Voir Autriche			
Indes britanniques { Office indien	^{2a)} 481 824	^{2a)} 40 852	—	^{2a)} 522 676
{ Office indo-européen	—	23 433	—	23 433
Indes néerlandaises	^{2a)} 200 281	^{2a)} 12 189	^{2a)} 16 181	^{2a)} 228 651
Indochine française	—	—	—	—
Islande	—	—	—	—
Italie	1 242 247	709 678	106 439	2 058 364
Japon	—	—	—	—
Luxembourg	—	—	—	—
Madagascar	—	—	—	—
Maroc	—	—	—	—
Monténégro	—	—	—	—
Norvège	174 312	50 375	17 488	242 175
Nouvelle-Calédonie	—	—	—	—
Nouvelle-Zélande	—	—	—	—
Pays-Bas	419 054	547 375	5 965	972 394
Perse	—	—	—	—
Portugal	90 240	35 260	—	125 500
Roumanie	265 750	85 133	1 946	352 829
Russie	775 145	174 648	94 582	1 044 375
Sénégal	—	—	—	—
Serbie	^{2a)} 70 759	^{2a)} 91 390	^{2a)} 1 949	^{2a)} 164 098
Siam	—	—	—	—
Suède	259 278	95 990	558 700	913 968
Suisse	364 118	227 096	13 749	604 963
Tunisie	—	—	—	—
Turquie	^{2a)} 476 342	^{2a)} 194 978	—	^{2a)} 671 320
Uruguay	—	—	—	—
Total	20 046 571	7 030 179	1 348 673	28 425 423

1875				1885			
Service intérieur	Service international	Télégrammes de service	Total	Service intérieur	Service international	Télégrammes de service	Total
18 731 492	2 331 486	—	21 062 978	35 417 578	4 921 441	—	40 339 019
191 523	52 391	5 759	249 673	544 556	181 991	8 686	735 233
1 713 350	319 950	225 979	2 259 279	1 888 741	1 596 876	151 211	3 636 828
803 860	111 122	42 972	957 954	1 913 626	379 216	176 690	2 469 532
—	50 880	—	50 880	1 031	112 545	4 473	118 049
307 296	19 926	13 071	340 293	308 119	91 100	11 027	410 246
^{2a)} 26 499	^{2a)} 10 258	^{2a)} 11 000	^{2a)} 47 757	^{2a)} 99 810	^{2a)} 17 906	^{2a)} 19 500	^{2a)} 137 216
4 308 146	901 291	188 133	5 347 570	6 366 280	1 448 116	194 384	8 008 780
^{2a)} 956 257	^{2a)} 17 843	^{2a)} 71 342	^{2a)} 1 045 442	2 533 963	49 977	81 018	2 664 958
^{1a)} 26 150	^{1a)} 44 272	^{1a)} 1 122	^{1a)} 71 544	28 903	54 145	899	83 947
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
486 779	248 456	46 247	781 482	487 924	372 570	5 190	865 684
—	—	—	—	—	—	—	—
^{2a)} 1 344 545	^{2a)} 22 196	—	^{2a)} 1 366 741	1 753 536	41 067	—	1 794 603
1 441 515	755 444	17 771	2 214 730	2 001 743	1 442 955	31 352	3 476 050
575 000	52 800	100 000	727 800	—	—	—	—
330 792	161 179	29 366	521 337	484 881	350 291	76 382	911 554
765 071	201 299	—	966 370	917 448	228 992	6 864	1 153 304
3 265 230	680 708	232 586	4 178 524	8 895 870	1 318 646	672 032	10 886 548
119 555	62 000	1 069	182 624	^{2a)} 35 489	^{2a)} 4 419	^{2a)} 958	^{2a)} 40 866
^{2a)} 317	^{2a)} 1 978	^{2a)} 140	^{2a)} 2 435	1 671	4 736	1 200	7 607
788 131	359 285	28 908	1 176 324	607 256	559 378	18 782	1 185 416
2 091 787	834 486	38 731	2 965 004	1 759 054	1 151 076	97 426	3 007 556
—	—	—	—	—	—	—	—
^{2a)} 1 385 419	^{2a)} 354 795	^{2a)} 103 608	^{2a)} 1 843 822	1 487 461	Voir France et Algérie		1 993 057
—	—	—	—	—	377 007	128 589	—
64 190 321	18 545 353	3 907 539	86 643 213	123 768 142	31 962 616	5 475 622	161 206 380

Extract from 50th anniversary publication of ITU, in 1915 "Tableaux Statistiques Comparatifs du développement des telegraphes et telephones, 1865 – 1915"

Statistical data reporting in 21st Century ...

The screenshot shows the ITU World Telecommunication Indicators 2005 web application. The browser window title is "ITU World Telecommunication Indicators 2005". The menu bar includes "File", "Edit", "View", "Format", "Options", "Help", and "Information". The main navigation tabs are "WTI Home", "Query", "Result", and "Map". Below the navigation is a toolbar with "New Query", "Load Query", "Save Query", and "Availability" (checked).

Time Series Query

To view time series data you first define your query. Click each button below and select at least one country, series, and period. Click View Data to see the result.

Select:

- Countries
- Series
- Periods
- View Data

Selected countries/groups: 8 of 214

- Afghanistan
- Bangladesh
- Bhutan
- India
- Maldives
- Nepal
- Pakistan
- Sri Lanka

Selected periods: 14 of 45

- 1991
- 1992
- 1993
- 1994
- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004

Selected series: 45 of 102

- Cellular mobile telephone subscribers per 100 inhabitants
- Cellular monthly subscription
- Cellular monthly subscription (US\$)
- Connection capacity of local exchanges
- Consumer price index (1995=100)
- Cost of a local 3 minute call (off-peak rate)
- Cost of a local 3 minute call (off-peak rate) (US\$)
- Cost of a local 3 minute call (peak rate)
- Cost of a local 3 minute call (peak rate) (US\$)
- Coverage of population (%)
- DSL Internet subscribers
- Gross domestic product (GDP)
- Gross domestic product (GDP) (US\$)
- Gross Fixed Capital Formation (GFCF)
- Gross Fixed Capital Formation (GFCF) (US\$)
- Home satellite antennas
- Households
- International incoming telephone traffic (calls)
- International incoming telephone traffic (minutes)

The World Telecommunication Indicators Database contains time series data for the years 1960, 1965, 1970 and annually from 1975-2004 for around 80 sets of telecommunication statistics.

See: <http://www.itu.int/ti>



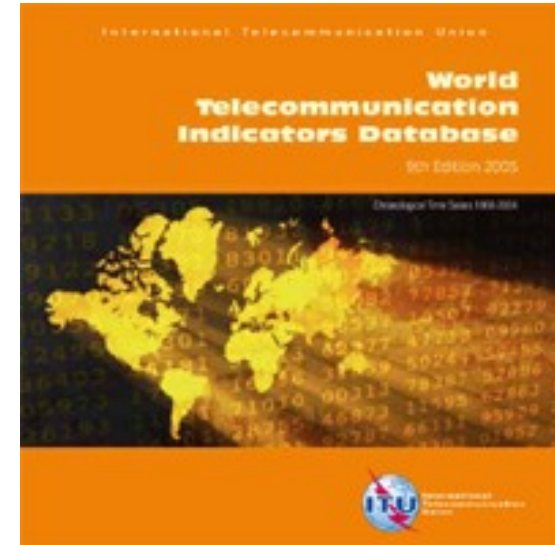
ITU Data Reporting: World Telecom Indicators Database

● Strengths:

- Based on annual questionnaire to national administrations and operators
- Long time-series (1960 onwards)
- Online updates (3 or 4 times per year)
- Tracks 80 main indicators for 200+ economies
- “STARS” based tool allows for easy data selection, mapping, cross-comparisons of data etc
- Formal process for review (through World Telecom Indicators Meeting)

● Weaknesses

- Based on economies NOT companies
- Plenty of holes in the data sets, or partial reporting
- Always at least 9-18 months in arrears



i111	Telephone sets	i153c	Cellular - cost of 3 minute local call (peak)
i1112	Public pay phones	i153c\$	Cellular - cost of 3 minute local call (peak) (US\$)
i112	Main telephone lines in operation	i153o	Cost of a local 3 minute call (off-peak rate)
i91	Main lines per 100 inhabitants	i153o\$	Cost of a local 3 minute call (off-peak rate) (US\$)
i1121	Main telephone lines in largest city	i153co	Cellular - cost of 3 minute local call (off-peak)
i112t	Total telephone subscribers	i153co\$	Cellular - cost of 3 minute local call (off-peak) (US\$)
i9111	Total telephone subscribers per 100 inhabitants	i271	Cellular mobile telephone subscribers
i114	% of automatic main lines	i2712	Digital cellular subscribers
i1142	% of digital main lines	i911	Cellular subscribers per 100 inhabitants
i116	% of residential main lines	i28	ISDN subscribers
i1162	% of main lines in urban areas	i28c	ISDN Channels
i117	Connection capacity of local exchanges	i311	Telex subscribers
i1191	International telephone circuits	i412	Leased circuits
i123	Waiting list for main lines	i4211	Number of internet hosts
i131c	Total national telephone traffic (calls)	i4212	Internet users
i131m	Total national telephone traffic (minutes)	i422	Number of personal computers
i131p	Total national telephone traffic (pulses)	i51	Total full-time telecommunications staff
i1311c	Number of local telephone (calls)	i61	Population
i1311m	Number of local telephone (minutes)	i611	% of urban population
i1311p	Number of local telephone (pulses)	i612	Population of largest city
i1312c	Number of national long distance telephone (calls)	i62	Households
i1312m	Number of national long distance telephone (minutes)	i63	Gross domestic product (GDP)
i1312p	Number of national long distance telephone (pulses)	i63\$	Gross domestic product (GDP) (US\$)
i132c	International outgoing telephone traffic (calls)	i64	Gross Fixed Capital Formation (GFCF)
i132m	International outgoing telephone traffic (minutes)	i64\$	Gross Fixed Capital Formation (GFCF) (US\$)
i132p	International outgoing telephone traffic (pulses)	i65	National currency per US\$ (end of year)
i132ci	International incoming telephone traffic (calls)	i652	Average annual exchange rate (local curr. p. US\$)
i132mi	International incoming telephone traffic (minutes)	i67700001	Exports - telecommunication equipment (US\$)
i143	Telephone faults per 100 main lines	i67700002	Imports - telecommunication equipment (US\$)
i151	Residential telephone connection charge	i66_95	Consumer price index (1995=100)
i151\$	Residential telephone connection charge (US\$)	i75	Total telecommunication service revenue
i151b	Business telephone connection charge	i75\$	Total telecommunication service revenue (US\$)
i151b\$	Business telephone connection charge (US\$)	i71	Total income from telephone service
i152	Residential monthly telephone subscription	i71\$	Total income from telephone service (US\$)
i152\$	Residential monthly telephone subscription (US\$)	i741	Mobile communication revenue
i152b	Business telephone monthly subscription	i741\$	Mobile communication revenue (US\$)
i152b\$	Business telephone monthly subscription (US\$)	i81	Annual investment in telecommunication
i153	Cost of three minute local call	i81\$	Annual investment in telecommunication (US\$)
i153\$	Cost of three minute local call (US\$)	i965	Television receivers
i151c	Cellular connection charge	i965h	Television equipped households
i151c\$	Cellular connection charge (US\$)	i965c	Cable TV subscribers
i152c	Cellular monthly subscription	i965s	Home satellite antennas
i152c\$	Cellular monthly subscription (US\$)		

Indicators tracked in WTI Database

www.itu.int/ti



World Telecom/ICT Indicators Meeting

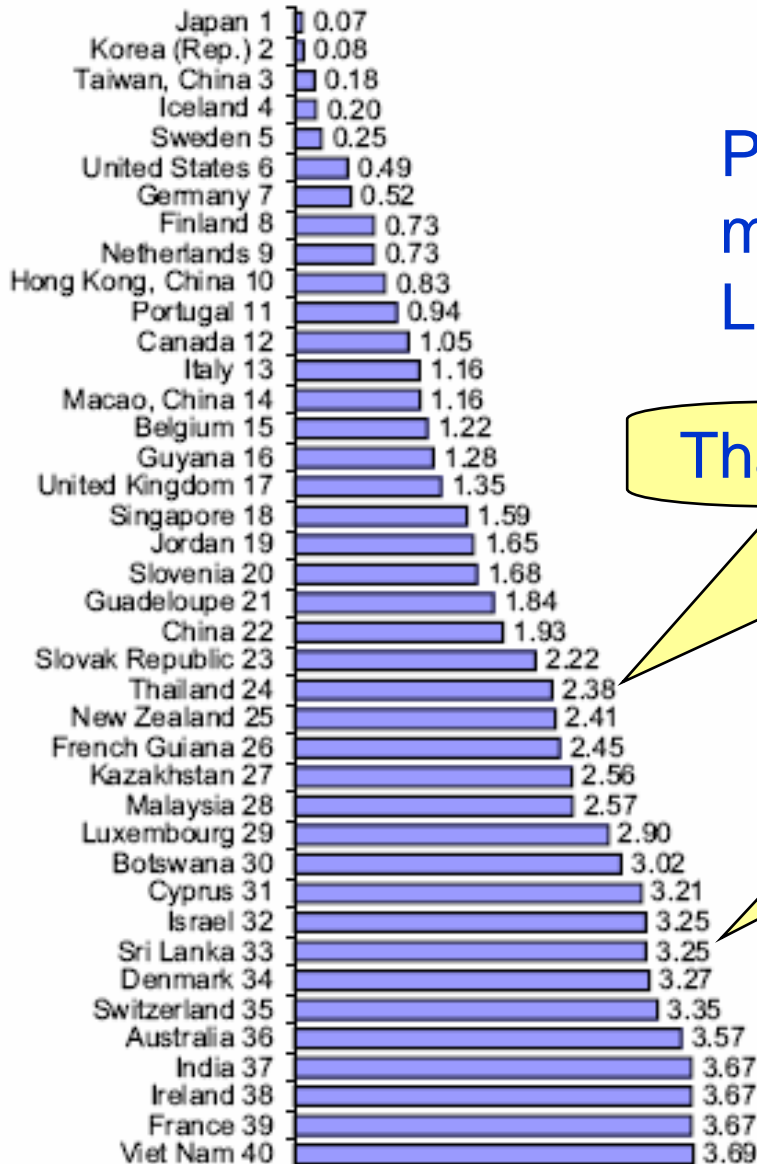
- Held in Geneva in 1999, 2001, 2003 and 2005
- Most recent, 10-11 February 2005 (preceded by WSIS Thematic meeting of Partnership)
- Topics covered:
 - Cooperation with national statistical agencies and regulators
 - International and Regional cooperation (Partnership)
 - Core set of ICT indicators (see Sam's presentation)
 - New indicators, e.g., to measure impact of ICTs
 - Methodological issues on data collection
 - Policy for information and analysis
- Agreed definitions of key indicators.
- See: <http://www.itu.int/ITU-D/ict/wict05/index.html>.



Tariff comparisons

- **Complimentary to work of OECD/Teligen**
 - **Data collected is less detailed but covers more countries**
 - **Uses similar basket-based model for tariff comparisons**
- **Basic data**
 - **Connection, subscription, local call price, price of 3 minute call to USA, etc**
 - **Internet access tariffs for dial-up**
- **Broadband and mobile**
 - **Sample of two prices for broadband (entry-level and cheapest per kbit/s)**
 - **“Low-user” basket for mobile, as defined by OECD**

Example of broadband price comparisons (1)



Price per 100 kbit/s per month, July 2005, in US\$.
Lowest 40 economies

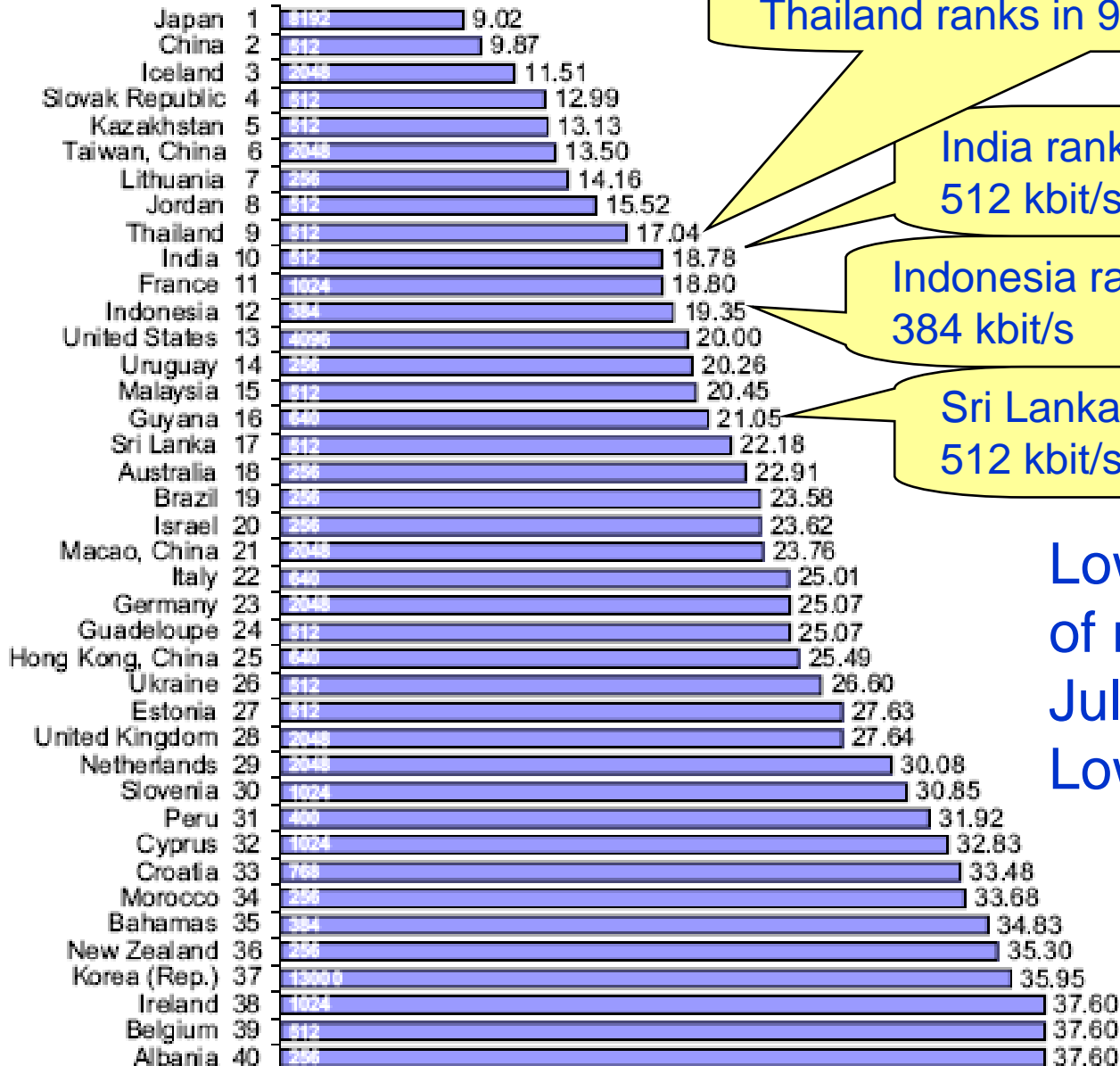
Thailand ranks in 24th place

Sri Lanka ranks in 33rd place

India ranks in 37th place

Indonesia, US\$5.07, ranks 47th
Philippines, US\$6.95, ranks 59th
Pakistan, n/a

Example of broadband price comparisons (2)



Thailand ranks in 9th place, for 512 kbit/s

India ranks in 10th place, for 512 kbit/s

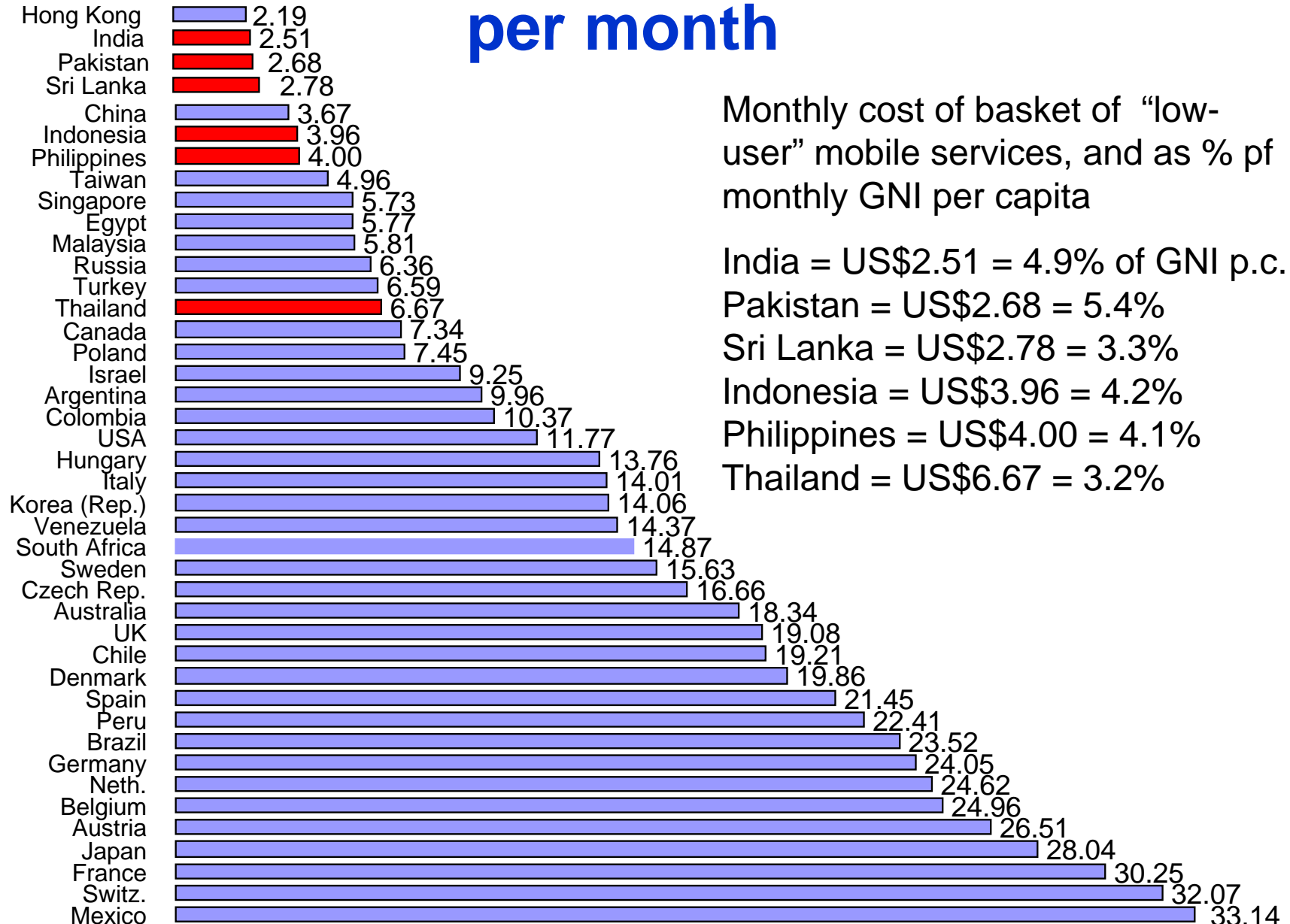
Indonesia ranks in 12th place, for 384 kbit/s

Sri Lanka ranks in 17th place, for 512 kbit/s

Lowest sampled price of monthly subscription, July 2005, in US\$.
Lowest 40 economies

Philippines ranks in 52nd place, US\$44.51 for 512 kbit/s
Pakistan, n/a

Mobile “low-user” basket, Aug. 2005, in US\$ per month



Monthly cost of basket of “low-user” mobile services, and as % pf monthly GNI per capita

India = US\$2.51 = 4.9% of GNI p.c.

Pakistan = US\$2.68 = 5.4%

Sri Lanka = US\$2.78 = 3.3%

Indonesia = US\$3.96 = 4.2%

Philippines = US\$4.00 = 4.1%

Thailand = US\$6.67 = 3.2%



Specific data requirements for WSIS commitments: Target for year 2015

- a) to connect all villages with ICTs
- b) to connect all educational institutions
- c) to connect all scientific and research centres;
- d) to connect all public libraries, museums and archives
- e) to connect all health centres and hospitals;
- f) to connect local and central government departments
- g) to adapt all primary and secondary school curricula to meet the challenges of the Information Society;
- h) to ensure that all have access to television and radio services;
- i) to encourage the development of content on the Internet;
- j) to ensure that more than half the world's inhabitants have access to ICTs within their reach.



A new tool for international comparisons: **Digital Opportunity Index**

- **A composite index made from 11 separate indicators**
- **Structured around:**
 - **Opportunity (e.g., Coverage and tariffs)**
 - **Infrastructure (e.g., penetration rates for individuals and households)**
 - **Utilisation (e.g., access to Internet and broadband connections)**
- **Separate indices for fixed and mobile as well as a combined index**
- **Launched at WSIS Summit in Tunis (Tunis Agenda, para 115)**

DOI Indicators

	Indicator	Goal post	Indicator weight	Category weight
Opportunity	Percentage of population covered by mobile	100	33%	33%
	Internet access tariffs as a % of per capita income	.16	33%	
	Mobile tariffs as a % of per capita income	.20	33%	
Infrastructure	Proportion of households with a fixed telephone	100	20%	33%
	Mobile cellular subscribers per 100 inhabitants	100	20%	
	Proportion of households with Internet access	100	20%	
	Mobile Internet subscribers per 100 inhabitants	100	20%	
	Proportion of households with a computer	100	20%	
Utilization	Internet users per 100 inhabitants	85	33%	33%
	% of fixed Internet subscribers with broadband	100	33%	
	% of mobile Internet subscribers with broadband	100	33%	



Selected rankings in 2004 (Provisional, based on analysis of 176 economies)

DOI	Country	DOI	DOI	Country	DOI
1	Korea (Rep.)	0.76	55	Russia	0.45
2	Japan	0.71	64	Mexico	0.43
3	Denmark	0.71	66	Brazil	0.42
4	Iceland	0.69	69	China	0.42
5	Hong Kong, China	0.69	76	Thailand	0.40
6	Sweden	0.69	82	South Africa	0.38
7	United Kingdom	0.67	100	Philippines	0.33
8	Norway	0.66	106	Sri Lanka	0.31
9	Netherlands	0.66	107	Indonesia	0.31
10	Taiwan, China	0.66	109	India	0.29
11	Australia	0.65	124	Pakistan	0.24
12	Switzerland	0.65	176	Chad	0.01

Detailed results for India (2004)

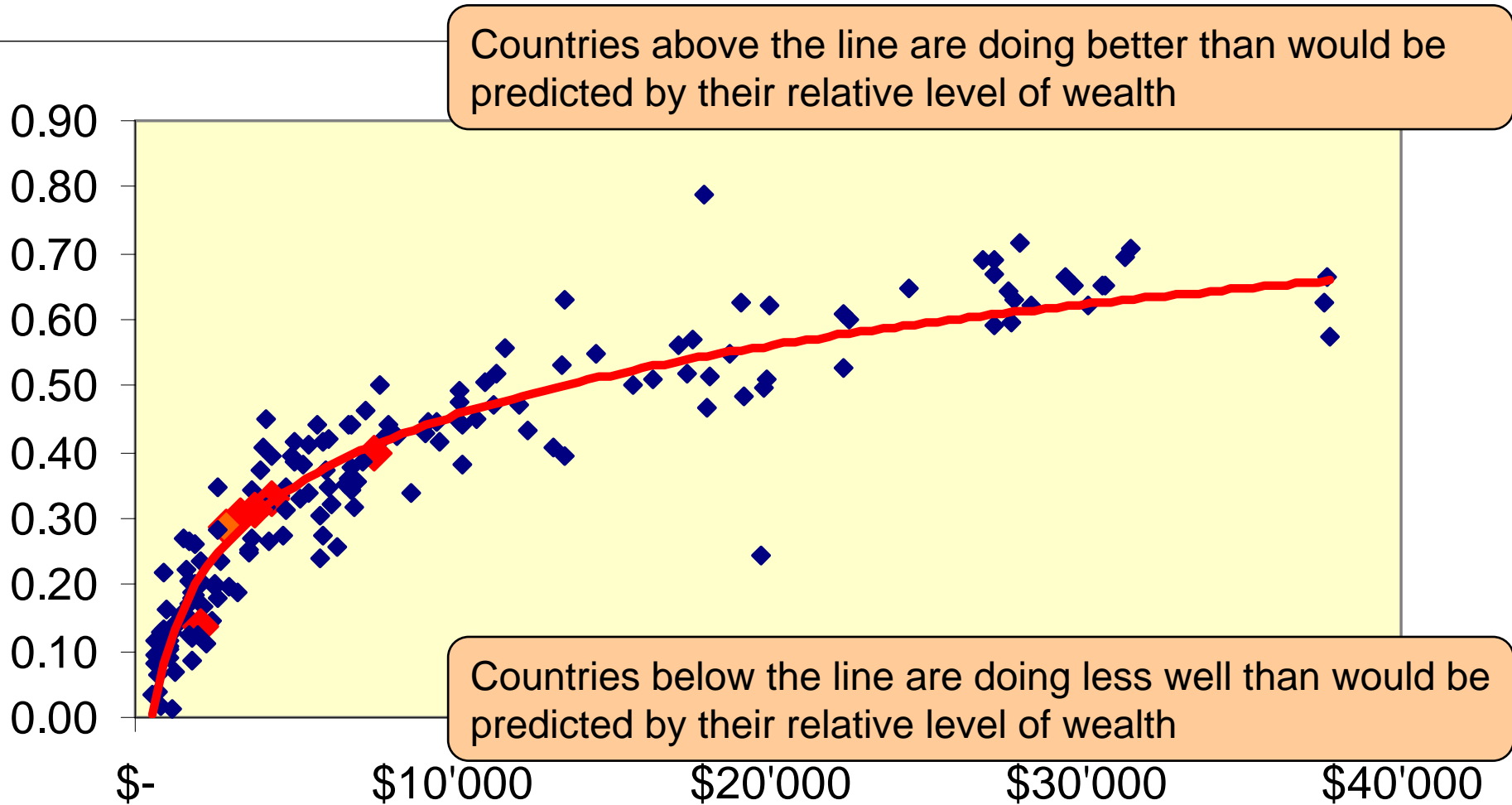
2004	Indicator	INDEX
Percentage of population covered by mobile	60%	0.78 = 106th
Internet tariffs as a % of per capita income	19.8%	
Mobile tariffs as a % of per capita income	4.9%	
Proportion of households with a fixed line	10.3%	0.04 = 131st
Mobile cellular subscribers per 100 inhabs	4.5	
Proportion of households with Internet access	2.3%	
Mobile Internet subscribers per 100 inhabs	0.00	
Proportion of households with a computer	4.8%	
Internet users per 100 inhabs	2.3	0.04 = 90th
% of fixed BB in fixed Internet subscribers	9%	
% of mobile BB in mobile Internet subscribers	0%	
DIGITAL OPPORTUNITY INDEX	0.29	109th

Opportunity
 Infrastructure
 Utilization

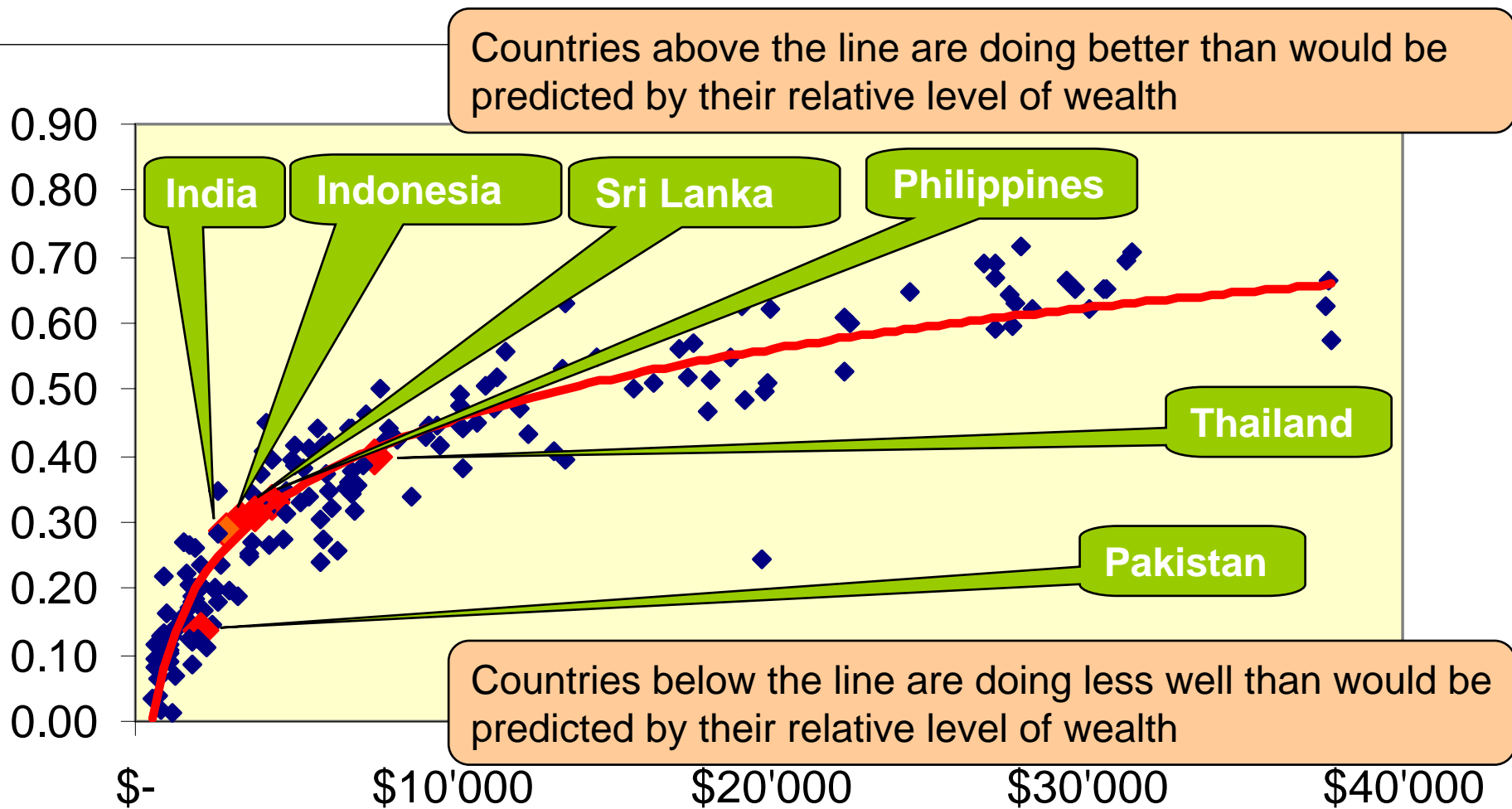
Comparative results for India (2004)

- India has a digital opportunity index of 0.29 in 2004, up from 0.26 in 2003
- Out of 176 economies
 - India ranks 109th in 2004
 - Lower rank than Thailand (76), Philippines (100), Sri Lanka (106) or Indonesia (107)
 - Higher rank than Pakistan (124), Vietnam (130) or Nepal (143)
- India's DOI ranking compares favourably with:
 - Ranked 125th for Human Development Index
 - Ranked 113th for GDP per capita
- *So, India is performing better than might be predicted in ICTs, but not as well as some of its major developing country competitors*

Six country positions on the DOI relative to their wealth (Gross National Income per cap)



Six country positions on the DOI relative to their wealth (Gross National Income per cap)





Some issues for discussion

- **How useful are the ITU-collected indicators for the six-country benchmarking study?**
 - **Timeliness (year-end 2004 data now; 2005 data by Sept '06)**
 - **Tariff comparisons**
- **Could the Digital Opportunity Index (and its 11 sub-indicators) be used as a basis for data gathering and benchmarking?**
 - **Comparability (176 economies)**
 - **Forward-looking (covers broadband and 3G mobile)**
 - **Allows for disaggregation between fixed and mobile**
- **Which other indicators defined by the Partnership, ITU, OECD or NRRI could be useful?**



Thank you

www.itu.int/spu

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