

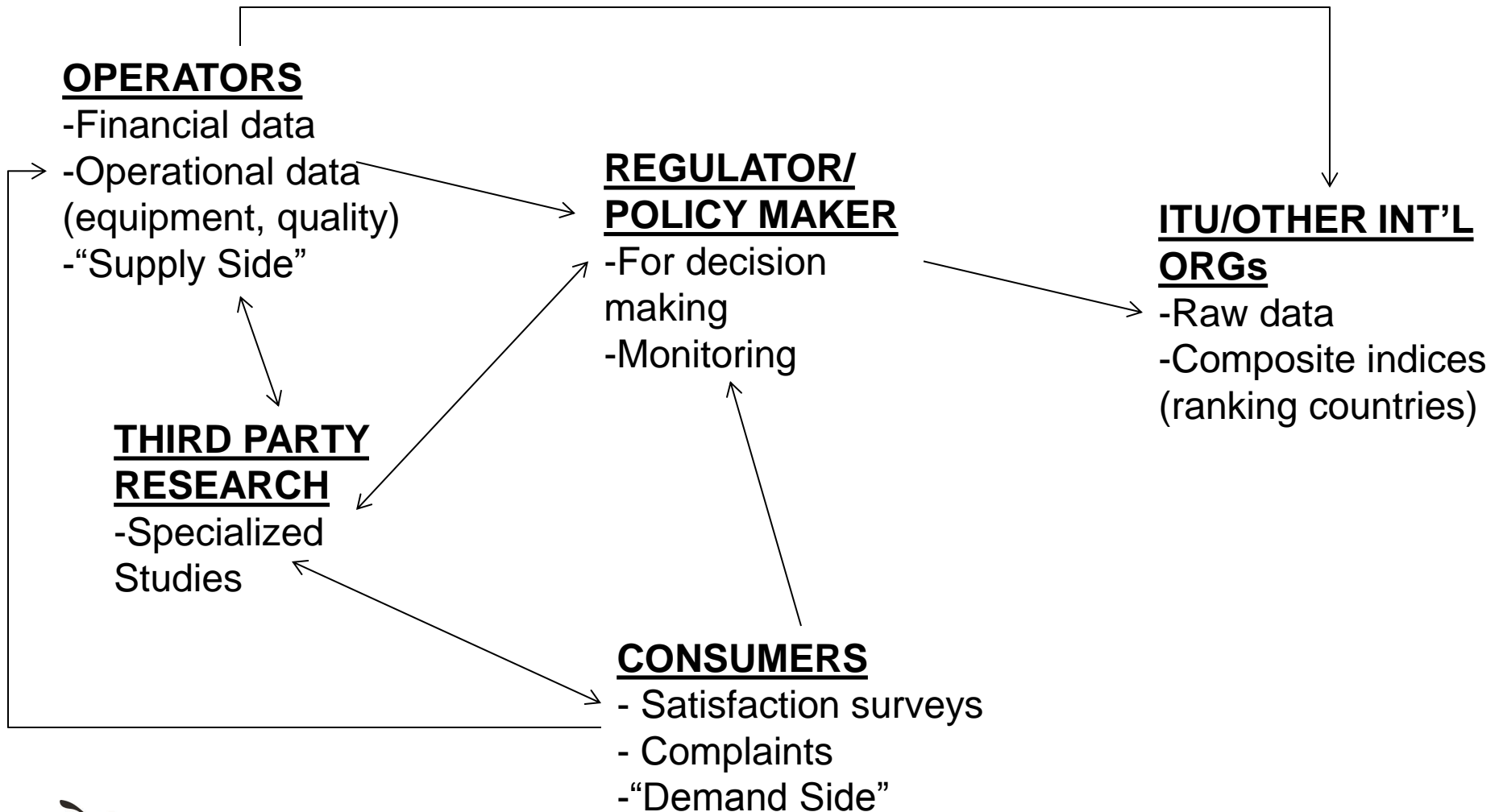
ITU and PiRRC Indicators

Rohan Samarajiva

Apia, April 25, 2013



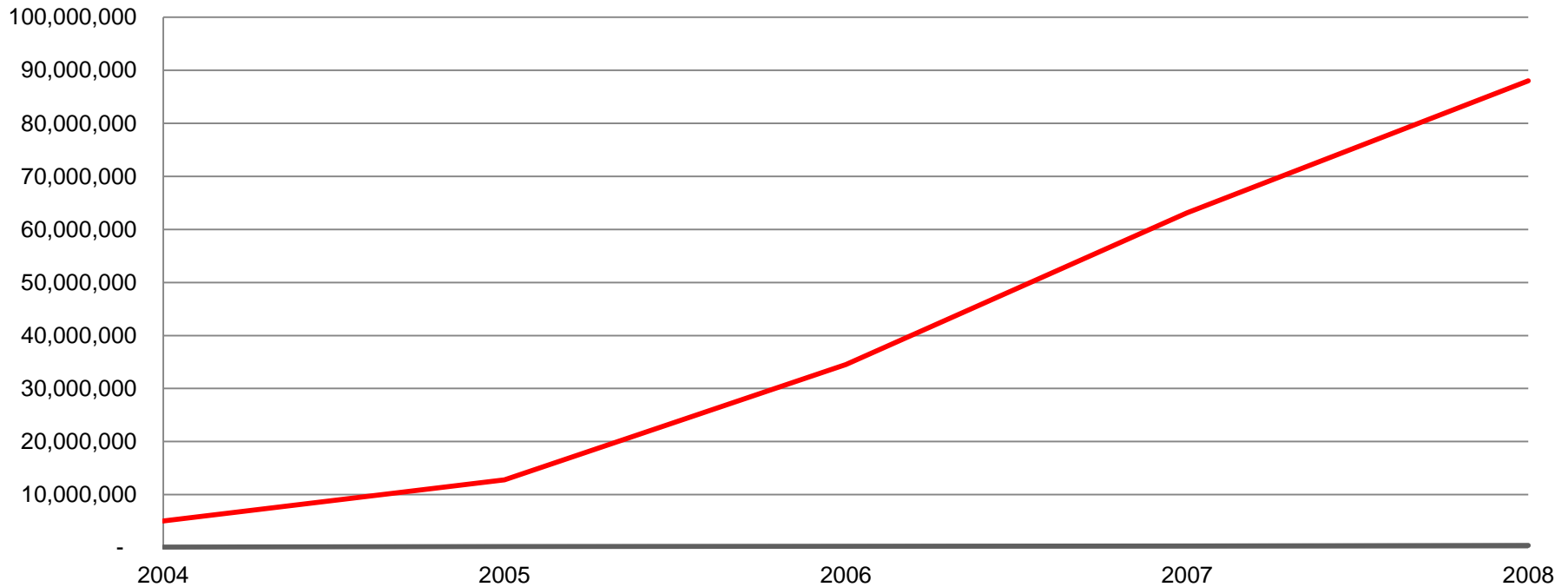
Data on the sector come from multiple sources. Important to understand methods & definitions



CONNECTIVITY

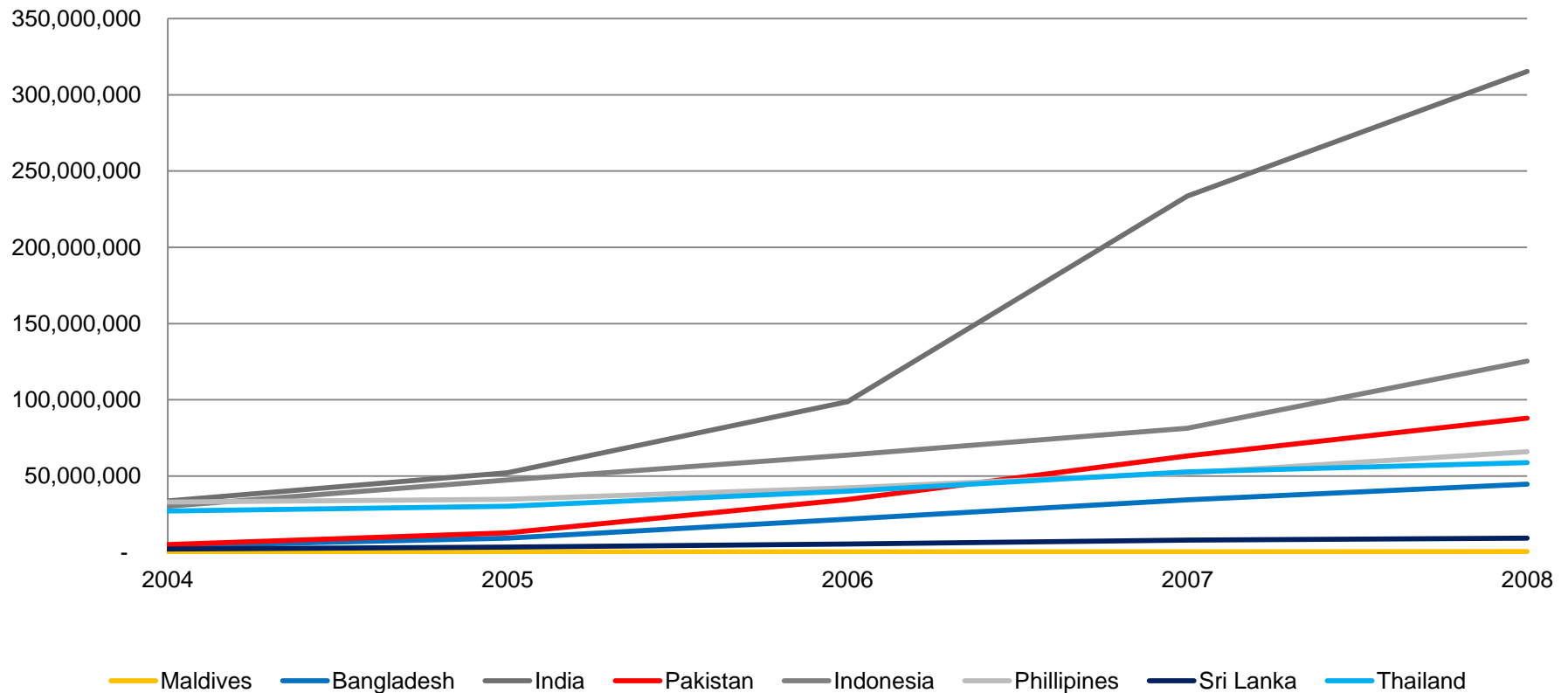
Is connectivity increasing?

Pakistan Mobile SIMs: 2004 - 2008

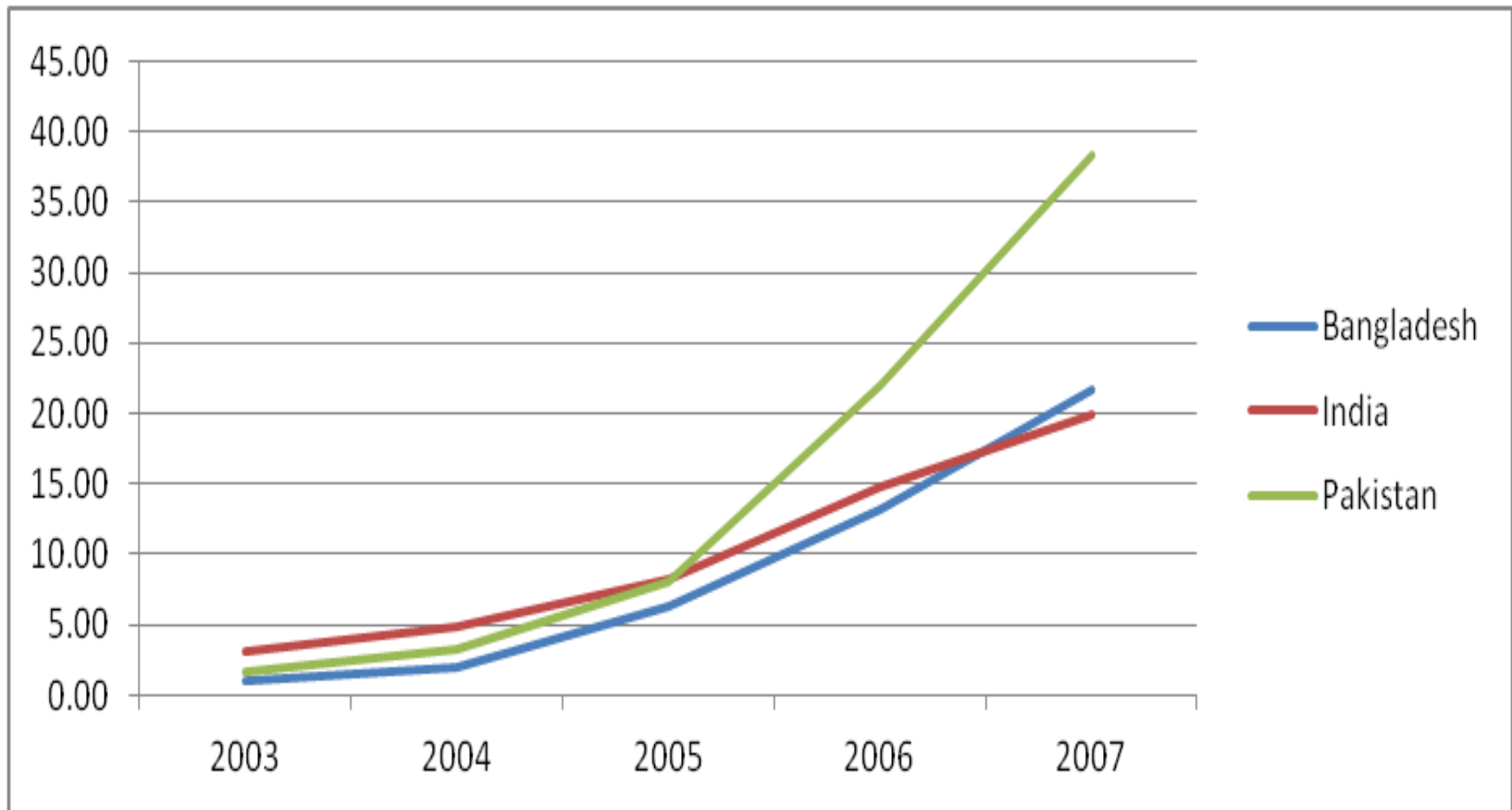


But PK is in middle of pack when compared with S & SE Asian peers

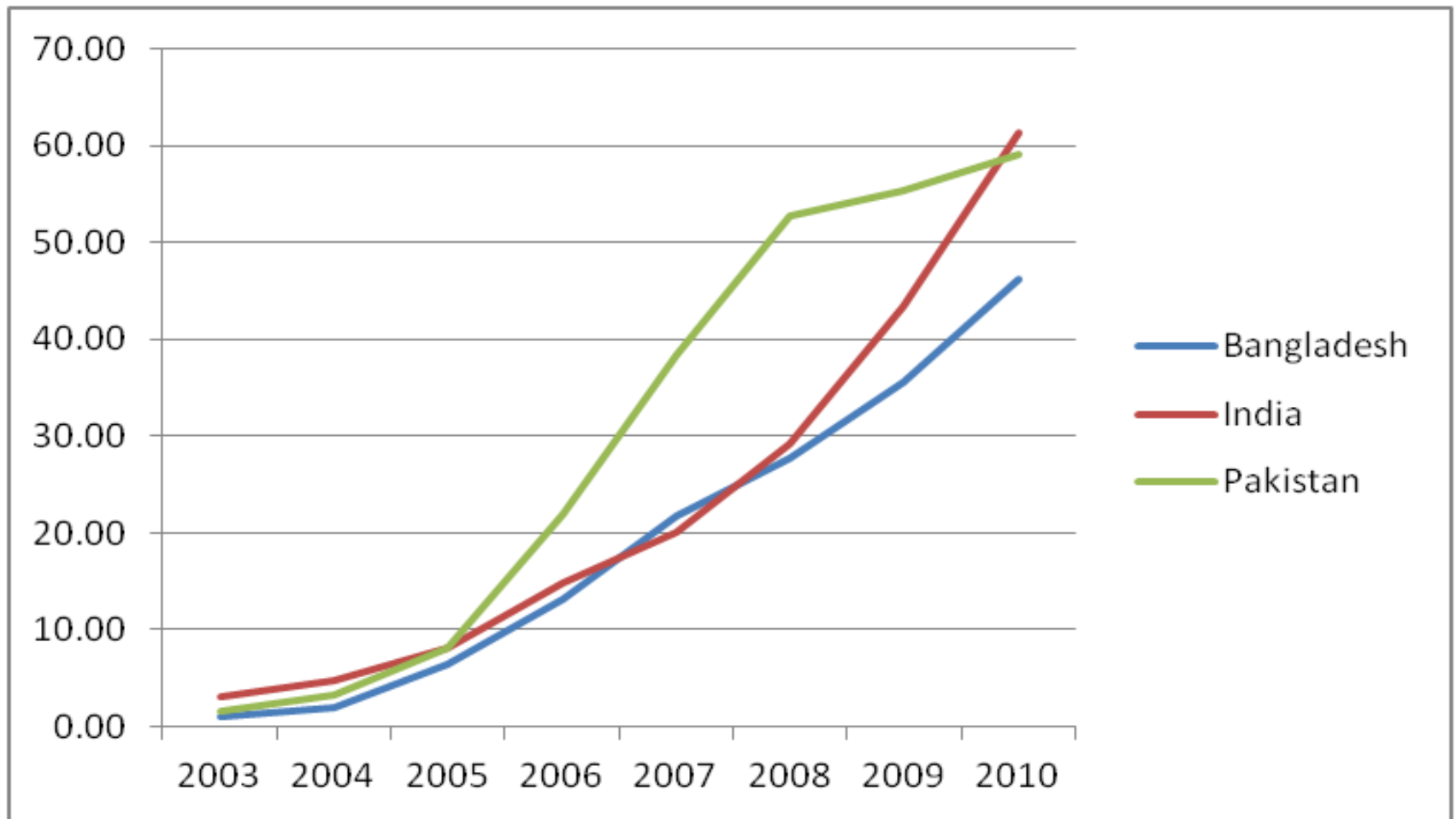
Mobile SIMs: 2004 - 2008



Telecom data change: Most recent SIM/100 data matter . . .



Who is actually ahead?



Aided by multiple millions of SIMs deregistered in PK & SIM tax of USD 12+ in BD

Are the data comparable? E.g., How do you reconcile different financial years?

- Many countries Jan – Dec (calendar year)
 - E.g., Sri Lanka
- But many others differ
 - India: Apr – Mar
 - Pakistan : Jul – June
- So “total fixed access paths in 2008” reported by IN not comparable with PK
- Having quarterly data eliminates problem to a great extent
- Especially important if benchmarks are used for mainstream regulatory work such as interconnection or retail tariff regulation

Prerequisites for comparison

- Internationally accepted definitions and procedures
- Make sure that the definitions are adhered to
 - E.g., ITU has mobile broadband definition; use is inconsistent
 - *“Mobile broadband subscribers refer to subscribers to mobile cellular networks with access to data communications (e.g. the Internet) at broadband speeds (here defined as greater than or equal to 256 kbit/s in one or both directions) such as WCDMA, HSDPA, CDMA2000 1xEV-DO, CDMA 2000 1xEV-DV etc, irrespective of the device used to access the Internet (handheld computer, laptop or mobile cellular telephone etc). These services are typically referred to as 3G or 3.5G and include: Wideband CDMA (W-CDMA), an IMT-2000 3G mobile network technology, based on CDMA”*

Sources of internationally accepted definitions

- ITU (2010) *Definitions of World Telecommunication/ICT Indicators*, Geneva: ITU—Supply side, mostly
- Partnership on Measuring ICT for Development (2010), *Core ICT Indicators 2010*, Geneva: ITU –Demand side, mostly

Absolute numbers: Cook Islands & Fiji

2011	Cook Islands		Fiji	
	PIRRC	ITU - no data	PIRRC	ITU
Telephony:				
Fixed	12,151		129,845	129,845
Mobile	6,351		727,000	727,000
Internet :				
Broadband - Fixed	1,675		23,071	23,250
Broadband - Wireless	-		-	135,000
Internet	4,036		46,266	
Leased Lines	-		-	
Total Internet Subs	5,711		69,337	
Population Size	17,791		890,057	
Competition Status:	Telephony: Monopoly - Telecom Cook Islands Internet: Oyster Internet Services (Owned by Telecom CK)		Telephony: Competition - Telecom Fiji, Vodafone and Digicel Internet: Vodafone, Connect Internet Services (Telecom Fj), Unwired (Digicel), Kidanet (FINTEL)	

- ITU has no data on Cook Islands
- Fiji: most numbers similar
- PiRRC has no data on broadband-wireless, which ITU reports
- PiRRC has data on <256 kbps Internet; but apparently not wireless?

PiRRC definitions

- **Total Internet:** This is the total number of Internet connections in use within the country and is the sum of all the Internet connections issued by each operator. This indicator is not technology specific and would include all Internet connections such as dial-up, ADSL and wireless.
- **Internet:** This is the residual of total Internet subscriptions which includes the number of Internet connections in use within the country which is less than 256kbps. It excludes the number of subscriptions for broadband fixed, broadband wireless and leased lines.

ITU definitions (Internet subs)

- **Total fixed (wired) Internet subscriptions:** The number of total Internet subscriptions with fixed (wired) Internet access, which includes dial-up and total fixed (wired) broadband subscriptions. Only active subscriptions that have used the system within the past 3 months should be included.
- **Dial-up Internet subscriptions:** Number of Dial-up Internet subscriptions. Dial-up is a connection to the Internet via a modem and fixed telephone line, which requires that the modem dial a phone number when Internet access is needed. Only active subscriptions that used the system during the past three months should be included.

ITU definitions (Fixed Broadband)

- **Total fixed (wired) broadband Internet subscriptions:** Total fixed (wired) broadband Internet subscriptions refers to subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This can include for example cable modem, DSL, fibre-to-the-home/building and other fixed (wired) broadband subscriptions. This total is measured irrespective of the method of payment. It excludes subscriptions that have access to data communications (including the Internet) via mobile cellular networks. If countries use a different definition of broadband, this should be indicated in a note. It should exclude technologies listed under wireless broadband category.

ITU definitions (Wireless broadband)

- **271twb Total wireless broadband subscriptions.** Sum of satellite, terrestrial fixed wireless and terrestrial mobile wireless subscriptions. (271s + 271fw + 271mw)
- **271s Satellite subscriptions:** Number of satellite Internet subs with advertised download speeds of at least 256 kbit/s.
- **271fw Terrestrial fixed wireless subscriptions:** Number of terrestrial fixed wireless subscriptions with advertised download of at least 256 kbit/s. This could also include fixed WiMax and fixed wireless subscriptions and excludes occasional users at hotspots etc.
- **271mw Terrestrial mobile wireless subscriptions:** Sum of active mobile broadband subscriptions and dedicated mobile data subscriptions. (271mb_use + 271md).

Per 100: Cook Islands & Fiji

2011	Cook Islands		Fiji	
	PIRRC	ITU-no data	PIRRC	ITU
Fixed Telephony	68%		15%	14.95%
Mobile Phone	36%		82%	84%
Broadband	9%		3%	3%
Total Internet	32%		8%	
Population Size	17,791		890,057	

- Fixed is household device, yet reported as percentage of population
- Mobile is personal. But multiple SIM ownership possible
- For Fiji both are more or less the same, possibly ITU used different population figures
- PiRRC Internet users understated because of exclusion of mobile?

Absolute numbers: FSM & Kiribati

2011	FSM		Kiribati	
	PIRRC	ITU	PIRRC	ITU
Telephony:				
Fixed	8500 ...		8500	8461
Mobile	27500 ...		13800	13788
Internet :				
Broadband - Fixed	1000 ...		920	920
Broadband - Wireless Internet			-	-
Leased Lines	123		-	
Total Internet Subs	1123		920	
Population Size	111356		101998	
Competition Status:	Telephony: Monopoly - FSM Telecommunications Corporation Internet: FSM Telecommunications Corporation		Telephony: Monopoly - Telecom Services Kiribati Limited. Internet: Coconut Wireless (TSKL)	

- ITU has nothing on FSM
- Both similar on Kiribati
- ITU does not report broadband-wireless for either country

PiRRC definition of a leased line

- “Number of leased line subscriptions - A leased line connects two locations for private voice and/or data telecommunication service. Not a dedicated cable, a leased line is a reserved circuit between two points. Leased lines can span short or long distances. They maintain a single open circuit at all times, as opposed to traditional telephone services that reuse the same lines for many different conversations through a process called "switching." Leased lines most commonly are rented by businesses to connect branch offices, because these lines guarantee bandwidth for network traffic.”

Per 100: FSM & Kiribati

2011	FSM		Kiribati	
	PIRRC	ITU	PIRRC	ITU
Fixed Telephony	8%...		8%	8%
Mobile Phone	25%...		14%	14%
Broadband	1%...		1%	1%
Total Internet	1%		1%	
Population Size	111356		101998	

- Two unusually similar countries, with similar populations that are still monopolies: same on fixed and broadband but different on mobile

Absolute numbers: Marshall Islands & Nauru

2011	Marshall Islands		Nauru	
	PIRRC	ITU	PIRRC	ITU
Telephony:				
Fixed	4400...	-	-	-
Mobile	4550...		6700	6700
Internet :				
Broadband - Fixed		-...		-
Broadband - Wireless Internet	-	-	617	700
Leased Lines	-		-	
Total Internet Subs		-	617	-
Population Size	54492		10284	
Competition Status:	Telephony: Monopoly - FSM Telecommunications Corporation Internet: FSM Telecommunications Corporation		Telephony: Monopoly - Telecom Services Kiribati Limited. Internet: Coconut Wireless (TSKL)	

- ITU has no data on Marshall Islands
- PiRRC identifies ISP in Marshall Islands but reports no subs?
- ITU has broadband-wireless for Nauru; PiRRC does not
- PiRRC has <256kbps Internet for Nauru; ITU does not

Per 100: Marshall Islands & Nauru

2011	Marshall Islands		Nauru	
	PIRRC	ITU	PIRRC	ITU
Fixed Telephony	8%..		-	0%
Mobile Phone	8%...		65%	65%
Broadband		-...	-	0%
Total Internet-			6%	
Population Size	54492		10284	

- Marshall Islands and Nauru Internet undercounted by PiRRC?

Absolute numbers: Niue & Palau

2011	Niue		Palau	
Telephony:	PIRRC	ITU - No data	PIRRC	ITU
Fixed	439.749		6900	6916
Mobile	181.17		15400	15445
Internet :				
Broadband - Fixed			292	518
Broadband - Wireless				
Internet	1100		1056	
Leased Lines				
Total Internet Subs	1100		1348	
Population Size	1647		21032	
Competition Status:	Telephony: Monopoly - National Telecommunications Authority Marshall Is. (NTAMAR) Internet: NTA Marshall Is.		Telephony: Monopoly - Digicel Internet: CenpacNet Inc, mobile internet with Digicel	

- ITU has no data on Niue
- ITU & PiRRC similar on Palau except for Broadband-Fixed
- PiRRC also reports <256 kbps Internet for Palau

Per 100: Niue & Palau

2011	Niue		Palau	
	PIRRC	ITU - No data	PIRRC	ITU
Fixed Telephony	27%		33%	34%
Mobile Phone	11%		73%	75%
Broadband	0%		1%	3%
Total Internet	67%		6%	
Population Size	1647		21032	

- Small difference for Palau may be caused by different population numbers
- PiRRC gets a higher Internet % because it counts <256 kbps Internet; but broadband undercount caused by lack of wireless numbers

Absolute numbers: PNG & Samoa

2011	PNG		Samoa	
Telephony:	PIRRC	ITU	PIRRC	ITU
Fixed	130000	130000	38500 ...	
Mobile	2170205	2400000	190866 ...	
Internet :				
Broadband - Fixed	7500	7500	226 ...	
Broadband - Wireless				
Internet	140277		12816	
Leased Lines				
Total Internet Subs	147777		13042	
Population Size	6310129		187820	
Competition Status:	Telephony: Bluesky Samoa, Digicel Internet: Bear Systems International Ltd., Computer Services Ltd, Datec Samoa, Digicel Samoa, iPacifica Samoa Ltd, Lesa's Telephone Service, Bluesky Samoa		Telephony: Bluesky Samoa, Digicel Internet: Bear Systems International Ltd., Computer Services Ltd, Datec Samoa, Digicel Samoa, iPacifica Samoa Ltd, Lesa's Telephone Service, Bluesky Samoa	

- ITU is blank on Samoa
- ITU slightly higher on PNG mobile
- Both ITU and PiRRC have no wireless broadband data for PNG

Per 100: PNG & Samoa

2011	PNG		Samoa	
	PIRRC	ITU	PIRRC	ITU
Fixed Telephony	2%	2%	20%...	
Mobile Phone	34%	34%	102%...	
Broadband	0.12%	0%	0.12%...	
Total Internet	2%		7%	
Population Size	6310129		187820	

Absolute numbers: Solomon Island & Tonga

2011	Solomon Islands		Tonga	
	PIRRC	ITU	PIRRC	ITU
Telephony:				
Fixed	8391	8391	35353	30000
Mobile	274872	274872	60670	55000
Internet :				
Broadband - Fixed	2430	2430	1300	1300
Broadband - Wireless		21261		
Internet	33136		4887	
Leased Lines				
Total Internet Subs	35566		6187	
Population Size	526189		101991	
Competition Status:	Telephony: Solomon Telekom, Bee mobile Internet: Solomon Telekom, Bee Mobile		Telephony: Tonga communications Corporation, Digicel Internet: Tonga Communication Corporation, Digicel, Dandin Group, Latter-Day Saints	

- Identical for Solomons
- ITU lower than PiRRC on Tonga fixed and mobile
- ITU has wireless broadband for Solomons but not Tonga
- PiRRC has <256 kbps Internet for both Solomons and Tonga; ITU does not

Per 100: Solomon Islands & Tonga

2011	Solomon Islands		Tonga	
	PIRRC	ITU	PIRRC	ITU
Fixed Telephony	2%	2%	35%	29%
Mobile Phone	52%	50%	59%	53%
Broadband	0%	0%	1%	1%
Total Internet	7%		6%	
Population Size	526189		101991	

- ITU is lower for Tonga than PiRRC

Absolute numbers: Tuvalu & Vanuatu

2011	Tuvalu		Vanuatu	
Telephony:	PIRRC	ITU	PIRRC	ITU
Fixed	1450	1450	4200 ...	
Mobile	2130	2130	166843 ...	
Internet :				
Broadband - Fixed	450	450	485 ...	
Broadband - Wireless				
Internet	2954		19172	
Leased Lines				
Total Internet Subs	3404		19657	
Population Size	9853		245357	
Competition Status:	Telephony: Monopoly - Tuvalu Telecommunications Corporation Internet: ICT Department of Govt of Tuvalu		Telephony: Telecom Vanuatu Limited, Digicel Vanuatu Internet: Telecom Vanuatu Ltd, Telsat Broadband Ltd, Digicel Vanuatu Ltd., Can'l Vanuatu, Spim, Incite Technology	

- ITU blank on Vanuatu
- PiRRC has <256 kbps Internet for Tuvalu; not ITU

Per 100: Tuvalu and Vanuatu

2011	Tuvalu		Vanuatu	
	PIRRC	ITU	PIRRC	ITU
Fixed Telephony	15%	15%	2%...	
Mobile Phone	22%	22%	68%...	
Broadband	5%	5%	0%...	
Total Internet	35%		8%	
Population Size	9853		245357	

An example of moving from supply-side to demand-side: Internet use

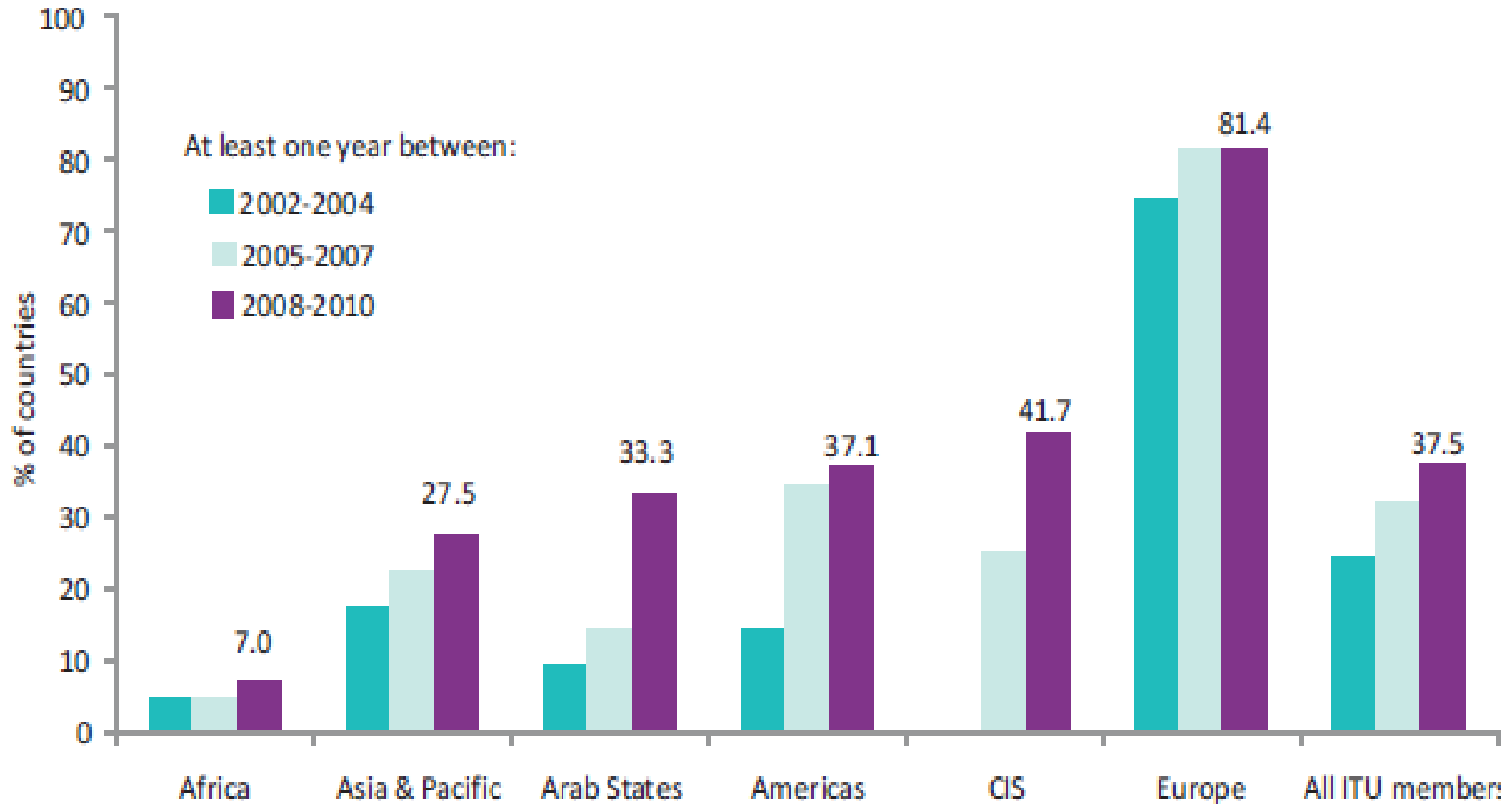
- Four indicators used to measure progress to WSIS Target 10:
 - Mobile subscriptions
 - Mobile use
 - Internet use by household
 - Internet use by individuals
 - [Note: 3 more business indicators added later (since WDTR 2010)]
- Data collected and reported for all
- Our Focus: Indicator 4 (Internet Use by Individuals)
 - Can the method for estimating be improved?

Focus of this section

'Proportion of individuals using the Internet'

- Base indicator in composite indices such as:
 - NRI (Network Readiness Index)
 - KEI (Knowledge Economy Index)
 - IDI (ICT Development Index)
- Best measurement method recommended by ITU:
 - demand-side survey on proportion of individuals using the Internet (from any location) in the last 12 months (HH7)

62.5% of countries had not conducted a demand-side survey on ICT use by 2011



Source: *Measuring the Information Society 2011*, ITU

Various methods can be used to estimate the number of Internet users

- **Internet Users = multiplier x Internet Subs (supply side)**

Where

- The multiplier = a number used to reflect that each subscription is used by more than one individual (e.g. at kiosks)
- Internet subscriptions = Internet subscription of all types (speeds, technologies etc.)
 - Wired, wireless etc.
- Above is then cross checked with other evidence (e.g. if HH access data available, Users > HH access number must be true, etc.)

Building on foundations of sand...

- Multipliers chosen at discretion of Country administrations
 - Perverse incentive to use higher multiplier to show high Internet penetration in country
- Difficulties in counting Internet subscriptions include...
 - Over-counting (counting all “Internet-capable” SIMs, irrespective of use)
 - Under-counting (being able to only count SIMs that have subscribed to a data package; SIMs with only voice packages may use Internet, but operators cannot count; impossible for pre-paid)
 - General difficulty with multiple ownership (one user with fixed and many SIM connections) leading to questionable multipliers

Difficult to find rationale for multipliers

Country	Fixed Internet Subscriptions (000s), 2009	Internet Users (000s), 2009, ITU method	ITU multiplier
Russia	88,068	59,700	0.68
Mauritius	224	290	1.29
Liberia	15
Liechtenstein
	16	968	53.78
	44	4,200	95.24
Iraq	3	325	104.84
Uganda	30	3,200	106.67
Afghanistan	2	1,000	500

Huge variance in Multipliers: 0.68 (Russia) to 500 (Afghanistan) in 2009

“Similar” countries with very different multipliers

- Afghanistan - 2,000 fixed subscriptions; Multiplier=500
- Burundi - 5,000 fixed subscriptions; Multiplier=13

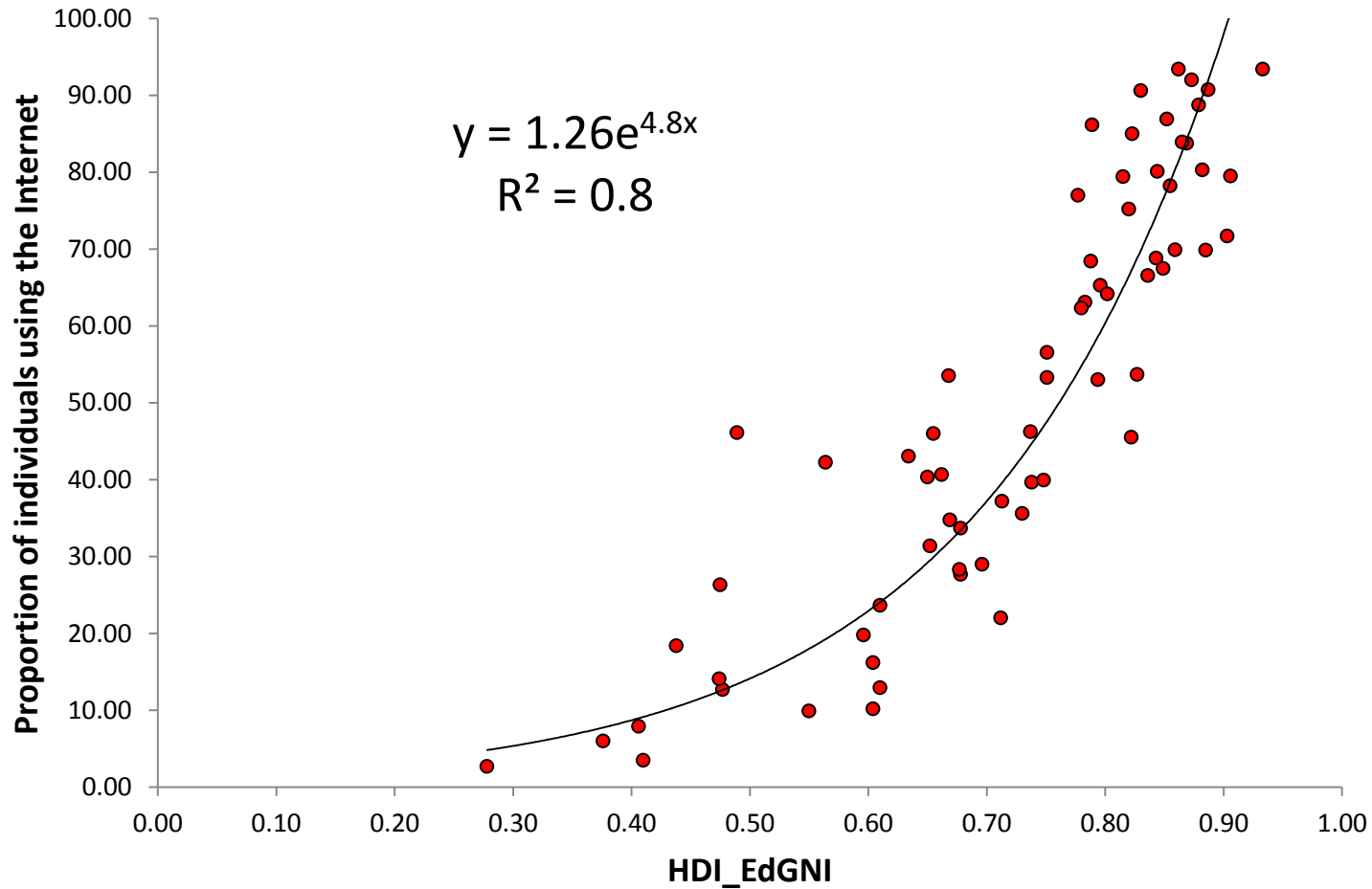
Gunaratne, Roshanthi Lucas & Samarajiva, Rohan (2012). Estimating Internet Users: An Evidence-Based Alternative in the Absence of Survey Data. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2145704

PROPOSED MODEST IMPROVEMENT

Proposed new methodology

- % of Internet users increase with Education and Income components of Human Development Index (HDI) of a country
 - Education component - mean of years of schooling for adults and expected years of schooling for children
 - Income component- Logarithm of GNI per capita (PPP\$).
 - Health component of HDI is not used, due to lack of evidence that internet penetration is correlated with life expectancy
- Studied the correlation between Internet penetration rate of countries which conducted demand side surveys and the education and income components of HDI 2011
 - Data on countries which have conducted demand-side surveys was obtained from ITU and RIA
 - Sub index Education_GNI Index, consisting of education and income components of the HDI index was calculated using 'DIY HDI: Build Your Own Index' on UNDP website. Both Education and Income were given equal weight

Strong correlation between Education_GNI Index and Internet penetration



Education_GNI Index 2011

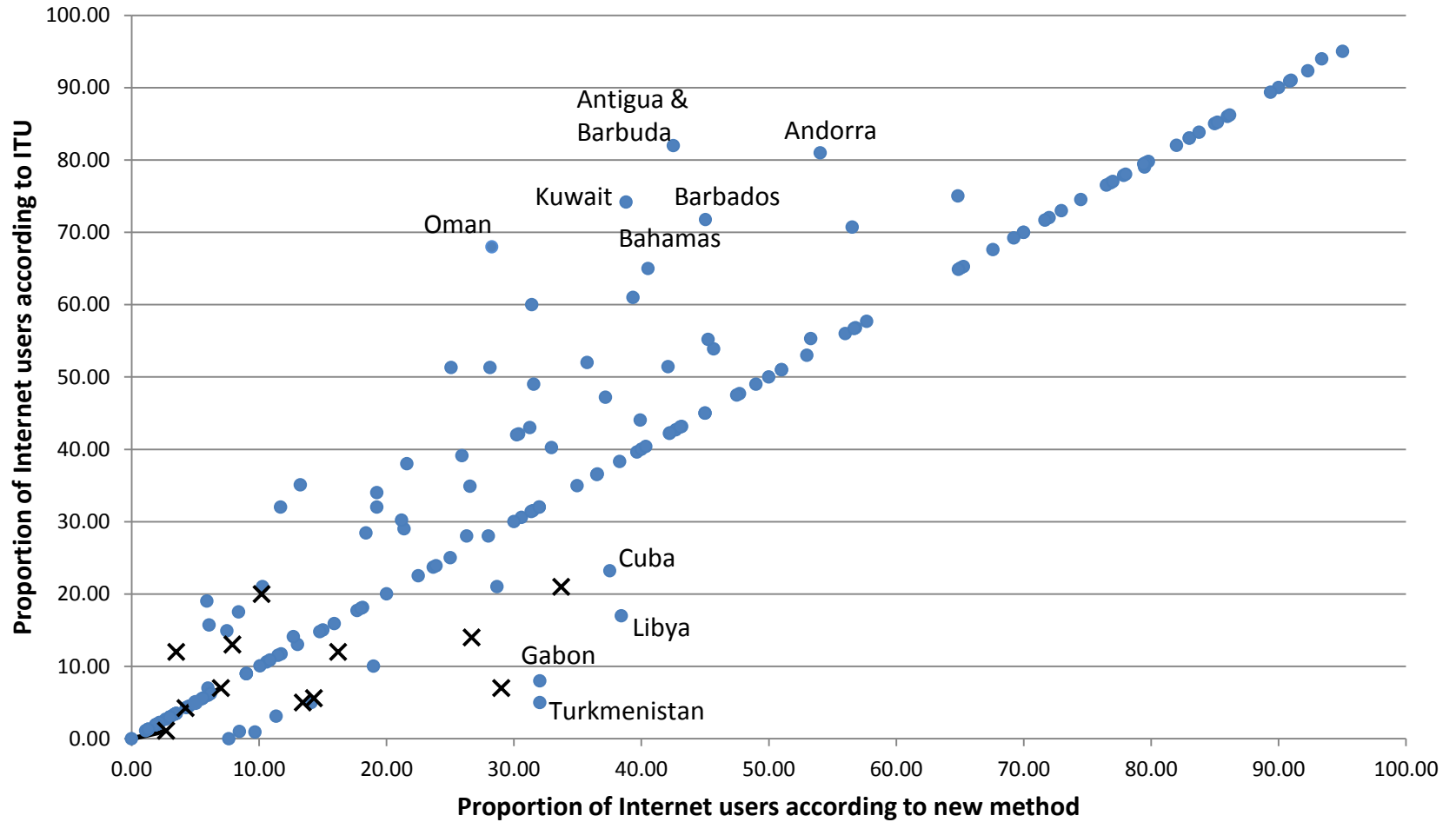
Step 1: If survey is available, use it since survey results are first best

- If representative survey from regional organization is available, use their data (e.g. RIA in Africa; PiRRC in Pacific)
- If survey from current year is not available, use previous year's data with adjustment
 - Adjust by average growth for country grouping (e.g., middle income countries etc.)

Step 2: In the absence of survey data use Education_GNI Index to estimate proportion of Internet users

- Derive model using income and education components of Human Development Index (HDI) vs. Internet penetration rate for countries which have conducted a survey (annually after HDI report has been released)
- Use this model to impute % of Internet Users for countries which have never conducted a survey
- If Internet penetration rate provided by country administrator is within +/- 7 percentage point band around calculated estimate -> use country reported figure
- Else use imputed figure

Less than 30% countries show different Internet penetration rates



Comparative results for PICs with HDI data

Country	ITU Result	New Method	Variance
Fiji	28.0	28.0	0.0
Kiribati	10.0	19.0	9.0
Papua New Guinea	2.0	2.0	0.0
Samoa		25.7	
Solomon Islands	6.0	6.0	0.0
Vanuatu		16.0	
FSM		20.4	
Palau		36.3	
Tonga	25.0	25.0	0.0

PRICE & AFFORDABILITY

The OECD mobile and fixed baskets: a realistic method of price comparison

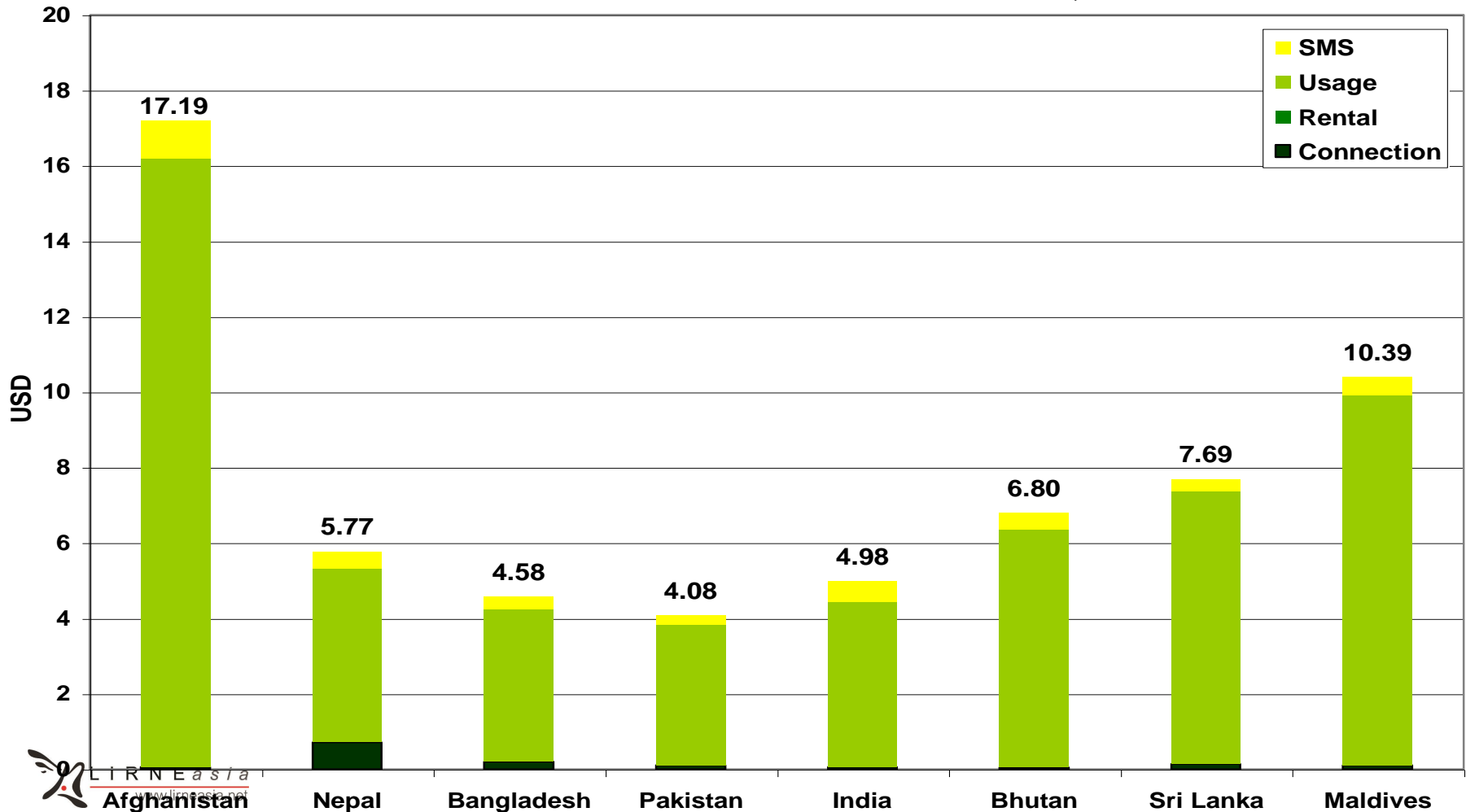
- ITU reported many micro-measures (till recently)
 - E.g., “price of a 3 minute on-net call”
- But in selecting an operator, consumers are likely to think about ALL costs
 - Connection charge, monthly charge, what’s given “free” (i.e. X SMSs per month and Y minutes per month included in package), cost of additional SMS or Cost of Minute
 - AND their own consumption patterns (e.g. total minutes of calling per month, more friends on the same network therefore...)
- The OECD includes basket many of the above and more (ITU now agrees)

The OECD basket includes

- Average voice minutes used per month (including voice mail, free minutes given)
- SMS per month
- MMS per month
- All above separated by
 - On-net vs. off-net
 - Peak vs. off-peak

Calculated for low, medium and high users

SAARC Countries Medium User Price Basket, Feb 2009

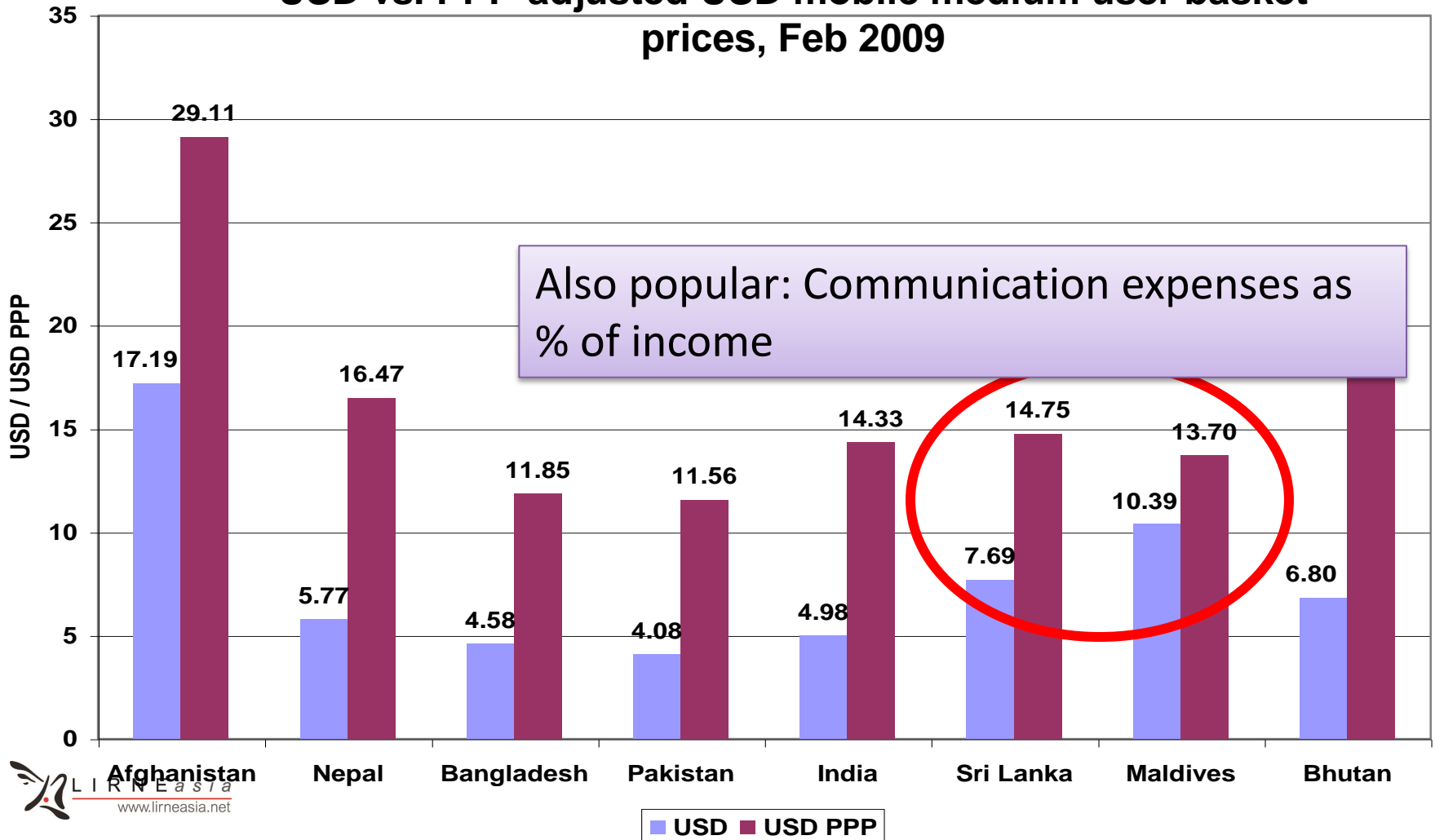


But not straightforward

- Regional variations
 - E.g., Average minutes of use in SAARC= 164 vs OECD = 119
 - A regional basket more meaningful?
 - Or just stick to OECD
- “Average users” vary even among regional neighbors
 - Philippines vs. other SE Asian countries
- Not easy to get the data
 - Needs cooperation from operators (ideally)
 - Best calculated by regulator

But price is not affordability. USD vs. PPP adjusted USD

USD vs. PPP-adjusted USD mobile medium user basket prices, Feb 2009



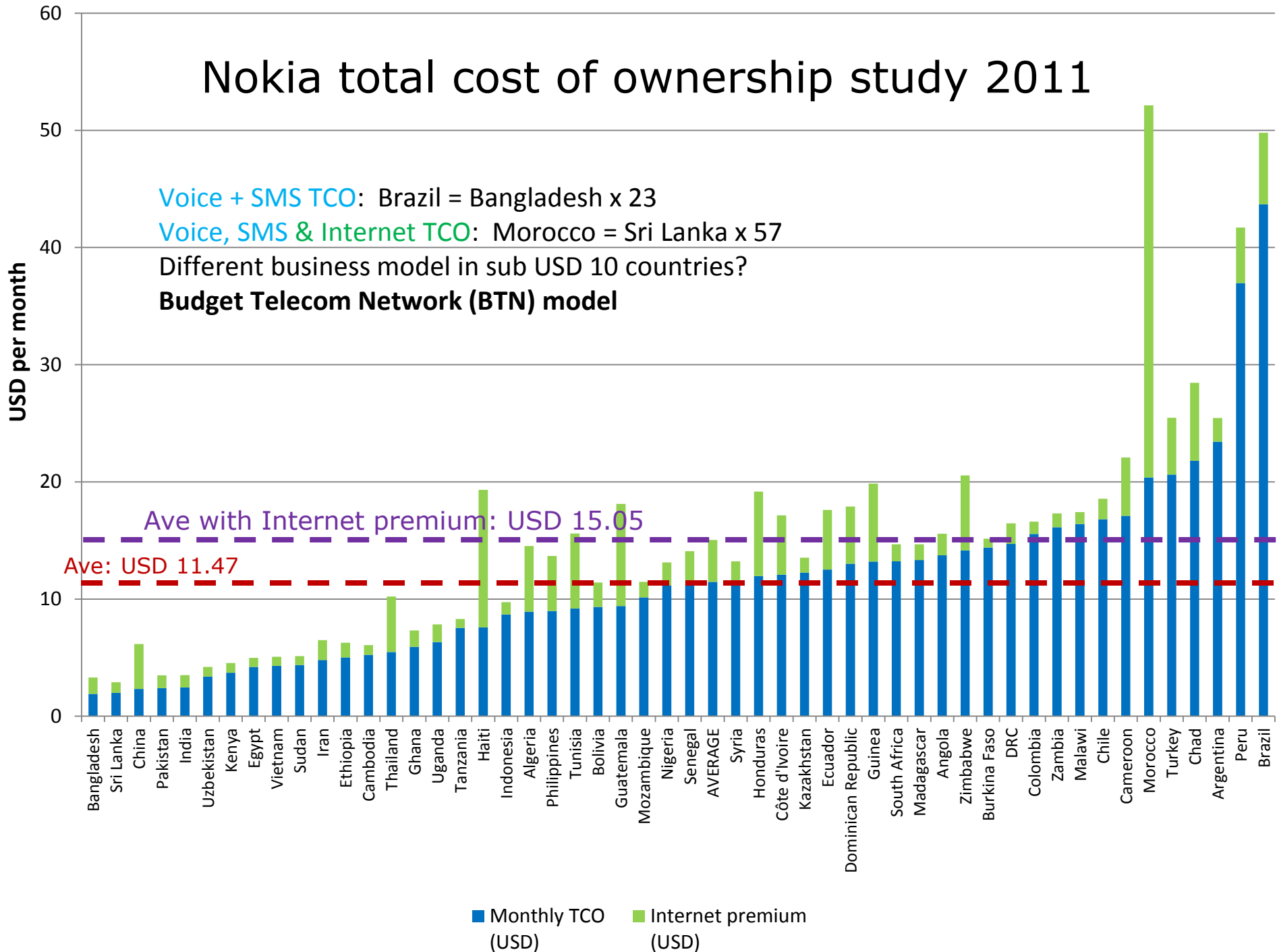
Nokia total cost of ownership study 2011

Voice + SMS TCO: Brazil = Bangladesh x 23

Voice, SMS & Internet TCO: Morocco = Sri Lanka x 57

Different business model in sub USD 10 countries?

Budget Telecom Network (BTN) model



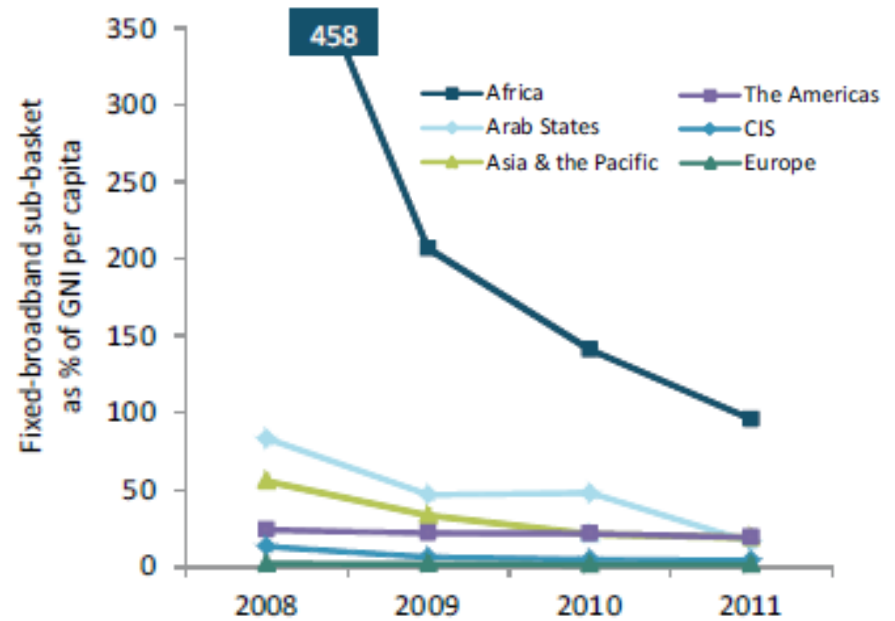
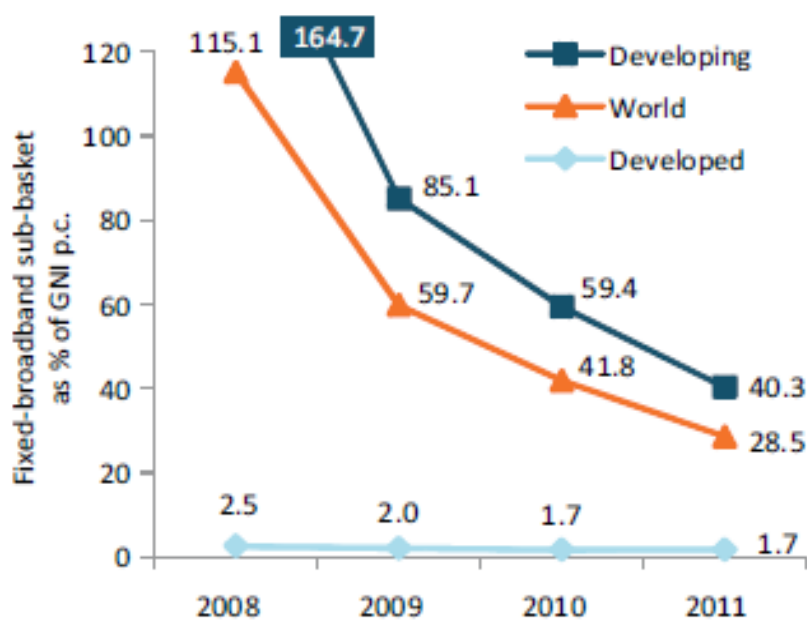
Broadband prices

- For lack of time and because PiRRC does not collect and report on yet
- Broadband methodology not yet fully settled

Broadband Baskets: a realistic method of price comparison

- In selecting an operator, consumers are likely to think about ALL costs including Connection charge, monthly rental etc.
- ITU ICT price basket methodology takes these issues into account and has created Fixed Broadband and Mobile Broadband Baskets consisting of
 - Monthly cost of 1 GB use per month with at least 256kbps connection for a period of 24 months (includes Initial Connection Fee/24)
 - ITU measures affordability by dividing the cost of the Broadband basket by National average monthly GNI per capita
- RIA (Research ICT Africa) has further developed this methodology and also measure the cost of the following baskets in addition to the ITU basket
 - Monthly cost of 5 GB use per month with at least 256kbps connection for a period of 24 months.
 - Monthly cost of uncapped use per month with at least 256kbps connection for a period of 24 months.

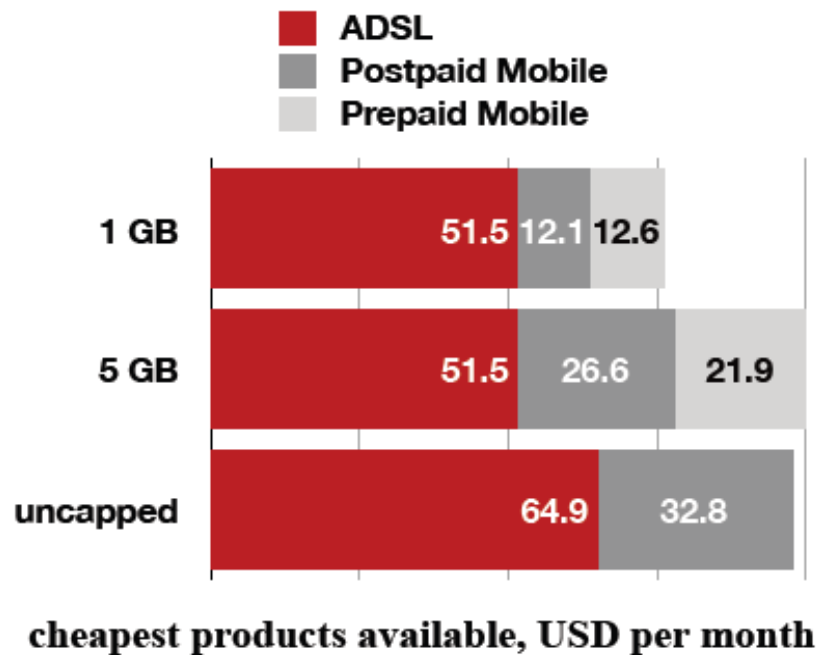
Affordability of Fixed Broadband is declining in developing countries, but still higher than developed countries, according to the ITU



Source: ITU, Measuring the Information Society 2012, <http://www.itu.int/ITU-D/ict/publications/idi/>

South Africa

		2012
Households with	Fixed-line	18%
	Computer	24.5%
	Internet	19.7%
Individuals 15+	use the Internet	33.7%
	use Internet on a mobile	70.6%
	first used Internet on mobile	34.9%



- Telkom South Africa appears to have neglected its ADSL products
- Its own mobile postpaid broadband (8ta) is faster and cheaper
- MTN is the only mobile operator in South Africa that offers uncapped mobile broadband
- But: after 3 GB usage in a month, the maximum download speed is reduced to 256kbps
- ADSL only for uncapped usage at higher speeds than 256kbps

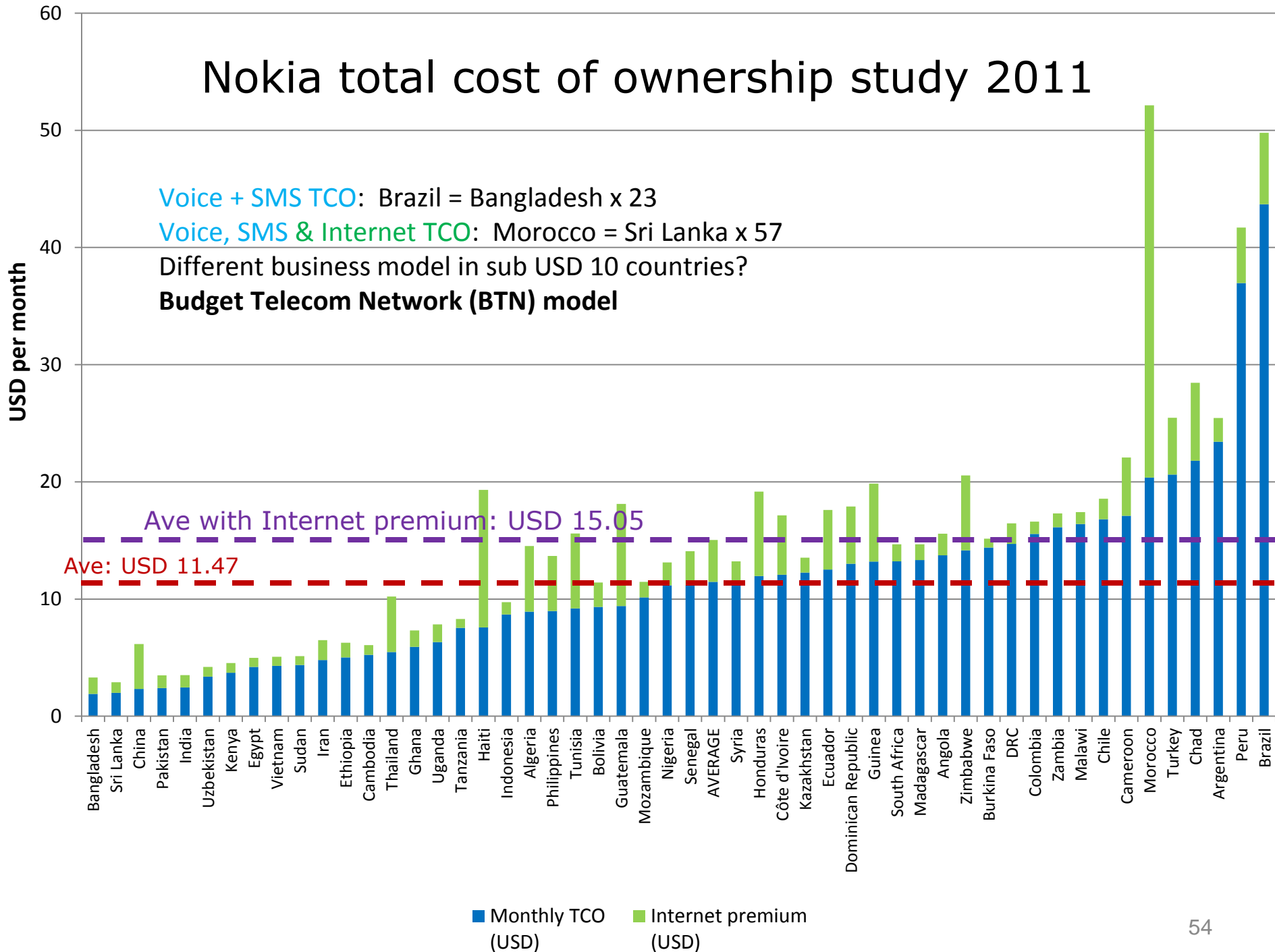
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Different business model in sub USD 10 countries?

Budget Telecom Network (BTN) model



What about other prices? E.g. BB, wholesale & retail?

Oct 2011

Table 1- Broadband Prices in Emerging Asia (USD¹)

Country ²	Whole sale packages		Fixed broadband retail packages				USB-Dongle based broadband retail packages				Value of 1 USD in local currency as at August 30, 2011 ⁵
	Annual cost, 2Mbps, 2km DPLC (tail cost)	Annual cost, 2Mbps, 100km DPLC	Annual cost, 2Mbps Broadband (unlimited download)	Annual cost, 512kbps Broadband (unlimited download)	Annual cost, 256kbps Broadband (unlimited download)	Price per GB (lowest cost, limited download) ³	Annual cost, 2Mbps Broadband (unlimited download)	Annual cost, 512kbps Broadband (unlimited download)	Annual cost, 256kbps Broadband (unlimited download)	Price per GB (lowest cost, limited download) ⁴	
South Asia											
Afghanistan	⁶	N/A	N/A	1,531 ⁷	765 ⁸	⁹	N/A	N/A	510 ¹⁰	N/A	47
Nepal	9935 ¹¹		N/A	248 ¹²	149 ¹³	3 ¹⁴	N/A	N/A	N/A	N/A	72
Bangladesh	83 ¹⁵	3,741 ¹⁶	N/A	249 ¹⁷	150 ¹⁸	1 ¹⁹	873 ²⁰	208 ²¹	N/A	2 ²²	72
Pakistan ²³	54 ²⁴	2,720 ²⁵	210 ²⁶	140 ²⁷	112 ²⁸	3 ²⁹	336 ³⁰	168 ³¹	168 ³²	1 ³³	86
India	370 ³⁴	3,842 ³⁵	1,959 ^{36,37}	163 ³⁸	109 ³⁹	5 ⁴⁰	248 ⁴¹	N/A	130 ⁴²	1 ⁴³	46
Bhutan	271 ⁴⁴	2,64									
Sri Lanka	4,371 ⁵¹	9,87									
Maldives ⁵⁸		10659 ⁵⁹									
Philippines ⁶⁴ ⁶⁵	392 ⁶⁶	N/A									
Indonesia	3,296 ⁷⁰	9,283 ⁷¹	1,404 ⁷²	35 ⁷³	N/A	N/A ⁷⁴	N/A	141 ⁷⁵	71 ⁷⁶	12 ⁷⁷	8,503
Thailand ⁷⁸ ⁷⁹	1471 ⁸⁰		240 ⁸¹	N/A	N/A	N/A	320 ⁸²	N/A	N/A	12 ⁸³	30

With 83 footnotes in the most recent publications we did