Broadband Quality of Service: Short- & medium term solutions

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IDRC CRDI

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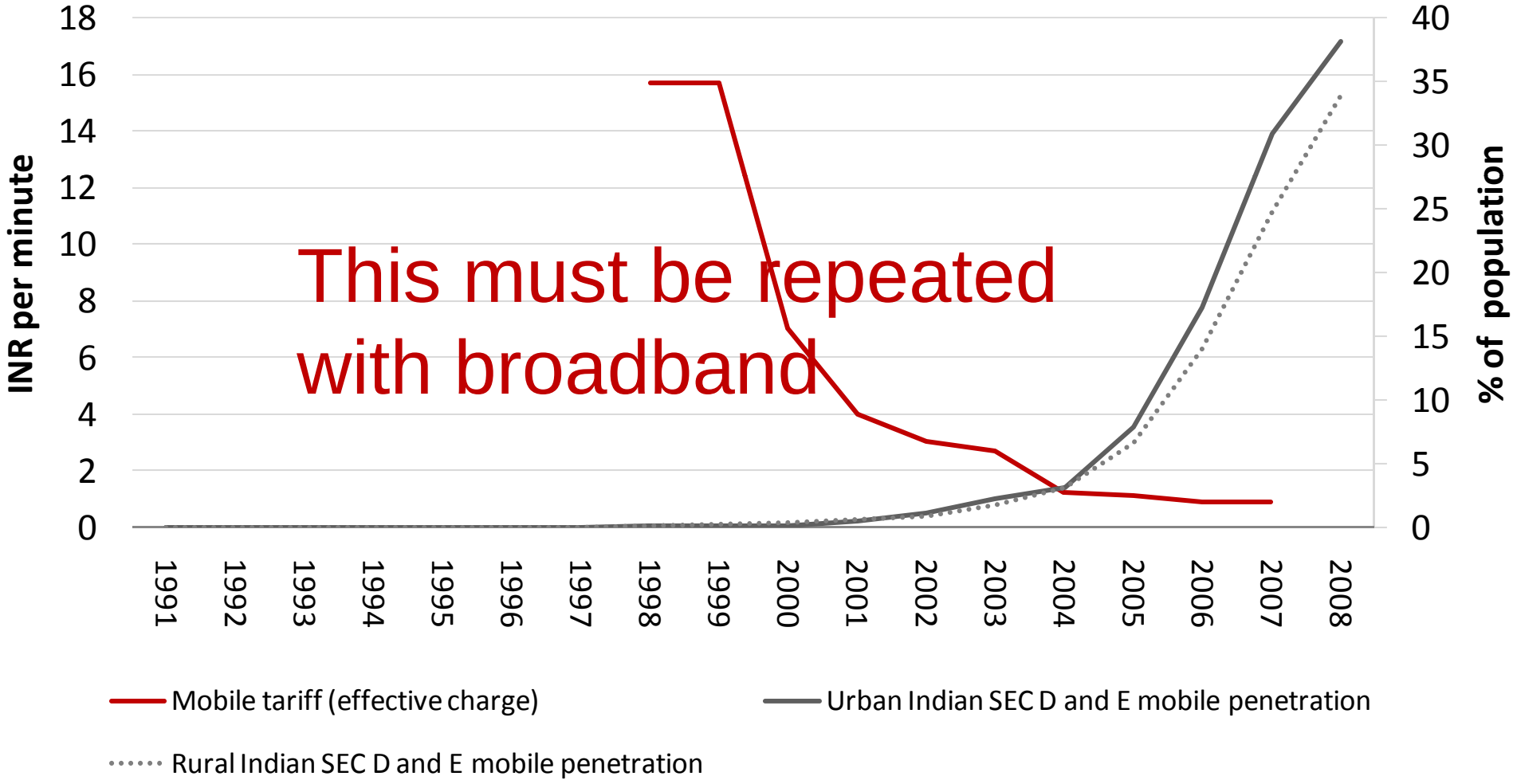
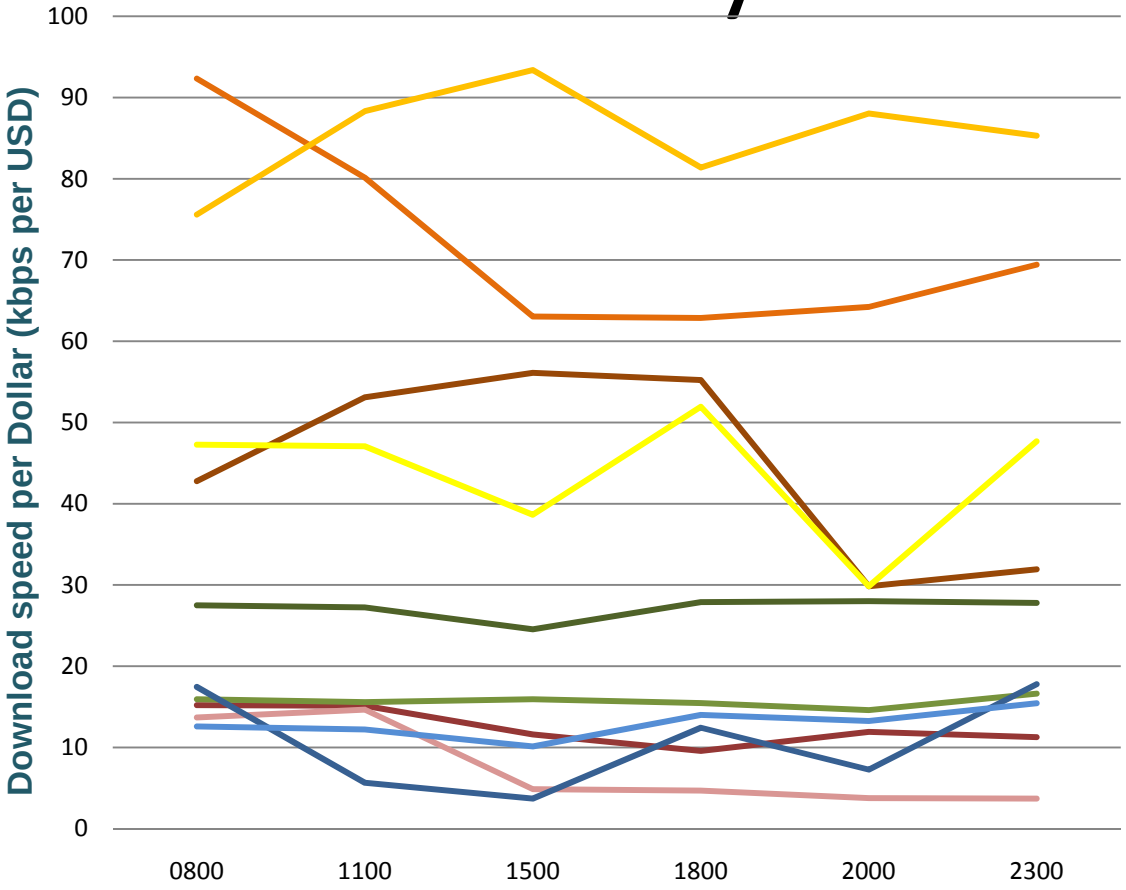
Agenda

- Lessons from voice success
- International backhaul as major barrier to connectivity
  - Reliability
  - Affordability
- Short-term solution: gentle regulation of broadband Quality of Service

Success in voice: Low prices ➔ greater connectivity (India SEC D&E)



Low prices in S Asia: But value for money in N America?



Package	per month in USD
Sirius (256 kbps) Dhaka, BD	15
SKYbd (256 kbps) Dhaka, BD	15
BSNL (256 kbps) Bangalore, IN	16
Airtel, (256 kbps) Delhi, IN	16
SLT (2 Mbps) Colombo, LK	48
Dialog (2 Mbps) Colombo, LK	44
Bell (6 Mbps) Ottawa, CA	60
Rogers (10 Mbps) Ottawa, CA	45
Verizon (3 Mbps) Buffalo, US	30
Comcast (6 Mbps) Denver, US	60

All high values for kbps/USD from N America

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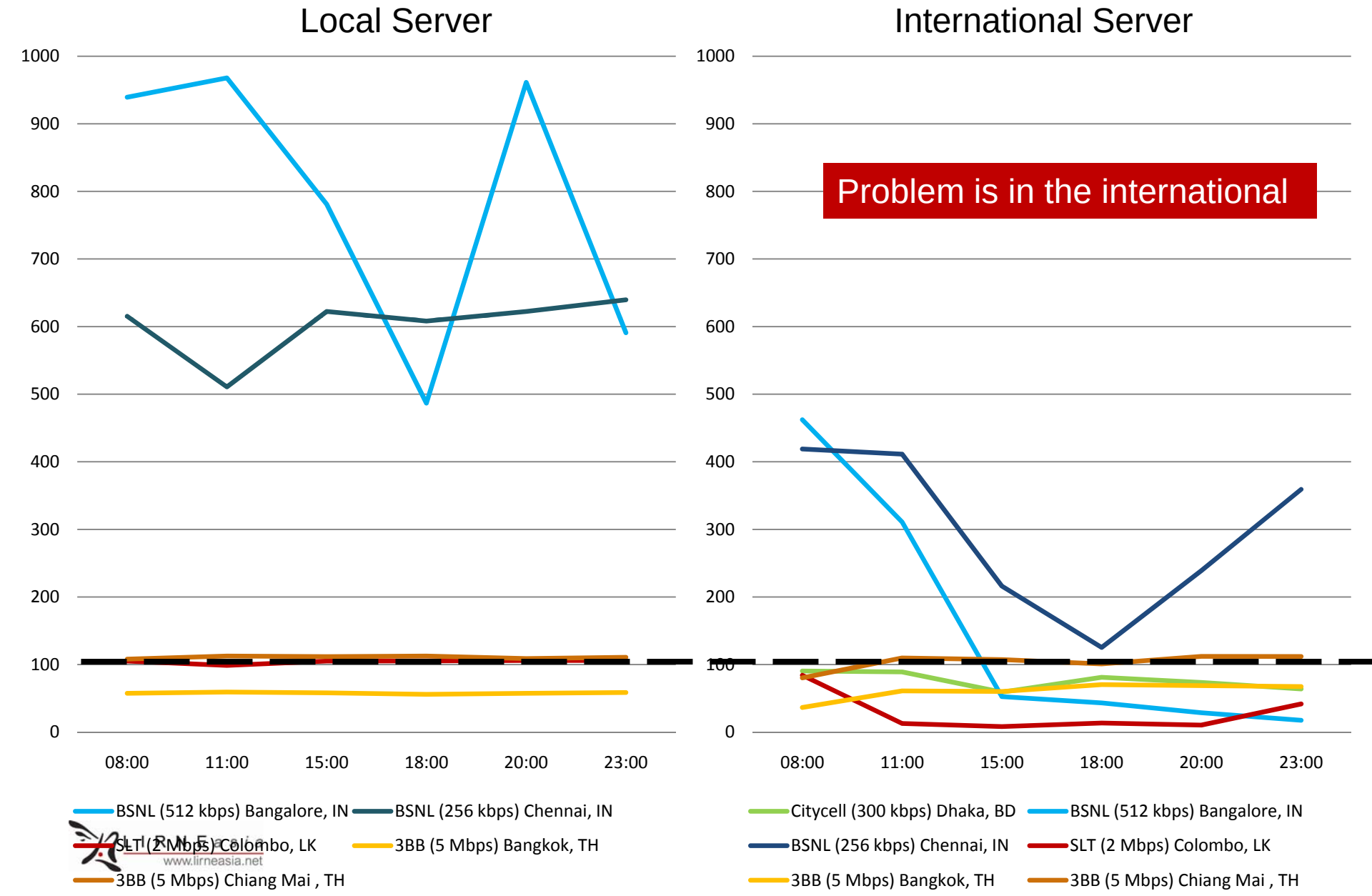
Source:* LIRNE*asia*, *2009

Necessary condition for affordable broadband: Lowering international backhaul costs

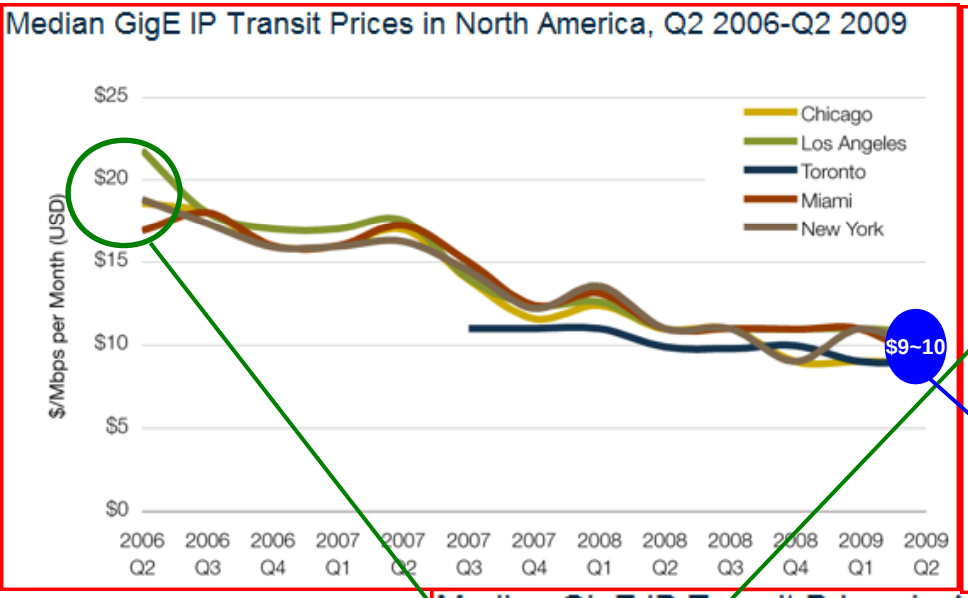
- Asian operators who are very good at controlling costs in voice are also offering value for money in broadband WITHIN ISP DOMAIN FROM LOCAL SERVER
- When it comes to broadband in the INTERNATIONAL DOMAIN, less value for money because operators are economizing on the costly input of international backhaul

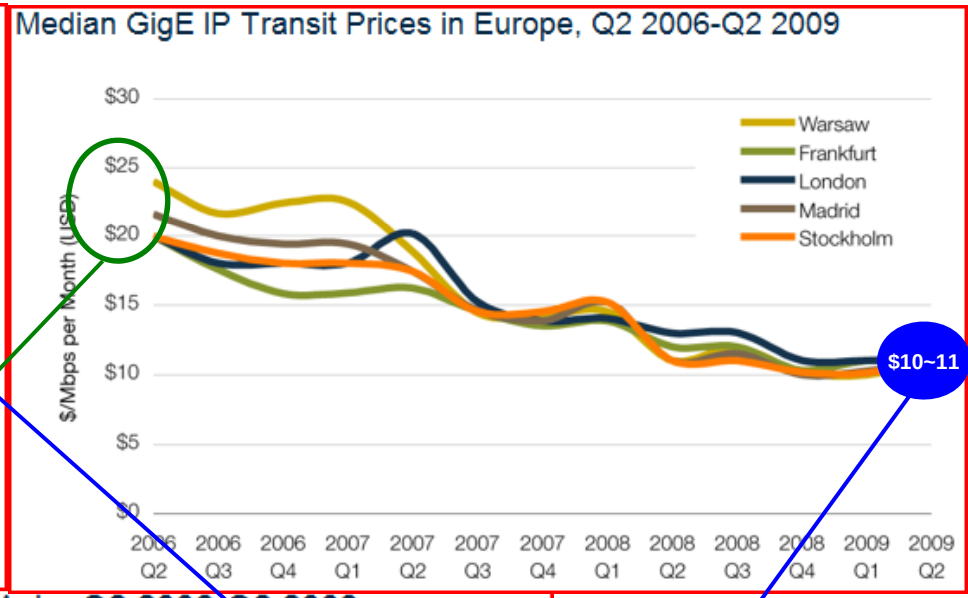
Delivered vs. Advertised Download Speeds

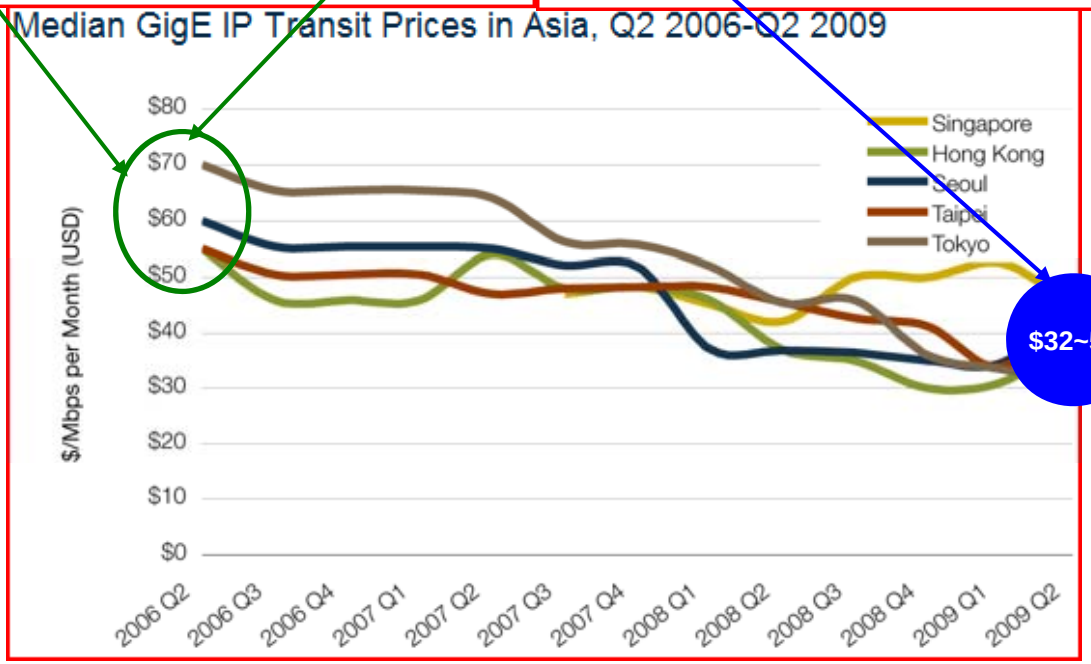


International bottleneck confirmed

Cause: Asian backhaul prices = 3x N. Am. & European prices





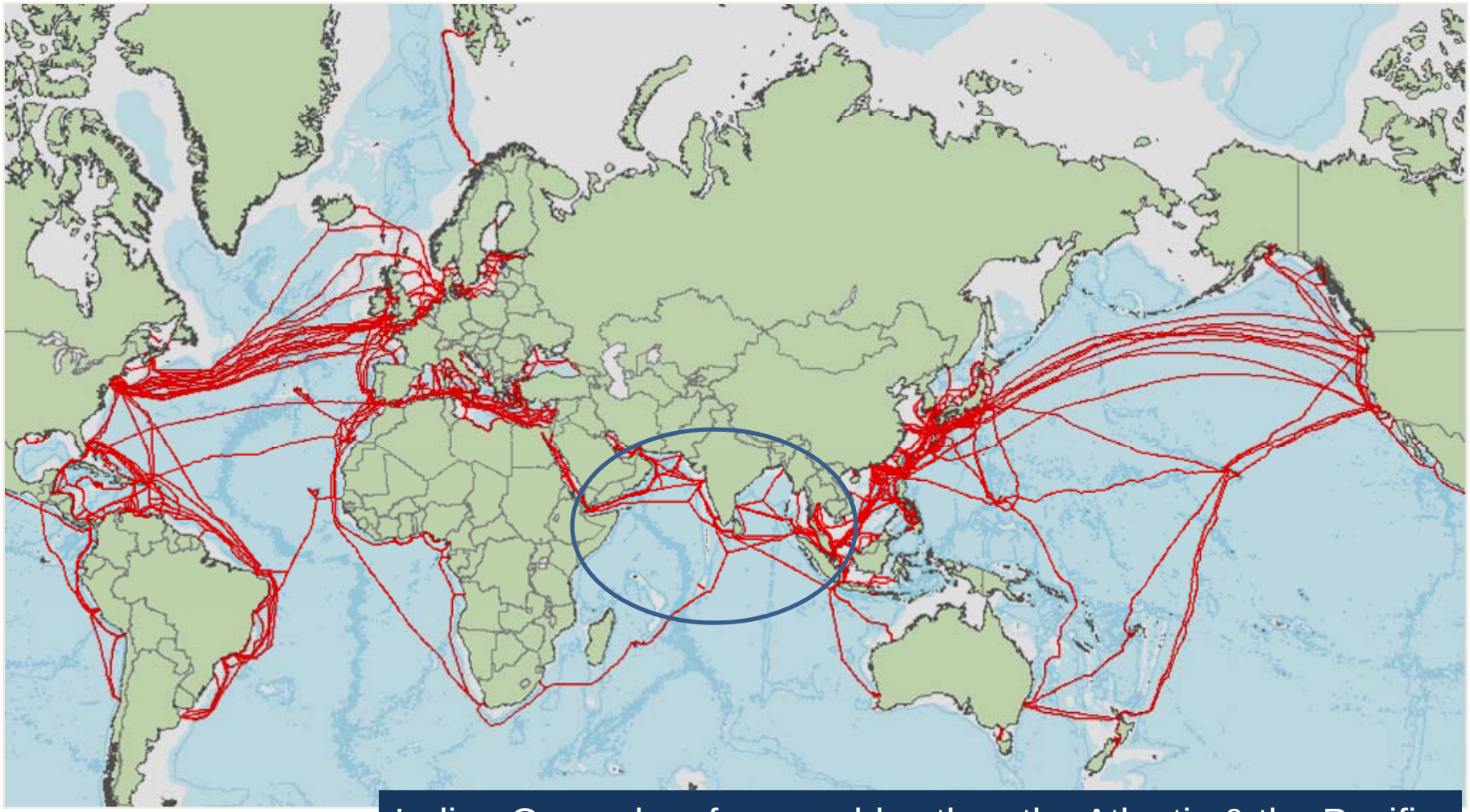


Source: TeleGeography

The challenge: Reduce international backhaul costs for all operators, not just incumbents

- Foundation: More conduits
  - Undersea and terrestrial fiber cables
- Structural and behavioral regulation to ensure that all access operators are offered cost-oriented and non-discriminatory access to backhaul
- Address reliability concerns that have come to the fore since recent cable cuts
  - Redundancy among undersea cables
  - Redundancy through terrestrial and undersea cables

International Submarine Cable Network



Indian Ocean has fewer cables than the Atlantic & the Pacific

Source: Global Marine Systems Ltd

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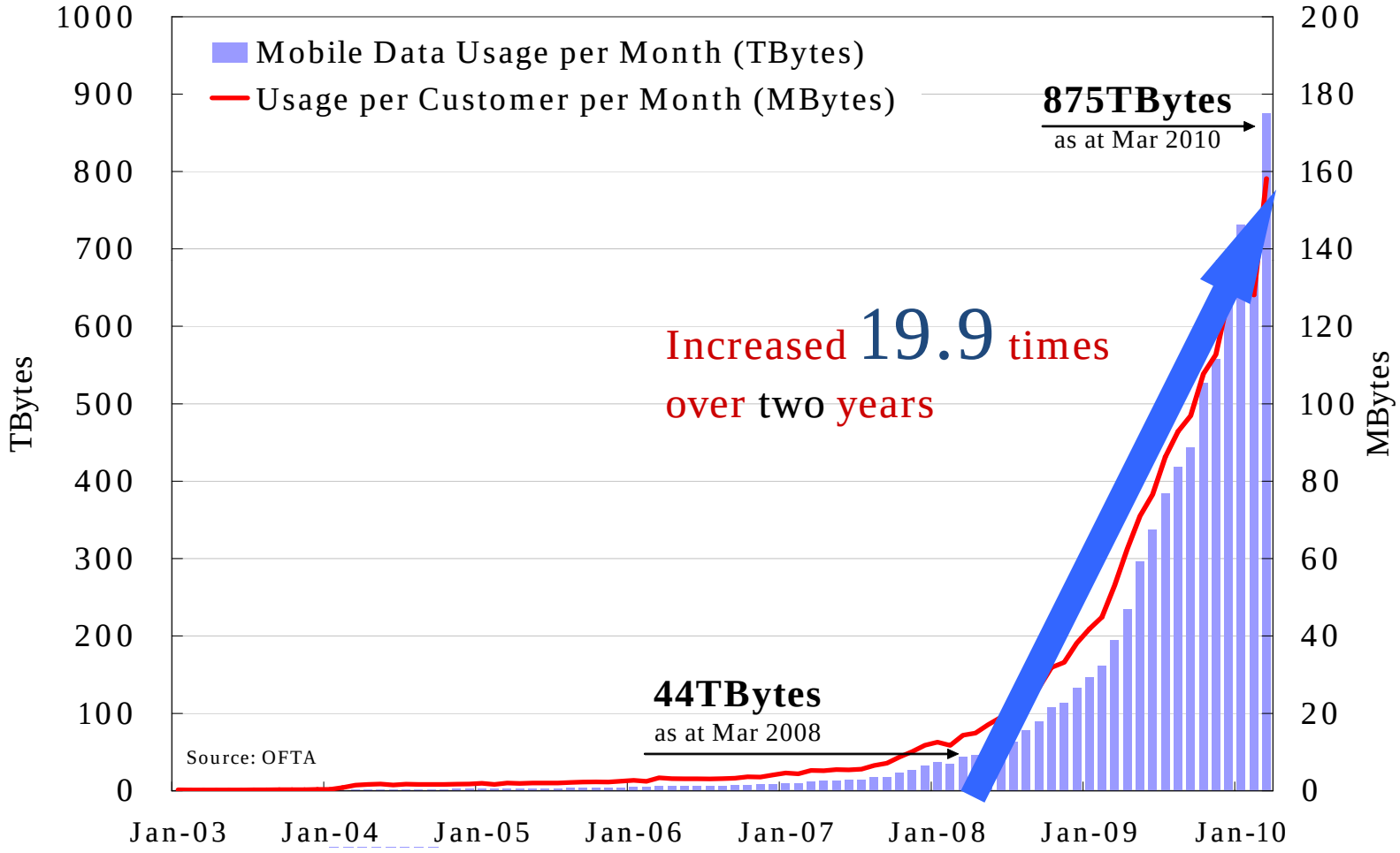
The coming data flood: Hong Kong shows the future



Source: Hong Kong Office of Telecom Authority

Asian governments and regional organizations need to start now, . .

- But results will be seen only in 5-6 years
- Need a short-term responses as well
  - Create conditions wherein consumers have choice among broadband suppliers
    - Existence of multiple providers
    - Make sure switching costs are minimal
    - Publish comparative performance data
  - Ensure truth in advertising . . .
- Heavy regulation can be counter-productive, raising prices, slowing uptake and stunting the extension of the BTN model

Does South Asia offer true broadband (256 kbps min., 80% of the time)?

BD offerings are not broadband? BSNL, Bangalore & Airtel, Chennai?

City, Country	Dhaka, BD		Thimphu, BT	Bangalore, IN		Chennai, IN	
Package	Qubee 256 kbps	Citycell 300 kbps	Druknet 1 Mbps	Airtel 512 kbps	BSNL 512 kbps	Airtel 512 kbps	BSNL 256 kbps
8:00 AM	252.5	271.5	1157.6	1297.8	2366.7	142.8	1072.3
11:00 AM	251.2	267.3	1173.4	1302.1	1591.6	162.9	1052.8
3:00 PM	230.8	177.4	1278.9	1179.4	269.4	163.8	553.4
6:00 PM	251.1	243.6	1061.0	237.8	221.4	268.2	320.6
8:00 PM	256.4	220.6		357.0	147.1	169.1	611.7
11:00 PM	257.8	191.7		1310.4	90.1	175.3	919.5
Average	**250.0**	**228.7**	**1167.7**	**947.4**	**781.0**	**180.4**	**755.1**

Red = performance < 256 kbps threshold

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Average is above 256 kbps
But below threshold 3/6

SLT, Colombo also fails the cut, despite a 2Mbps offering/average of 571 kbps delivery

City, Country	Mumbai, IN		New Delhi, IN		Colombo, LK		
Package	Airtel 2 Mbps	MTNL 512 kbps	Airtel 512 kbps	MTNL 2 Mbps	SLT 2 Mbps	Dialog 1 Mbps	Mobitel 1 Mbps
8:00 AM	293.4	375.3	337.6	416.7	1685.8	1082.7	714.9
11:00 AM	316.1	381.3	182.8	425.8	257.2	1054.0	340.5
3:00 PM	304.3	387.8	336.2	343.7	167.4	1054.0	340.5
6:00 PM	275.0	401.6	331.6	437.3	271.1	1401.3	855.0
8:00 PM	322.6	337.2	337.1	429.7	210.1	1355.7	579.9
11:00 PM	308.0	377.1	394.5	429.3	835.1	1398.5	832.4
Average	**303.2**	**376.7**	**319.9**	**413.7**	**571.1**	**1224.4**	**610.5**

Red = performance < 256 kbps threshold

Access via USB modem (dongle)

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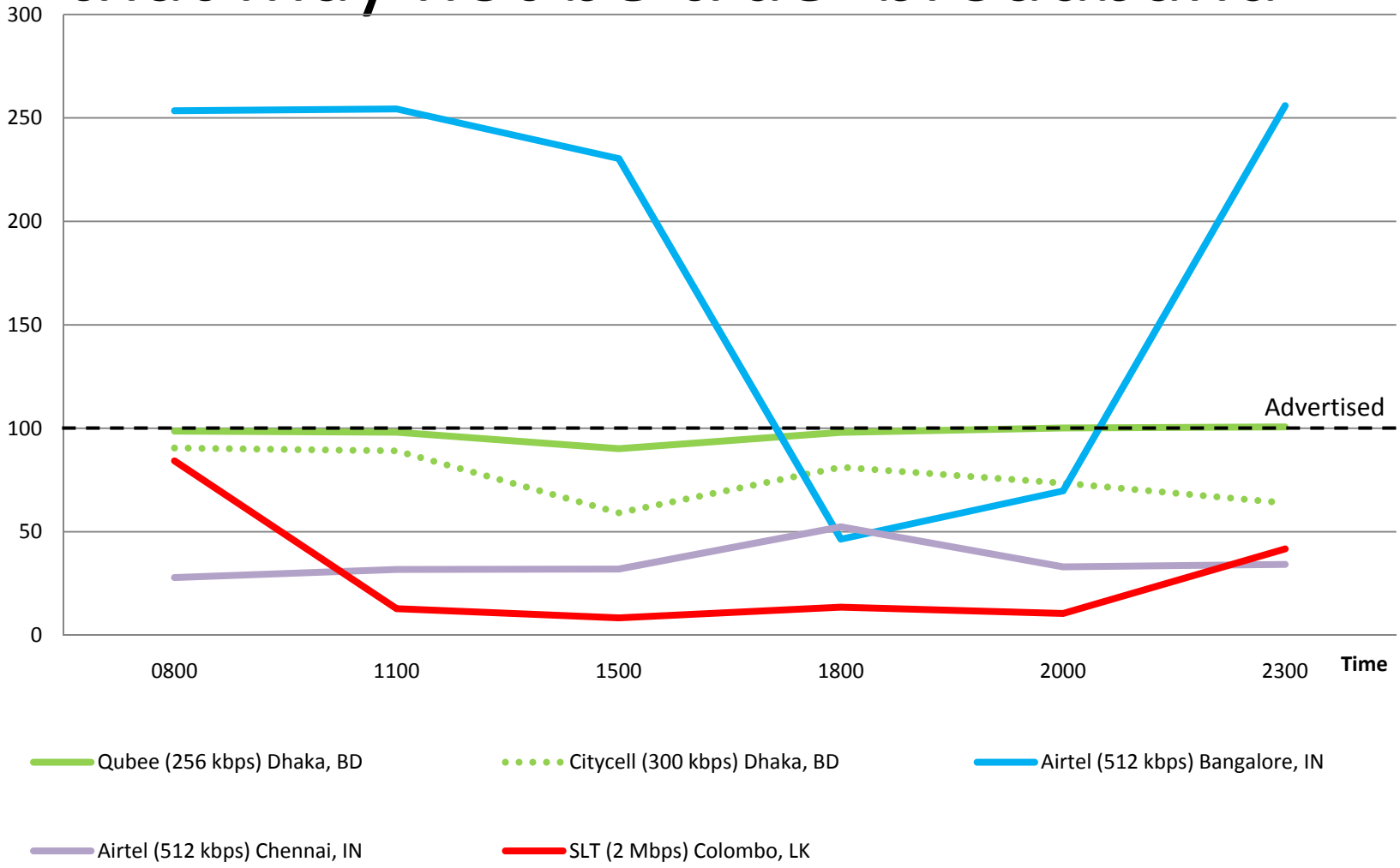
Delivered vs. Advertised – Packages that may not be true 'broadband'



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Source: LIRNE*asia*, *2010*

Challenges

- LIRNEasia and IIT Madras developed a diagnostic tool to measure broadband quality of service experience, hoping to mobilize crowdsourcing
  - Followed 2 years later by the FCC
  - Covered 5 dimensions of performance
  - Across 3 domains: ISP, National and International
  - But it is costly to implement without crowdsourcing
- Majority of users will be on 3G platforms
  - New method has to be developed for 3G
    - Possibly based on BTS load factors