Regional cooperation for expanding connectivity

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IDRC CRDI

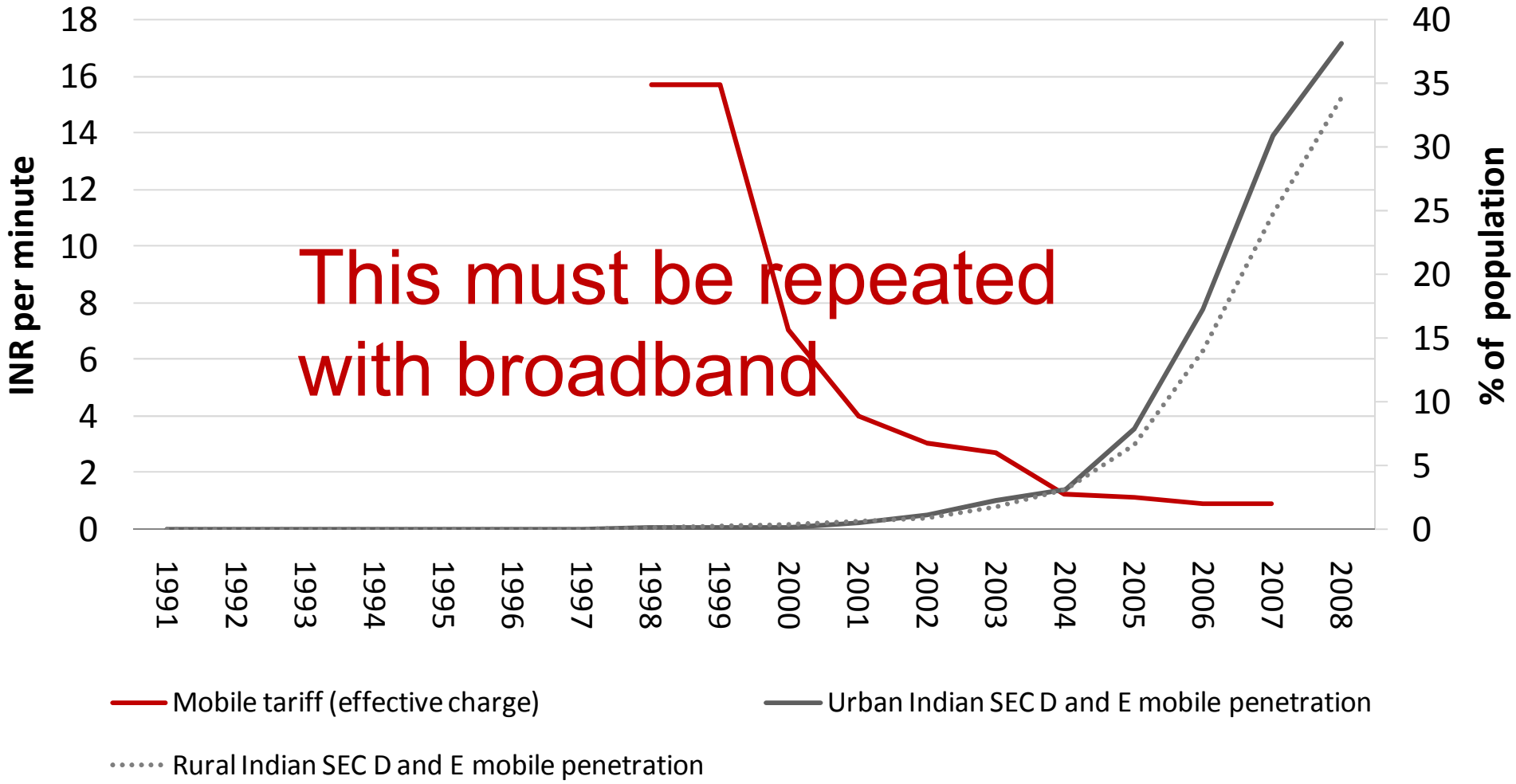
UKaid from the Department for International Development

Canada

Agenda

- Lessons from voice success
- International backhaul as major barrier to connectivity
  - Reliability
  - Affordability
- A win-win REGIONAL solution that leverages UNESCAP's unique strengths

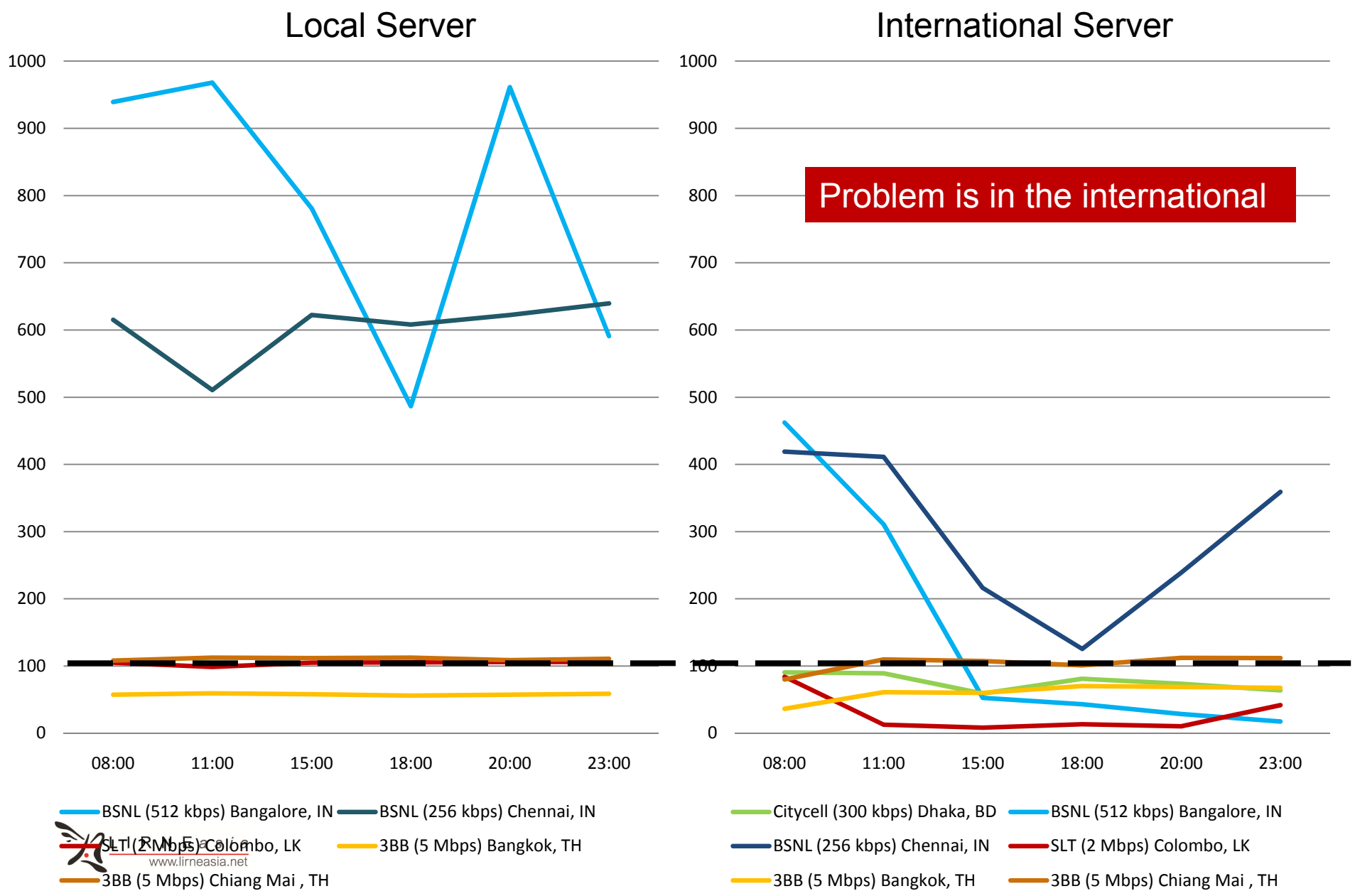
Success in voice: Low prices ➔ greater connectivity (India SEC D&E)



Necessary condition for affordable broadband: Lowering international backhaul costs

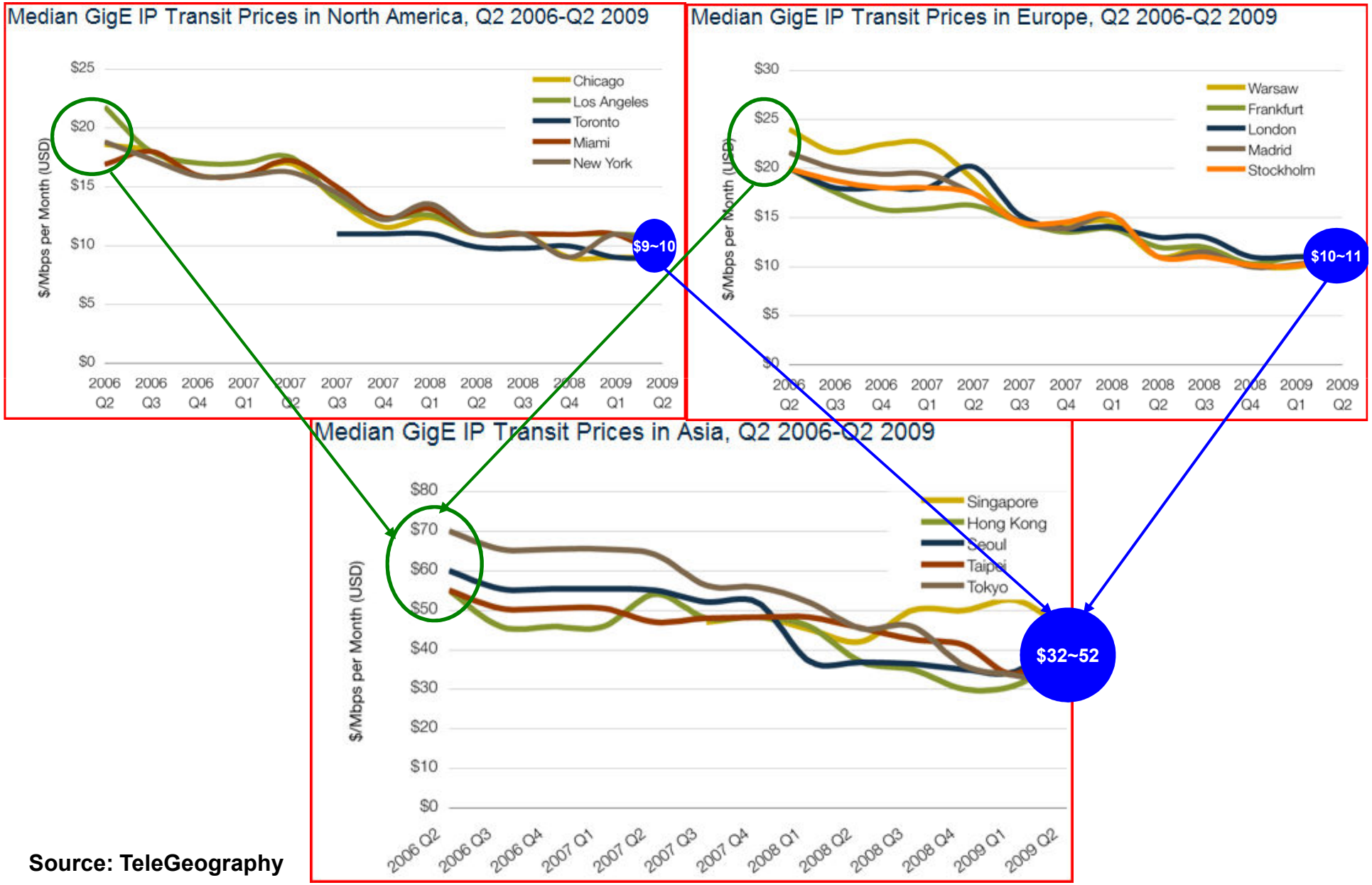
- Asian operators who are very good at controlling costs in voice are also offering value for money in broadband WITHIN ISP DOMAIN
- When it comes to broadband in the INTERNATIONAL DOMAIN, less value for money because operators are economizing on that costly input

Delivered vs. Advertised Download Speeds



International bottleneck confirmed

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



Source: TeleGeography

Not just about getting to N America: Internet backbone connections within region & outside, 2001 v 2009

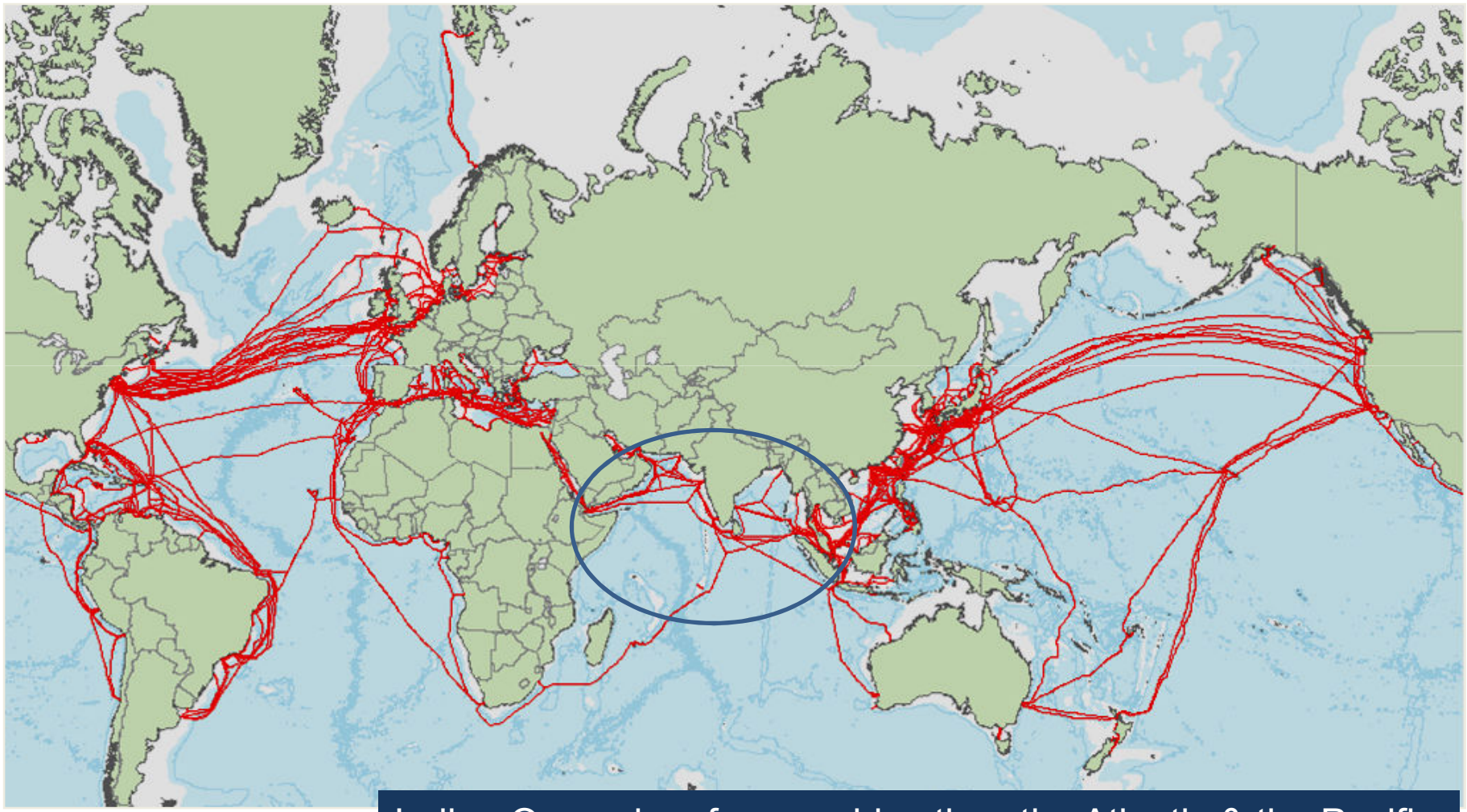
	2001	2009
Asia, intra-regional	**17%**	**30% (almost x2)**
Asia, with US & Canada	**80%**	**50%**
Europe, intra-regional	75%	76% (same)
Europe, with US & Canada	25%	19%
Latin America, intra-regional	12%	25% (more than x2)
Latin America, with US & Canada	88%	74%

Source: Presentation at Telegeography International Telecom Trends Seminar, Pacific Telecommunication Council, Honolulu HI, USA, 17 January 2010.

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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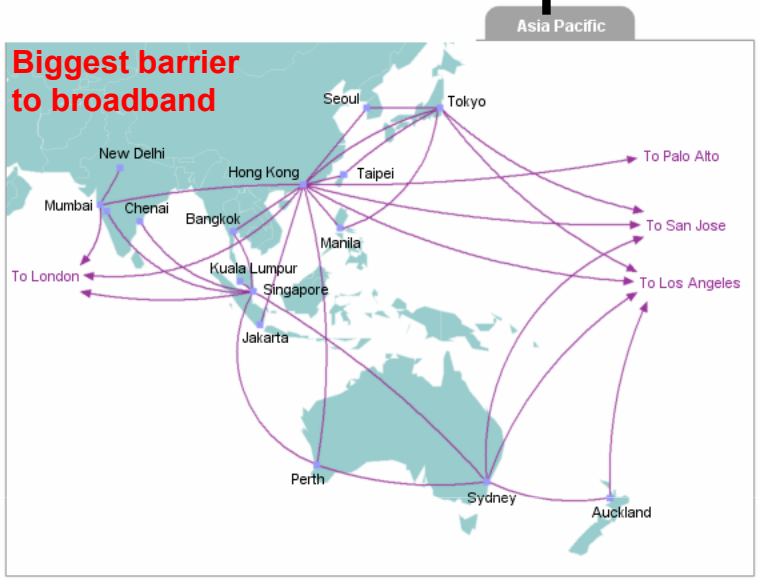
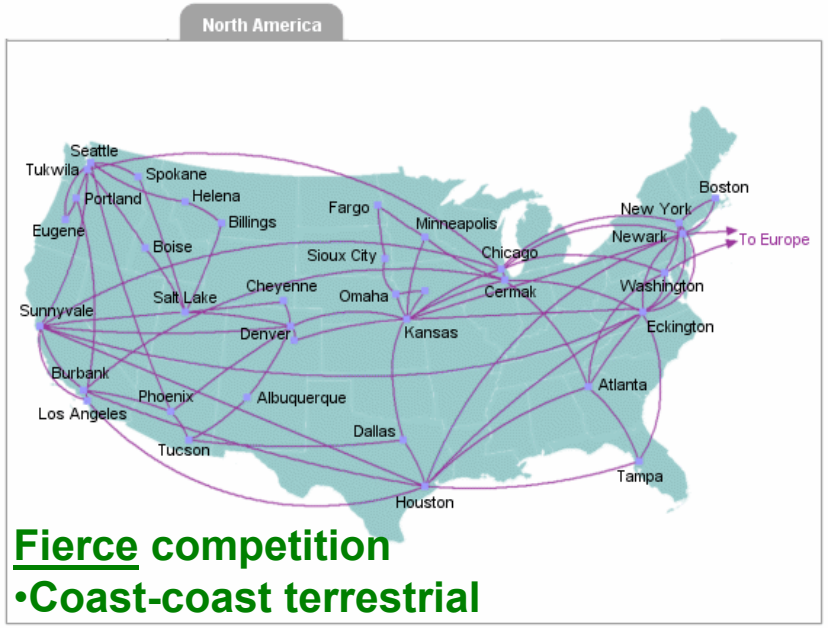
Asia has less cables on land, compared to Europe & N America



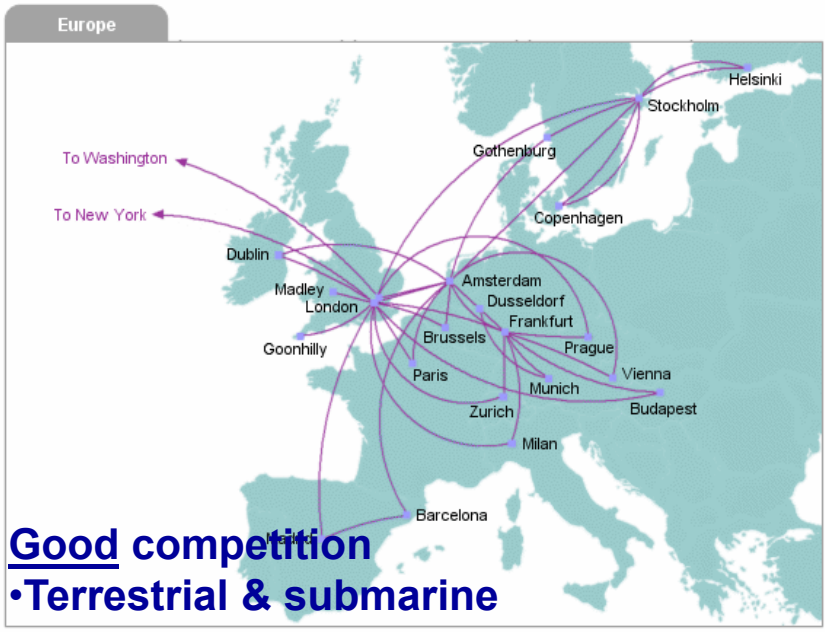
Poor competition

All submarine



Fierce competition

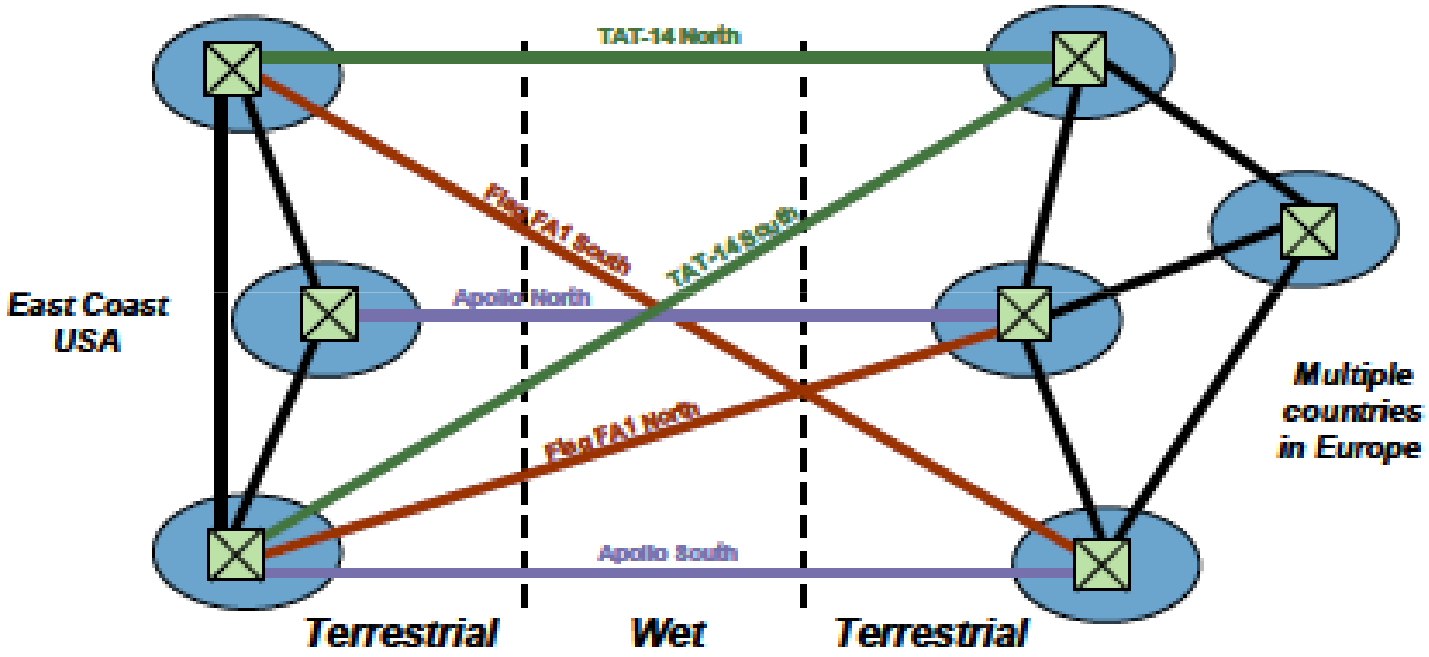
•Coast-coast terrestrial



Good competition

•Terrestrial & submarine

The solution: Build "open" terrestrial cable system across the continent to supplement submarine systems, preferably in mesh form



Source: Verizon, Inc.

Mesh form now exists only in the Atlantic; Pacific relies on rings, but December 2006 Taiwan quake snapped both sides of some rings.

Natural Candidate #1: Asian Highway

The designations employed and the presentation of material on this map do not imply the expressing of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.
Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not been agreed upon by the parties.

Natural Candidate #2: Trans-Asian Railway Network

Even better . . . Communication conduits on Asian highway + Trans-Asian Railway = UNESCAP's Asian Land Transport Infrastructure Development (ALTID) Project

- This is
  - NOT about access networks that have direct effects on consumers
    - Best dealt with by a national government
  - NOT about simple cross-border links
    - Best dealt with by the two governments
- This is about INTRA-ASIAN and INTERNATIONAL backhaul
  - This is the legitimate domain of Pan-Asian organizations

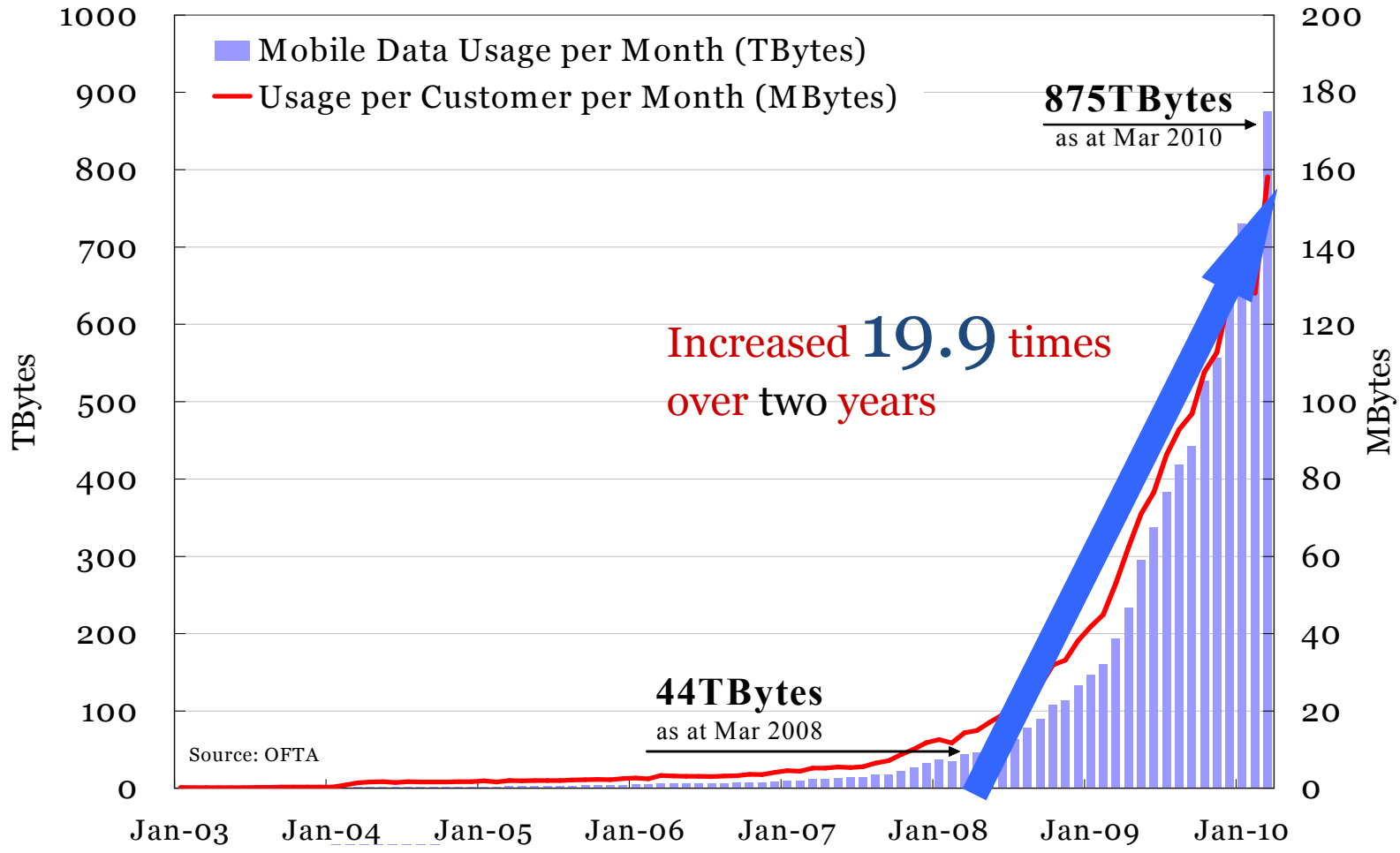
Also offers a structural regulatory solution

- The fiber in the interlinked conduits will be controlled by National Road/Railway Authorities/Designated Entities
  - No interest in ICT value chain ➔ impartial
    - Ideal if incumbent telecom operators do NOT control the fiber
  - More use is made of the fiber, the more revenues come to the Road/Railway Authorities ➔ no reason to exclude any operator
- Actual operation of the fiber can be contracted out, conditional on open-access rules
  - Subject of course to domestic regimes and international trade commitments
- Governance of the regional network(s) can be modeled on the consortia that run the undersea cables

Win-win solution

- Road/rail authorities get funds needed for maintenance
- Telecom operators avoid the large capital costs and uncertainties
  - Can lease capacity for international as well as domestic backhaul
    - Unlike undersea cables, highways/railways go through population centers
  - Can better face the data flood that is on horizon
  - Will also be able to provide 99.999 + reliability for communication-reliant industries
- Governments can ensure broadband development
  - With cost-oriented and non-discriminatory access to intra-Asian and international backhaul, operators can extend Budget Telecom Network Model that worked in voice to data, ensuring inclusive development
  - Lower prices & higher reliability will attract more industry, create jobs

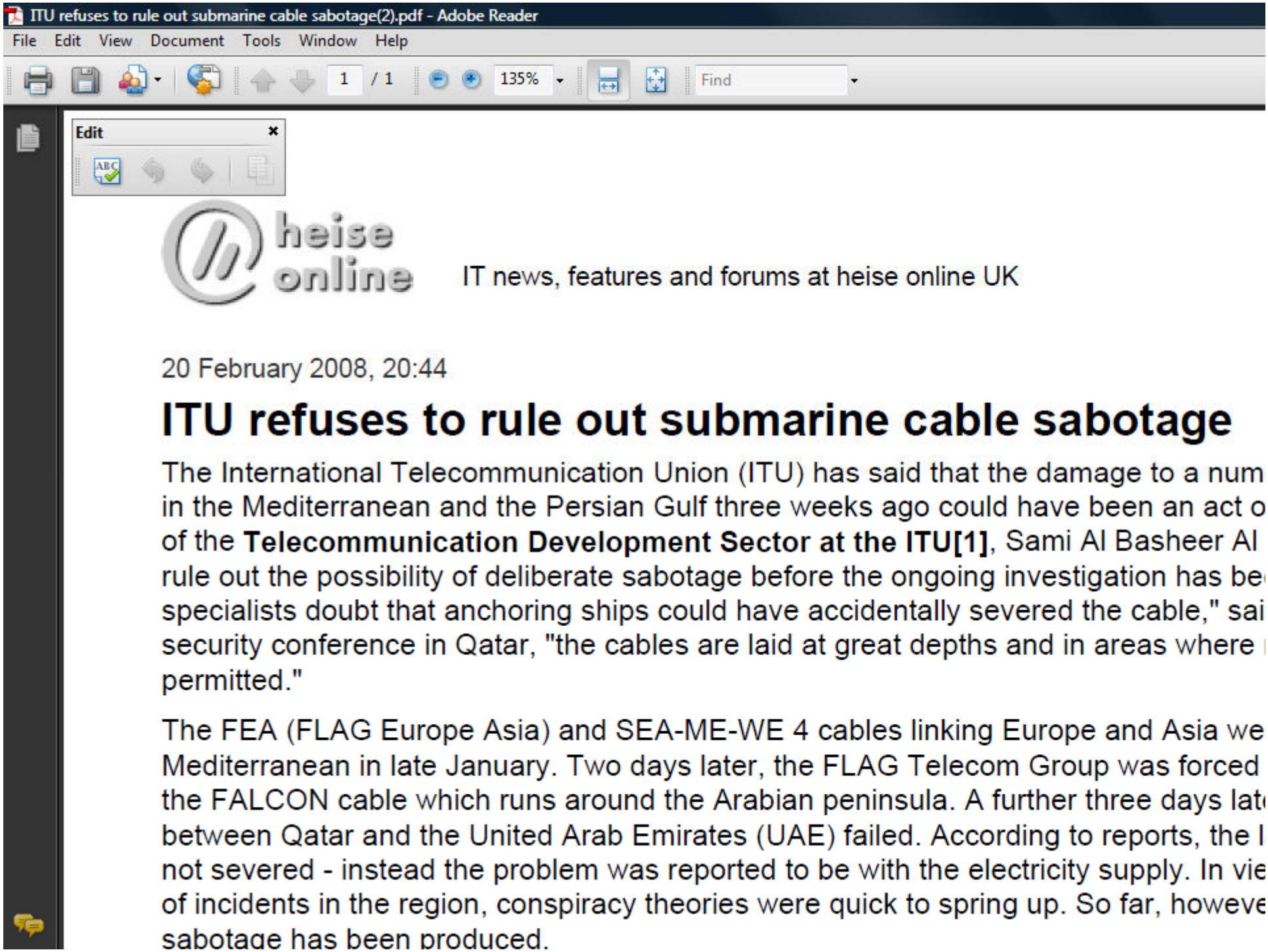
The coming data flood: Hong Kong shows the future



Source: Hong Kong Office of Telecom Authority

The redundancy imperative

- **Dec 26, 2006 earthquake in Luzon Strait** south of Taiwan snapped 7 out of 9 trans-Pacific cables, including both sides of some rings
  - 11 ships took 49 days to restore service
- **Jan 23 - Feb 4 2008: 6 cables snapped** within 12 days across the Mediterranean, Persian Gulf and Andaman sea
  - What caused this series of cable cuts remains unexplained
- **Dec 19, 2008: Mediterranean earthquake**
  - Total downtime: 17 days
- **Aug 7, 2009: Typhoon Morakot** and subsequent undersea earthquakes
  - 10 submarine cables damaged in >20 locations


ITU refuses to rule out submarine cable sabotage(2).pdf - Adobe Reader
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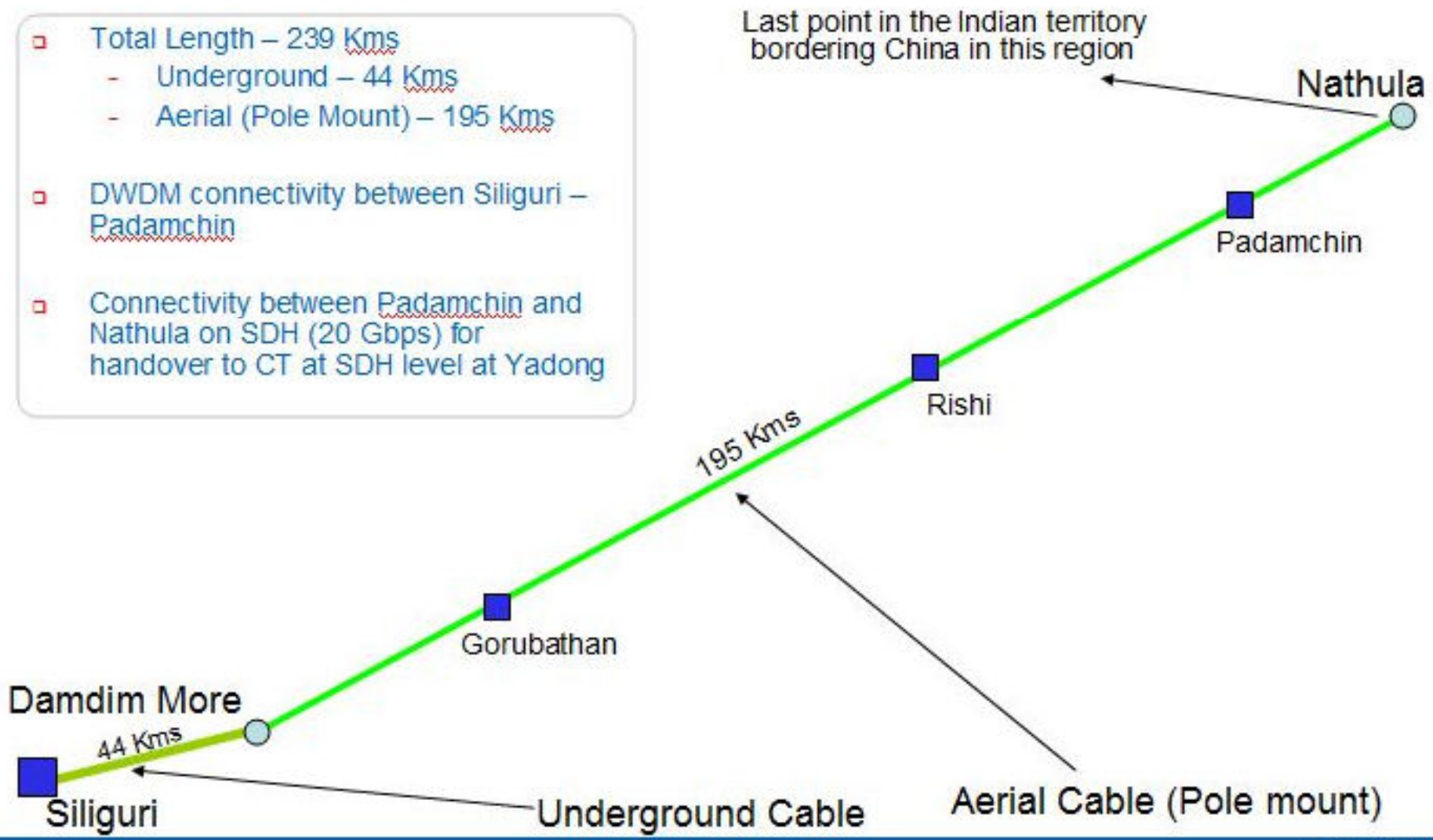
20 February 2008, 20:44
ITU refuses to rule out submarine cable sabotage
The International Telecommunication Union (ITU) has said that the damage to a num
in the Mediterranean and the Persian Gulf three weeks ago could have been an act o
of the Telecommunication Development Sector at the ITU[1], Sami Al Basheer Al
rule out the possibility of deliberate sabotage before the ongoing investigation has be
specialists doubt that anchoring ships could have accidentally severed the cable," sai
security conference in Qatar, "the cables are laid at great depths and in areas where
permitted."
The FEA (FLAG Europe Asia) and SEA-ME-WE 4 cables linking Europe and Asia we
Mediterranean in late January. Two days later, the FLAG Telecom Group was forced
the FALCON cable which runs around the Arabian peninsula. A further three days lat
between Qatar and the United Arab Emirates (UAE) failed. According to reports, the
not severed - instead the problem was reported to be with the electricity supply. In vie
of incidents in the region, conspiracy theories were quick to spring up. So far, howeve
sabotage has been produced.

And the response . . .

- Desperate search for redundancy solutions
  - Some that have surmounted enormous political, physical and engineering barriers

Siliguri – Nathula Connectivity

- Total Length – 239 Kms
  - Underground – 44 Kms
  - Aerial (Pole Mount) – 195 Kms
- DWDM connectivity between Siliguri – Padamchin
- Connectivity between Padamchin and Nathula on SDH (20 Gbps) for handover to CT at SDH level at Yadong



Dec 29, 2009
Tata and China Telecom JV

- Jointly rolling out a 500 km fiber-optic terrestrial cable connecting India and China
- Expected to go live by December 2010
- Route and cost not announced

"The India-China Terrestrial Cable will go a long way in meeting the business needs of two of the world's fastest emerging economies. The new route, coupled with Tata Communications' other subsea cable investments, **will also provide a new high-speed connectivity path between Europe and Asia by transiting India and China**."

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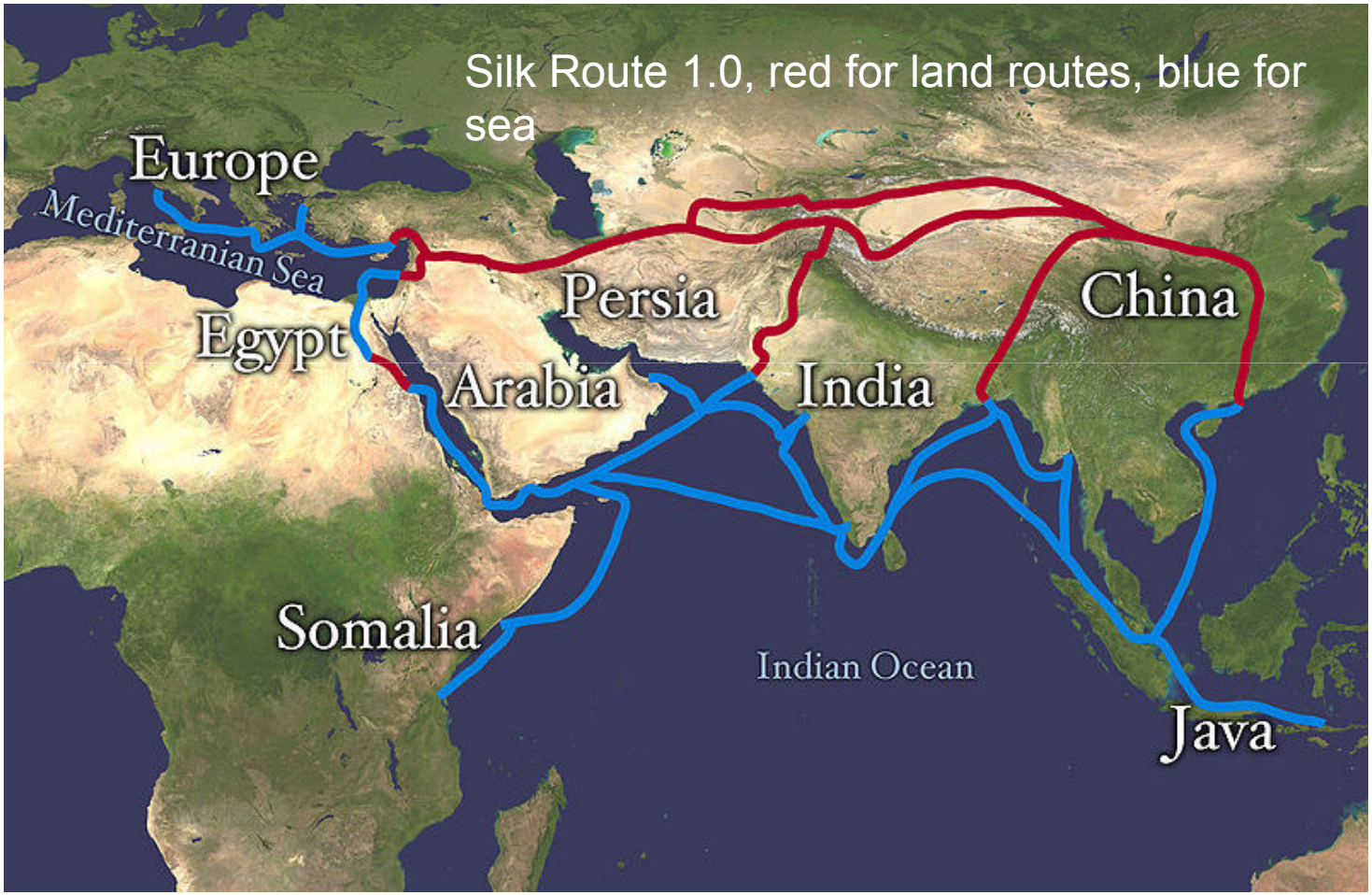
Byron J Clatterbuck, Senior VP
Tata Communications

The first-best solution

- An open-access submarine + terrestrial mesh network that will allow Asia to leapfrog to a level of reliability and affordability commensurate with its status as an economic engine and ICT powerhouse
- UNESCAP can lay the foundation
  - Develop Protocols on Communication Conduits for the Intergovernmental agreements on Asian Highway and Trans-Asian Railway Network

Inspiration from the past . . .



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