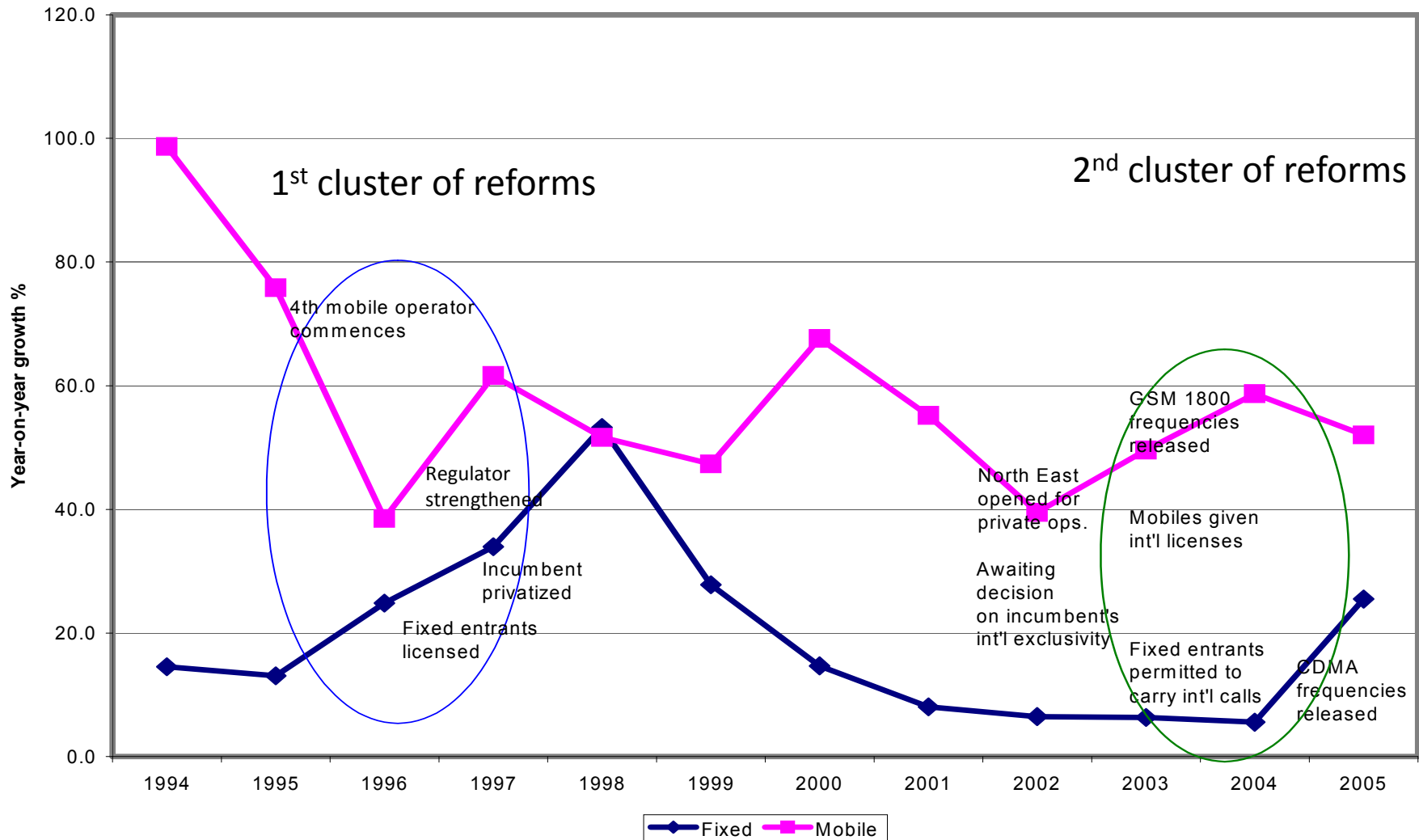


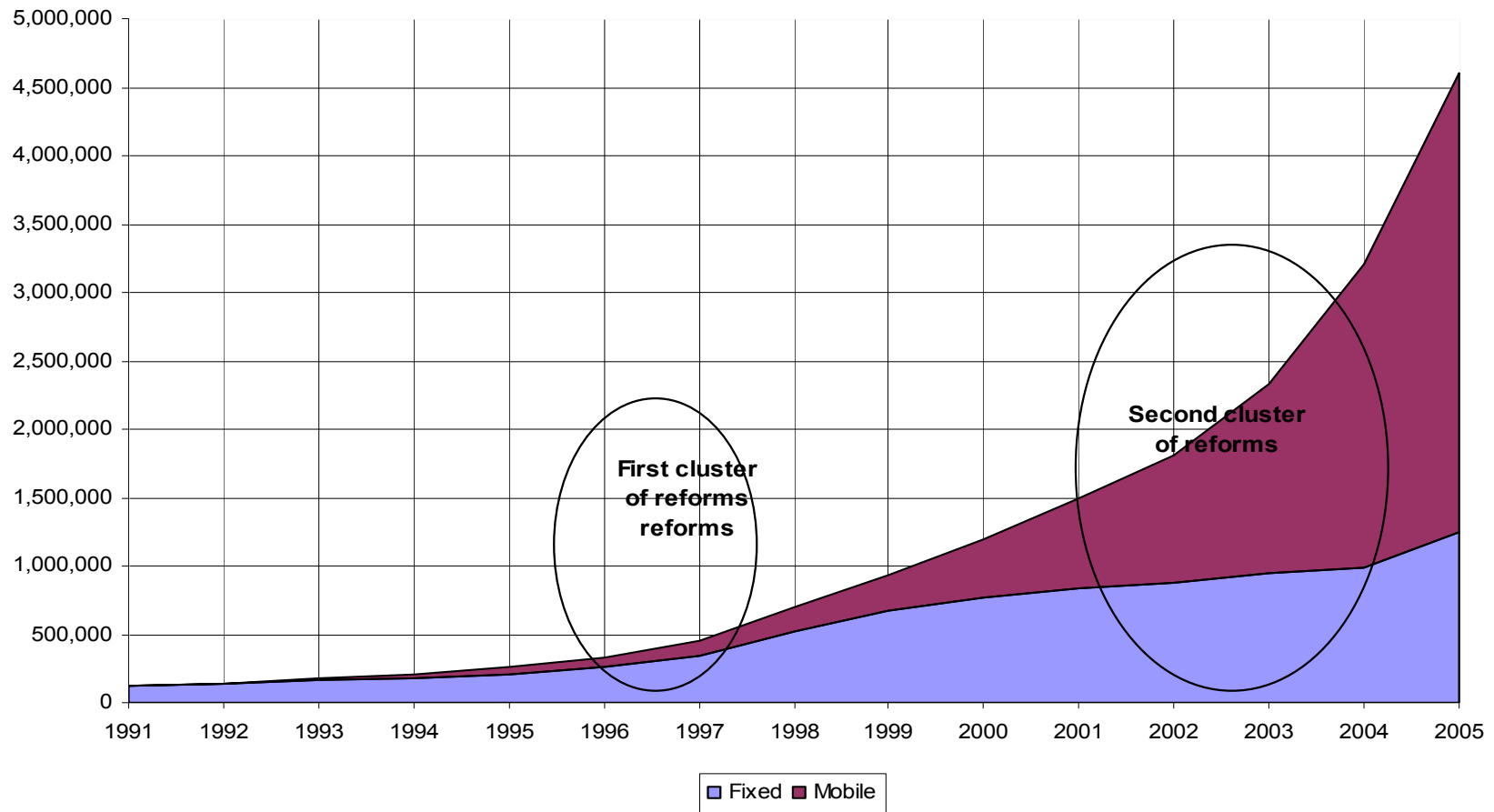
Basics of infrastructure regulation & what's different in emerging Asia

Rohan Samarajiva

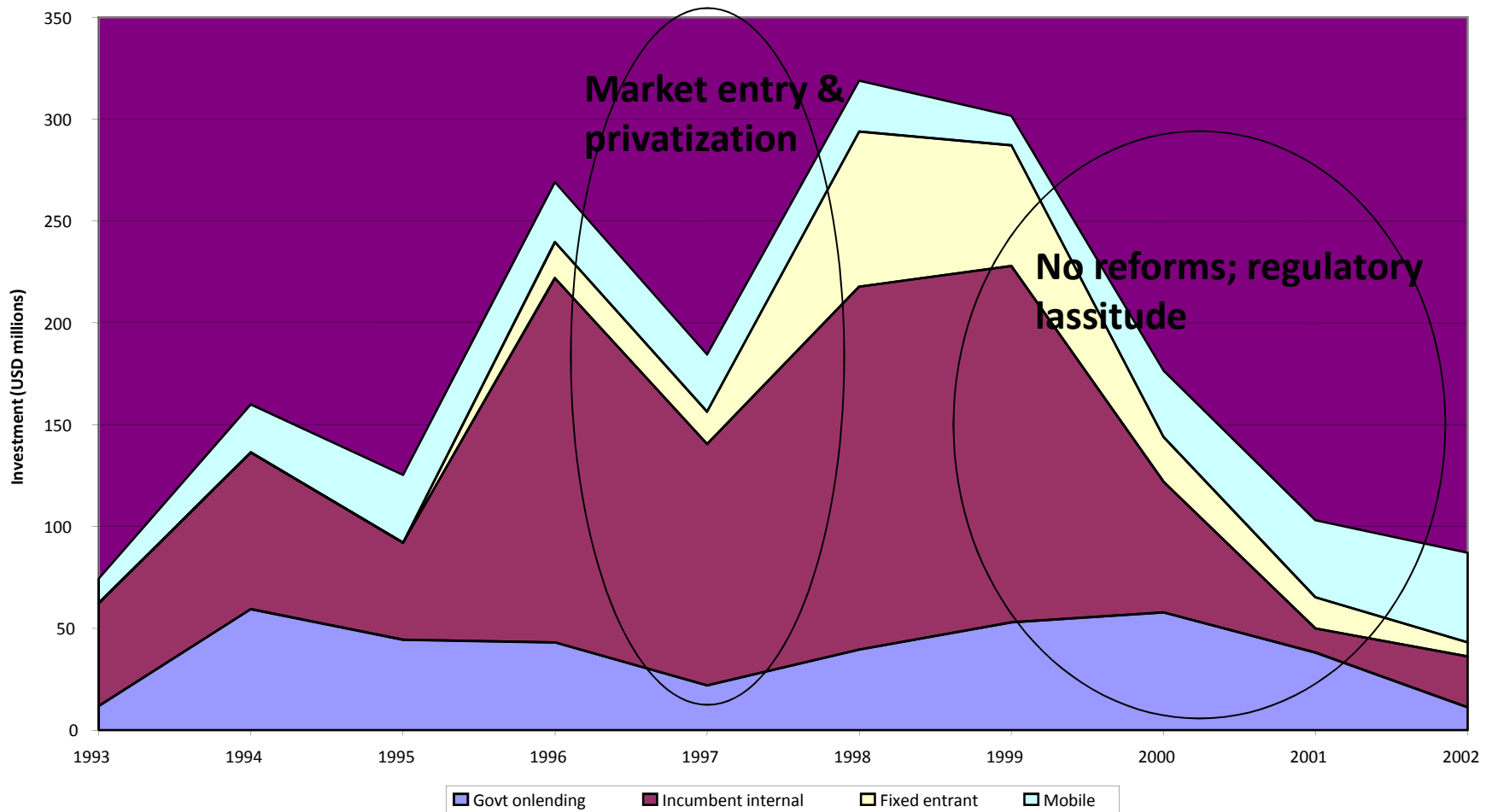
Year-on-year growth & reform actions, Sri Lanka 1994-2005



Growth in connectivity, 1991-2005



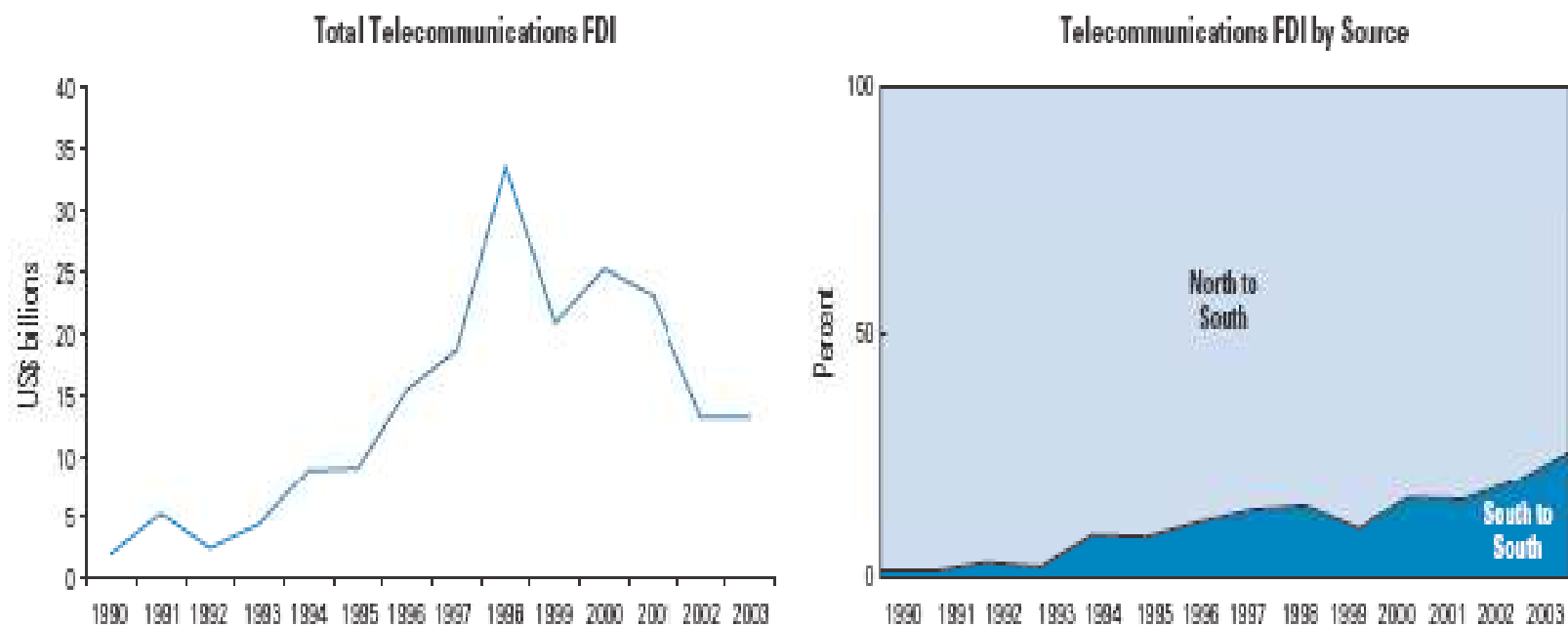
What drives expansion in connectivity: Investment, 1993-2002



What enables investment are market-friendly policies and regulation

- Not realistic to think of public funds (taxpayers or credits) as source of investment in telecom
 - Because private investors are willing to invest in telecom, limited public funds should be used for education, health, etc.
- Days of taxing international calls (actually your own families) for domestic investment are also gone
 - Bypass is endemic

Private investment available for telecom



Source: World Bank (2006), ICT4D: Global trends and policies

Government actions affecting investment, & thereby sector performance

- Government cannot eliminate market risk
 - Duopolies, monopolies, exclusivities are examples
 - Cause long-term bad effects
- Government must reduce regulatory risk
 - Term of art that is not limited to actions by regulatory agency
 - Actions to make market-entry rules rational and transparent (policy-regulation)
 - Actions to improve regulatory environment (regulator)
 - Also, actions to make taxation and other general rules more coherent and transparent (government)

What is regulatory risk?

- Likelihood of administrative expropriation
- What is administrative expropriation?
 - Expropriation other than nationalization
 - May take forms such as
 - Setting prices < long-run average costs
 - Mandates re investment/equipment purchases
 - Conditions in labor contracts

Why are regulatory risks high in infrastructure industries?

- High proportion of costs are sunk costs
 - Willing to operate as long as operating costs covered, even if investment not recovered
- Broad distribution of consumers makes pricing/access inherently political
- Small number of suppliers → monopoly/oligopoly; leading to vulnerability to public pressure
 - Exacerbated by foreign investment

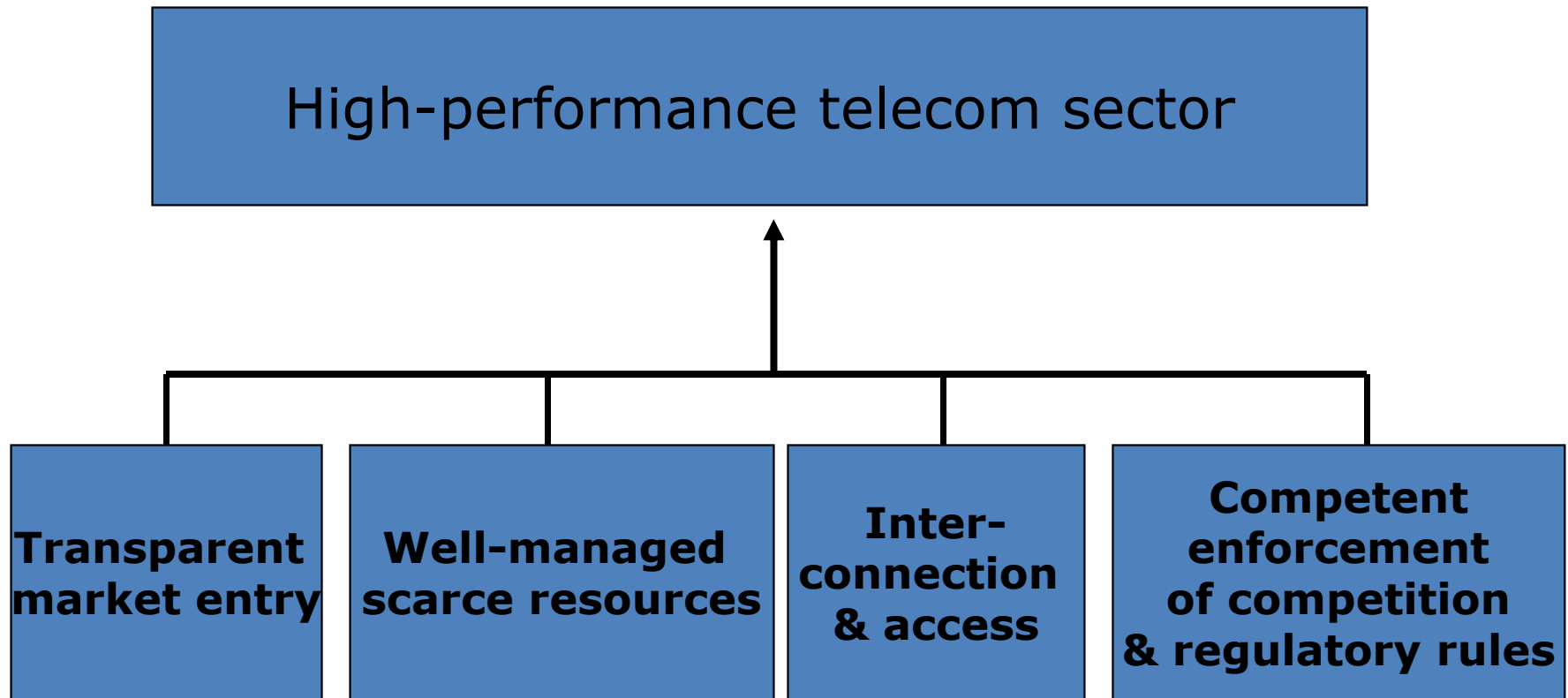
Unless regulatory risk is reduced . .

- Private investors may not enter
 - Or will enter sectors other than core infrastructure, where investment can be recovered quickly
 - Bias toward mobile networks and away from backbone in Africa
- Cost of capital will be very high
 - Resulting in high prices etc.
 - Demands for exclusivities

Essential condition for reducing regulatory risk

- Independence of regulator
- Minimal definition: “The regulatory body is separate from, and not accountable to, any supplier of basic telecom services. The decisions of and procedures used by regulators shall be impartial with respect to all market participants” (WTO Regulatory Reference Paper, Art. 5)

Schematic of regulatory implementation actions

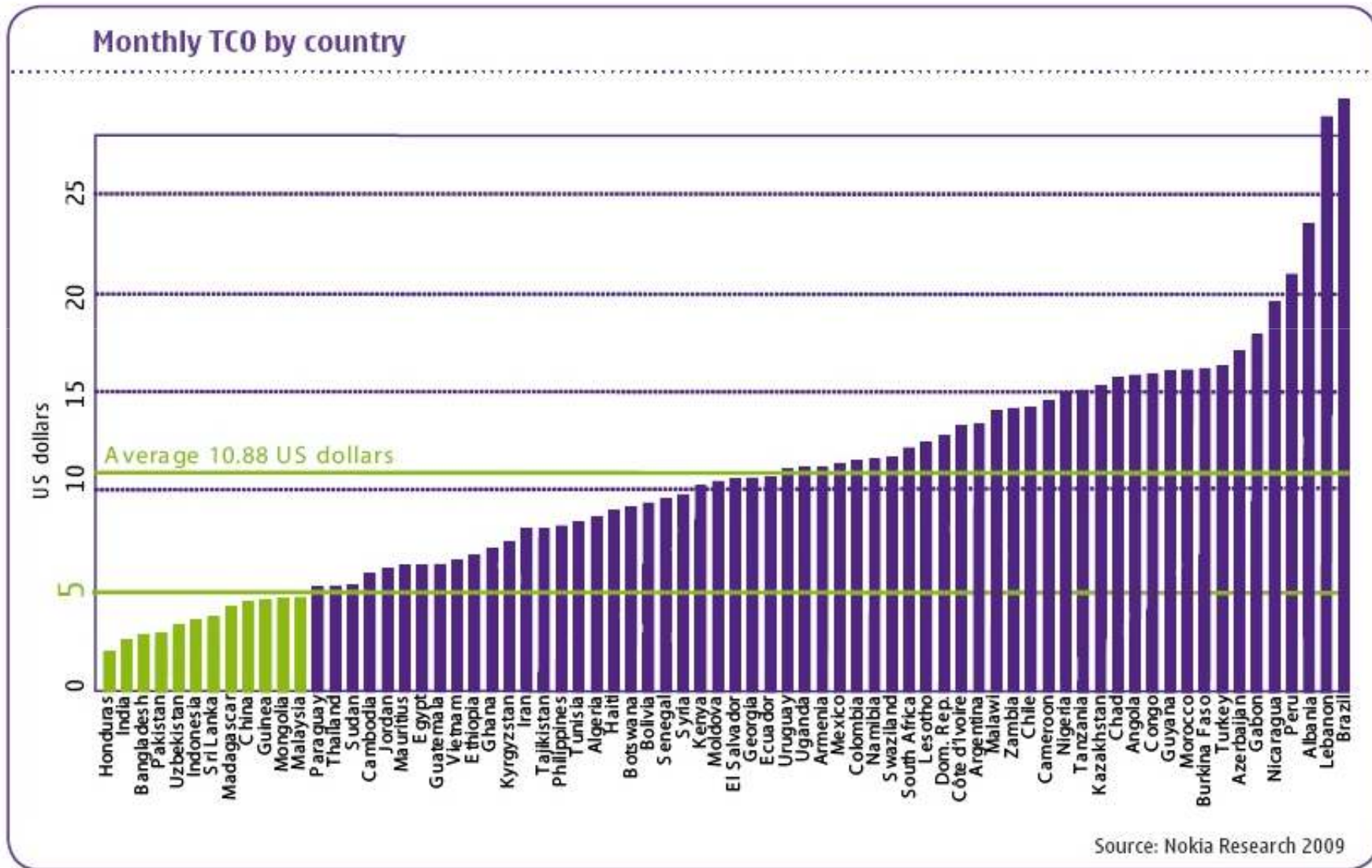


Implementation is what matters

- All the laws and regulations will mean little unless regulator performs
- Transparent, efficient, consultative action
- Communication of those actions to all stakeholders so that legitimacy is built up

Yet, the puzzle of good performance
without good governance

2008 mobile Total Cost of Ownership, 77 emerging economies



Access: 10,000-sample, 6-country Teleuse@BOP survey in 2008
 found that most poor people had . .

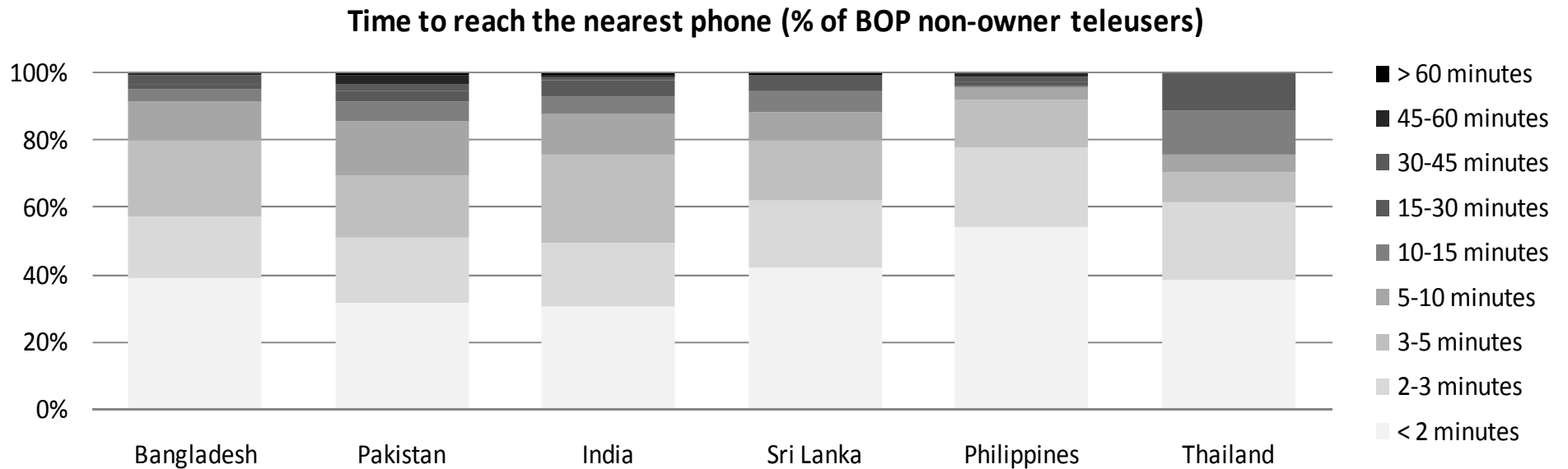
Used a phone in the last 3 months

	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
% of BOP (outer sample)	95%	96%	86%	88%	79%	77 %

Used a phone in the last week

	Bangladesh	Pakistan	India	Sri Lanka	Philippines	Thailand
% of BOP (outer sample)	82%	66%	65%	77%	38%	72%

Among non-owners, ~80% can get to a phone in under 5 minutes



Most non-owners walk to the nearest phone

Choice has improved too

- Quality of service the only laggard
 - Though both the Indian and Pakistani regulators make claims about good quality
- In sum, high performance in 3 out of 4 dimensions

Yet, governance is not too great

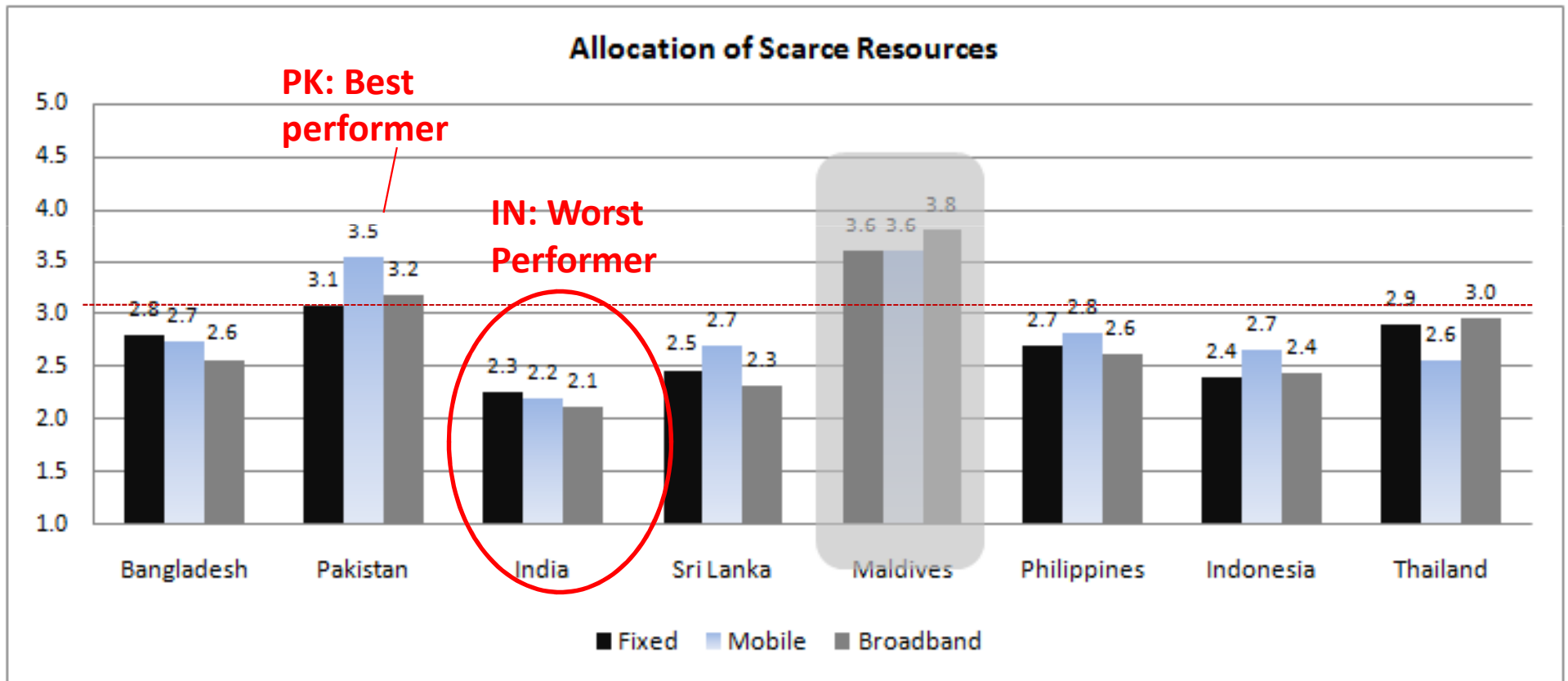
- In addition to general governance concerns, sector-specific regulation in the four countries is not seen as superior
- In the World Bank rankings, low numbers are bad (compare: Chile is 88, 91 and 90)

	Government effectiveness	Regulatory quality	Control of corruption
BD	20	18	8
PK	34	27	16
IN	51	47	47
LK	39	49	48

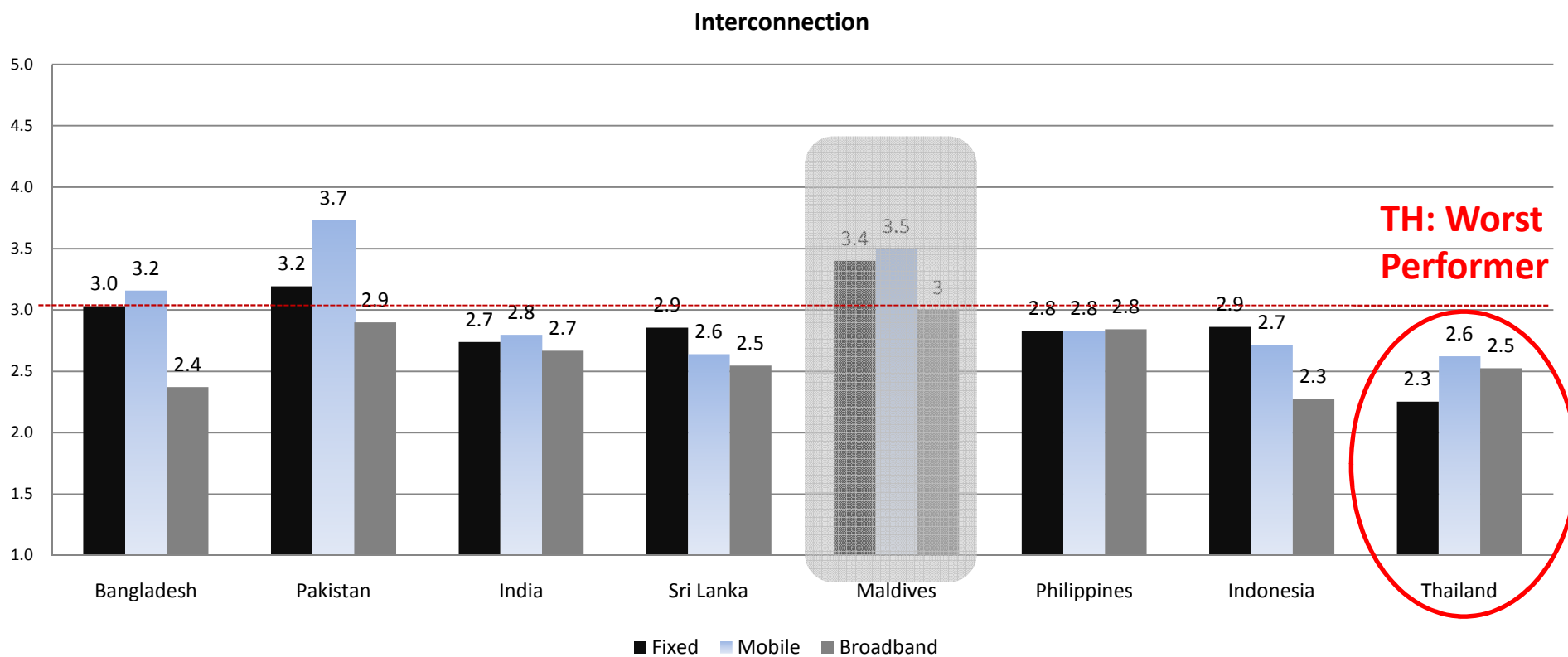
Sector-specific regulation

- Measured across six dimensions drawn from Reference Paper of the Fourth Protocol of the General Agreement on Trade in Services by weighted survey of informed stakeholders by LIRNEasia in 2008
- Two key dimensions are scarce resources and interconnection

Allocation of Scarce Resources: PK's fast response gives certainty. India's bungles of 3G and 2G spectrum issuance created negative perceptions



Interconnection: Only BD and PK have slightly above-average scores



Budget Telecom Network Model

- Budget Telecom Network Model allowed South Asian telcos since 2005-06 to make excellent (if highly volatile) returns by serving “long-tail” markets of poor people by
 - Dramatically reducing transaction costs primarily through prepaid
 - Allowing poor people to pay for services when they need it and when they have money (as opposed to fixed monthly payments)
 - Controlling operating expenses through business-process innovation
 - Focusing on revenue-yielding minutes rather than ARPUs

Budget Telecom Network Model

- Akin to Budget Airline Model that allows Air Asia to make profits while conventional airlines flounder
- Downsides
 - Patchy quality of service for consumers
 - Volatile returns; increased risks for suppliers

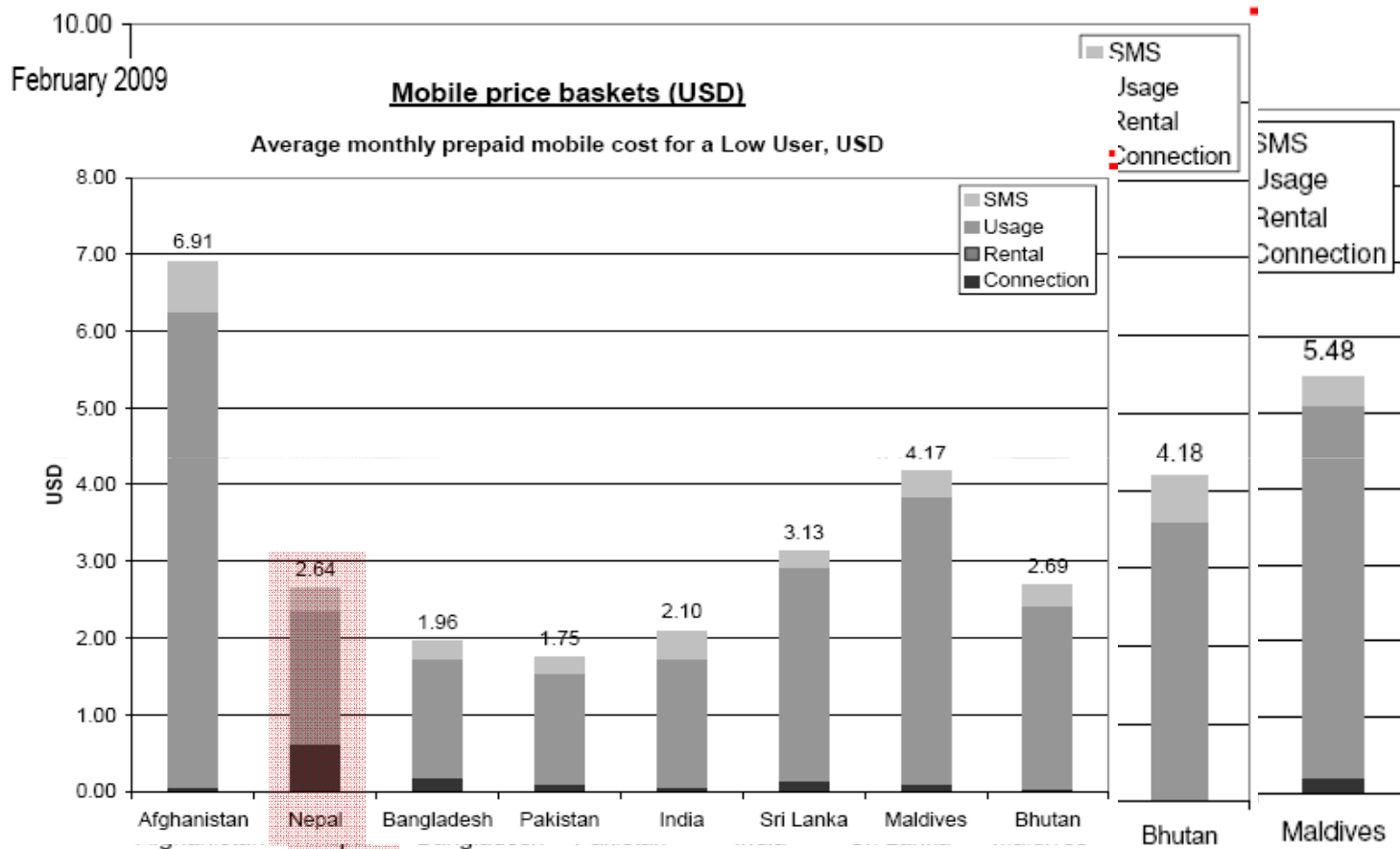
But market entry is the necessary condition

- Nepal shared many of the characteristics of the winning four, yet had low performance on all four dimensions in 2008
 - Connectivity was lowest in South Asia; slow growth
 - Low-user basket without handset cost was USD 5.25, suggesting a TCO in the range of USD 7-8
- But, something happened . . .

October 2008

Mobile price baskets (USD)

Average monthly prepaid mobile cost for a Low User



The challenge posed by South Asia

- How to devise policy and regulatory tools that will leverage the Budget Telecom Network Model which is giving good results and implement them
 - Does not suggest abolition of the laws of economics, but of applying them to fit the circumstances

Key lesson 1: Ensure necessary condition by allowing market entry

- Transparent is good (Pakistan), but even otherwise is better than no entry (Bangladesh and Sri Lanka); even Nepal's "backdoor" mode has a good side
- Entry does not mean a piece of paper, but includes frequencies, numbers and rights of way
- Address market-exit, as integral element of market-entry policy
- Will result in BTNM being implemented

Key lesson 2: Priority to spectrum management, including refarming

- Refarm and increase supply of spectrum
- Give frequencies and numbers without delay
 - Not necessarily free, paying attention to transparency and removing incentives to waste
 - Predictable procedures
- Assist with rights of way
- Allow passive and active infrastructure sharing to bring down costs
 - Help reduce energy costs

Key lesson 3: Wholesale access to “fat pipes”

- BTNM causes networks to extend coverage → backhaul becomes more important
 - International is especially important for broadband
- Wholesale access is more important than termination
 - Bangladesh achieved good performance with the worst termination regime in the world
 - With widespread multiple SIM use, customers are bypassing interconnection regimes

Key lesson 3: Attention to anti-competitive practices

- Especially vertical price squeeze
 - Becomes more important as retail prices go down under the BTNM

Key lesson 4: Price forbearance, banded or full

- India has shown how forbearance gives good results
- But India has some of the world's lowest HHIs
- What about countries with less competition and incumbents with control over essential facilities?
 - Banded forbearance
 - A rudimentary form in place in Bangladesh

Key lesson 5: Go gentle on quality of service regulation

- Patchy QOS is an outcome of BTNM
- Hard regulation of QOS with high standards will stifle the model and deprive the poor of service
- But truth in advertising and naming and shaming for those who violate basics . . .
- Crowdsourcing of QOS
 - Asian 2 years ahead of USA

HOW BROAD IS YOUR BROADBAND?

FOUR facts you should know

1

Value for Money

Sri Lankan broadband users receive less value for their money than North American users.

(LIRNEasia's 2009 3rd Quarter test results)

2

Checking Advertised Speeds

When connecting to most international websites, the average Sri Lankan broadband user typically gets only 40-50% of the advertised broadband speed.

3

Bandwidth Bottlenecks

Although international bandwidth prices continue to fall, international bandwidth limitations continue to be a major bottleneck.

4

Contention Ratios

The Sri Lanka Telecommunication Regulatory Commission has still not specified contention ratios, which limit the number of simultaneous users on a shared link, thereby boosting overall bandwidth.

In January 2009, following LIRNEasia's recommendations to adopt contention ratio of **1:20 (Business)** and **1:50 (Residential)**, the Telecommunications Regulatory Authority of India (TRAI)

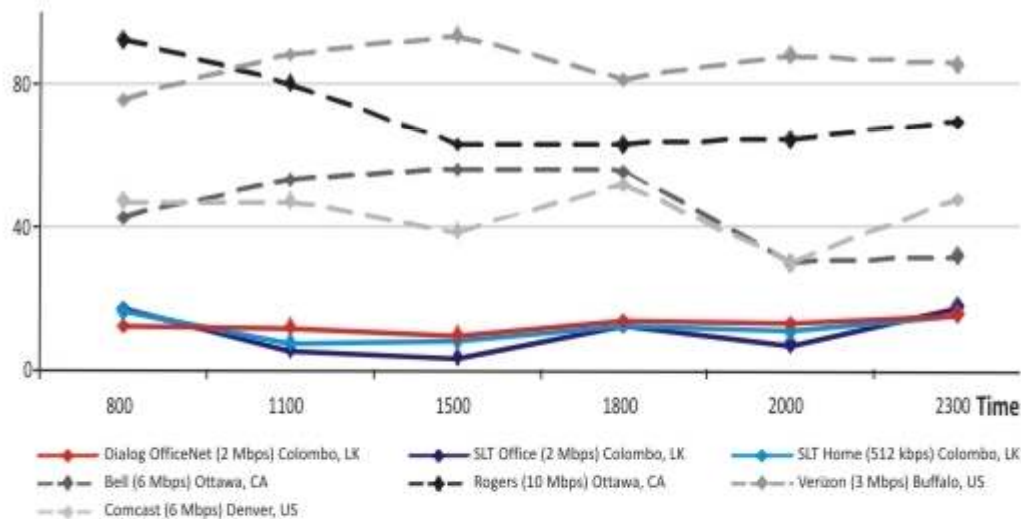
Ad published in Colombo on the occasion of the 11th Meeting of the South Asian Telecom Regulators Council

the telecommunications Regulatory Authority of India (TRAI)
specified contention ratios of 1:30 (Business) and 1:50 (Residential).

Models to emulate

PARAMETER	SINGAPORE	INDIA
Network Availability	> 99%	> 98%
Latency (Local)	< 85ms	< 120 ms
Latency (International)	< 300ms	< 350 ms (terrestrial) < 800 ms (satellite)
Bandwidth Utilization	90% during peak time	< 80% during peak time
Download Speed	Not Specified	> 80% of advertised from user to ISP
Service Activation	Not Specified	100% in 15 working days
Customer Support	Not Specified	60% calls in 60 seconds 80% calls in 90 seconds

Value for money Fixed Broadband Download from yahoo.com (kbps per dollar)



Broadband speed is the best known quality parameter. We measured how much you get for what you pay.

We measured download speed at different times, on multiple days to make readings accurate.

DOWNLOAD THE FREE SOFTWARE from www.broadbandasia.info to test the quality of your broadband link



LIRNEasia is a regional ICT policy and regulation think tank active across the Asia Pacific.

Key lesson 6: Lower the tax burden

- Recognize that long-tail customers are very sensitive to price & are buying “sachets” of services
 - No big usage-insensitive taxes
- Ideal if mobile/telecom specific taxes removed; even if not, keep them steady and reasonable
- Time to end universal service taxes; no point in taxing the poor to provide services also to the poor

Key lesson 7: If you can, improve regulation & be consistent about it

- Ideal: predictable, transparent and consultative
- If these can be done consistently over time, regulatory risk will decrease → cost of capital will decline → more investment will flow in → more people will be connected at lower prices → more profit → virtuous cycle

In sum

- A new business model, not government action (regulation, universal service funds), has connected unimaginable numbers to networks at unimaginable prices
- Policy of market opening has created the conditions for emergence of disruptive competitors and discovery of new business model to bring costs down to the floor
- Government will get better results by understanding and leveraging the business model than by trying to achieve objectives on its own

Performance is the end; regulation is the
means

- “It doesn’t matter if a cat is black or white as long as it catches mice” –Deng Xiaoping