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Broadband for Development in East Asia & Pacific

GSMA Mobile Asia Expo: Public Policy Forum on Market Drivers to Encourage Mobile Broadband Investment in Asia Pacific, Shanghai, June 21, 2012

Natasha Beschorner, The World Bank. www.worldbank.org/ict

East Asia & Pacific: Extremes of Connectivity

Korea, 2012

- ICT and knowledge-driven, urbanized economy
- Leader in e-government, ICT in education
- 90% broadband Internet access
- Fast, cheap, “ubiquitous” ICT

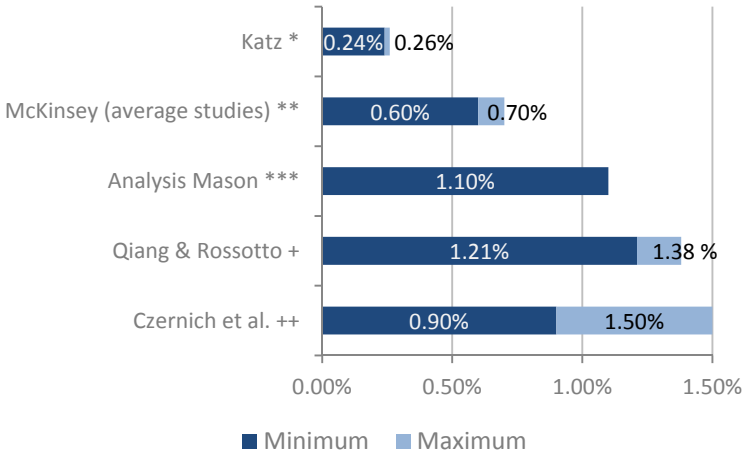
Kiribati, 2012

- Subsistence, aid and transfer-dependent economy
- Limited or no online services
- 14 percent teledensity, 1% Internet; <0.5 % broadband
- S. Tarawa + Outer Islands-dispersed population

Why does ICT, particularly broadband Internet, matter for development in this region?

Broadband Internet: Economic Benefits

Impact on GDP of an increase of 10 percent in broadband penetration



Source: Katz 2010; Analysis Mason 2010; McKinsey 2010; Qiang & Rossotto 2009, and; Czernich et al. 2009.
Notes:* Only includes Germany; ** Average of five country studies, including United Kingdom, Australia, New Zealand, Malaysia and a Middle Eastern country, from various sources 2003 and 2004, and Qiang and Rossotto 2009 study; *** Limited to mobile broadband impact in India; + Various countries, upper range applies to developing countries and lower range to developed countries; ++ Sample of 20 OECD countries.

Estimated broadband employment creation multipliers

Study	Year	Scope	Type I	Type II	Network Effects
Crandall et al.	2003	US	...	2.17	...
Katz et al.	2008	Switzerland	1.4	...	...
Atkinson et al.	2009	US	...	3.60	1.17
Katz et al.	2009a	US	1.83	3.43	...
Libenau et al.	2009	UK	...	2.76	...
Katz et al.	2009b	Germany	1.45	1.93	...

Source: Katz 2009, citing Crandall el al. (2003), Katz et al. (2008), Atkinson et al. (2009), Katz et al. (2009a), Libenau et al. (2009) and Katz et al. (2009b).
Note: Type I (Direct + Indirect)/Direct; Type II (Direct + Indirect + Induced)/Direct

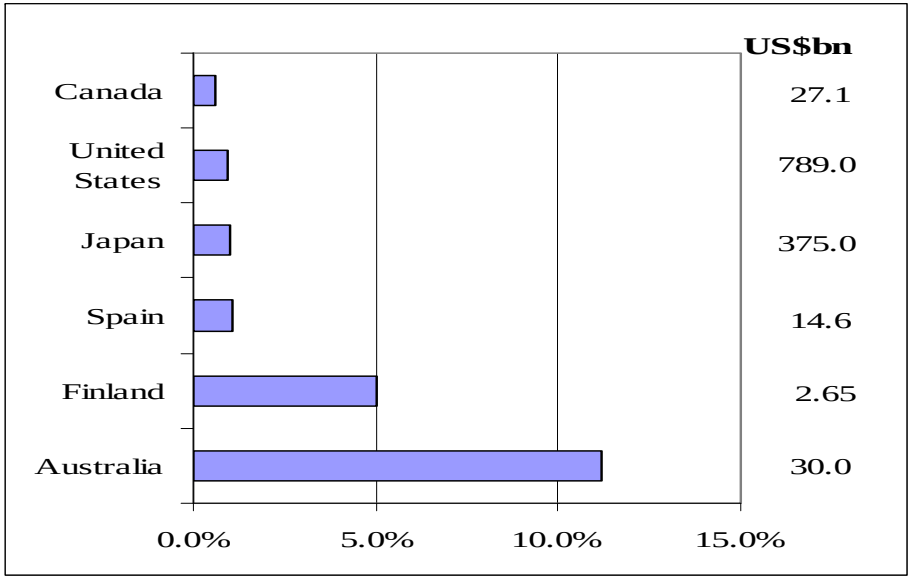
10 percent broadband penetration increases annual GDP growth by 0.24-1.5 percentage points, and creates 1.5 to 4.5 indirect jobs for each direct job created

Broadband: Catalytic Public Investment to Foster Growth

Developed and developing countries are investing in broadband as a platform for economic growth

- Stimulus packages used broadband as a source of long-term growth
- Colombia and Brazil have launched strong broadband infrastructure plans

Broadband spending in stimulus packages

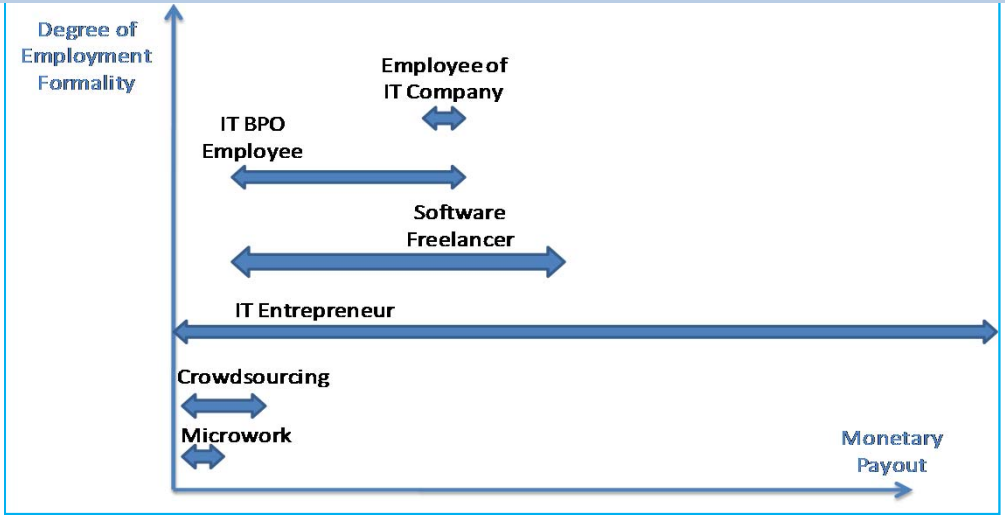


Source: "Broadband Infrastructure Investment in Stimulus Packages: Relevance for Developing Countries" , Christine Zhen-Wei Qiang, The World Bank, May 2009

Business Process Outsourcing & Information-Enabled Services

In India and the Philippines, most of BPO jobs go to youth and 60% of jobs go to women

The virtual economy provides both formal and informal job opportunities, at low and high wage levels. It opens labor markets by linking labor supply to regional or global demand.



Source: Rossotto, La Cava, Paradi-Guilford

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ICT in Health: Selected Applications

1 Data Collection / Disease Surveillance	Usage of mobile handheld devices to collect data remotely; use of remote diagnostic tools for disease surveillance and treatment; civic participation in reporting outbreaks and disease information
2 Treatment Adherence / Appointment Reminders	Use of messages and voice to communicate treatment and procedural reminders to patients (e.g., automated SMS reminders to patients on chronic medication)
3 Emergency Medical Response Systems	Emergency response tools , including creation of EMR via mobile phones, and ambulance services whose reach is extended with mobile usage in remote areas
4 Health Information Systems & Support Tools for Health Workers	Collection and analysis of patient data, particularly at clinics or related to call centers that are used to triage services and treatment; information to help health worker prioritization.
5 Supply Chain Management	Management of inventory and supply chain steps by mobile tracking and communication; includes advocacy informed by supply chain information
6 Health Financing	Use of smart-cards, vouchers, insurance and lending for health services linked to mobile platforms (e.g., m-Pesa) or otherwise enabled using mobile
7 Disease Prevention and Health Promotion	Use of mobile and SMS-based health information and education to inform individual patients of preventive care and treatment

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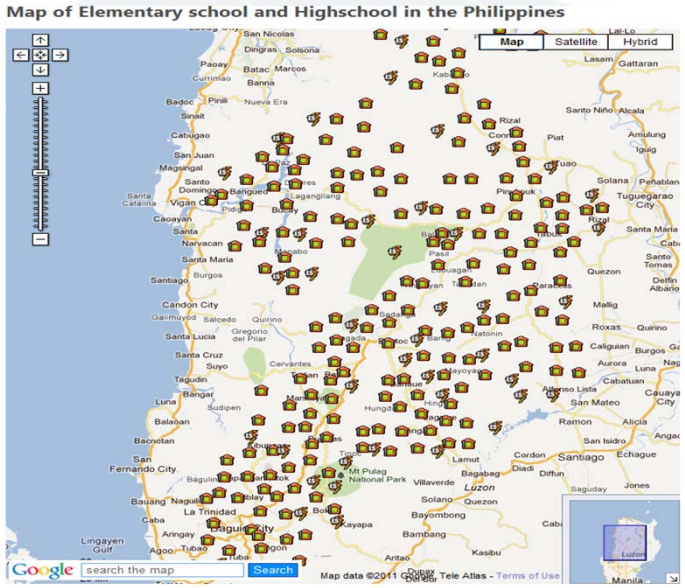
ICT for Education Monitoring



Checkmyschool.org: ICT-enabled education service delivery monitoring in the Philippines

- Tracking more than 8,500 of country's 44,000 public schools
- More than 350 volunteer information intermediaries ("infomediaries") for direct community engagement
- Teachers, parents, students send SMS or go to checkmyschool.org to report issues about quality of education service.
- Facebook, email, and Twitter are additional channels for reporting.

Source: http://www.checkmyschool.org/, http://wbi.worldbank.org/wbi/stories/check-my-school-improve-my-school

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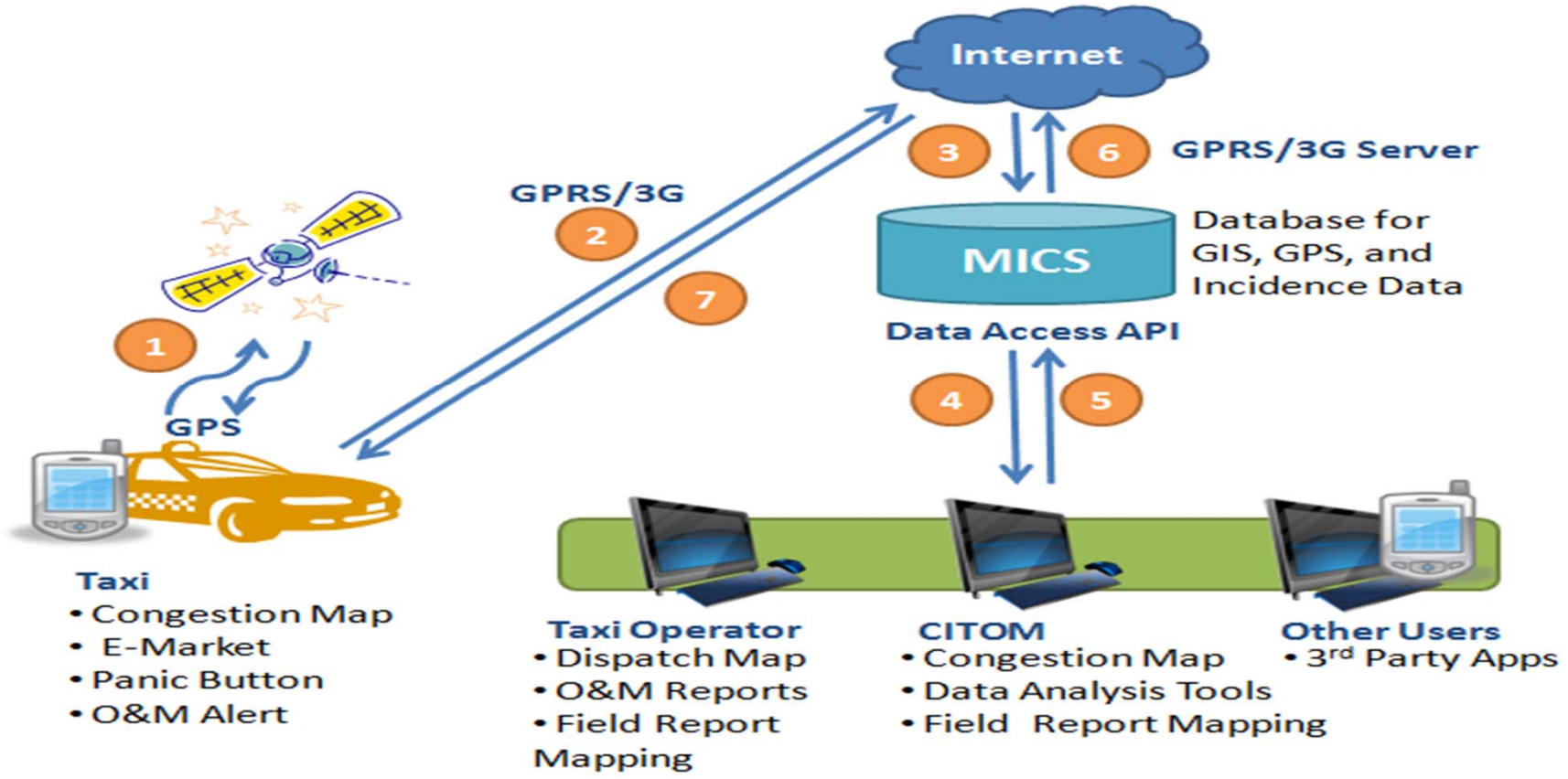
Cebu City– Taxi crowd sourcing project



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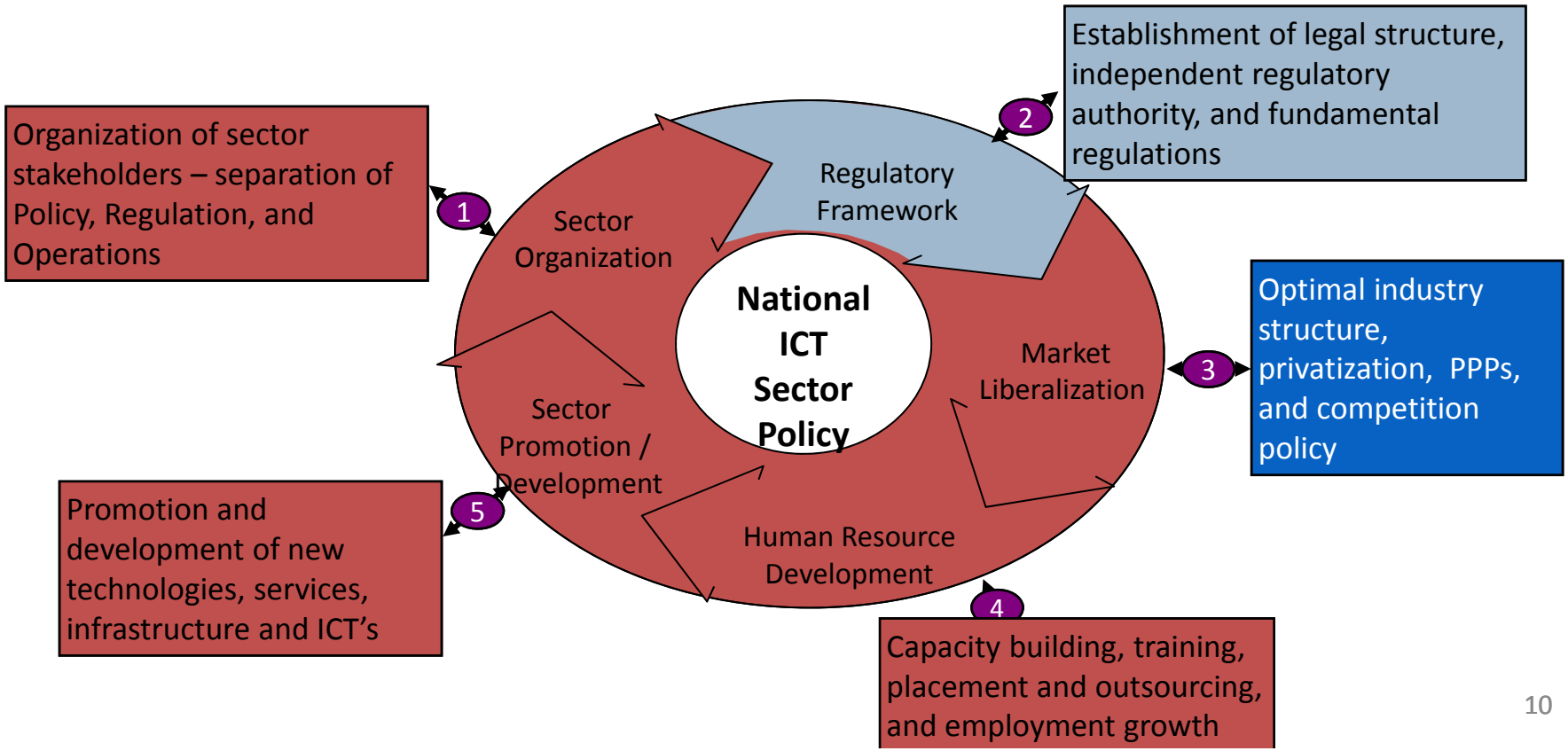
Rural Income-Generation

Micro-Work, via mobile or Internet

Farmer information service-Indonesia www.epetani.deptan.go.id

ICT Development: Conceptual Framework



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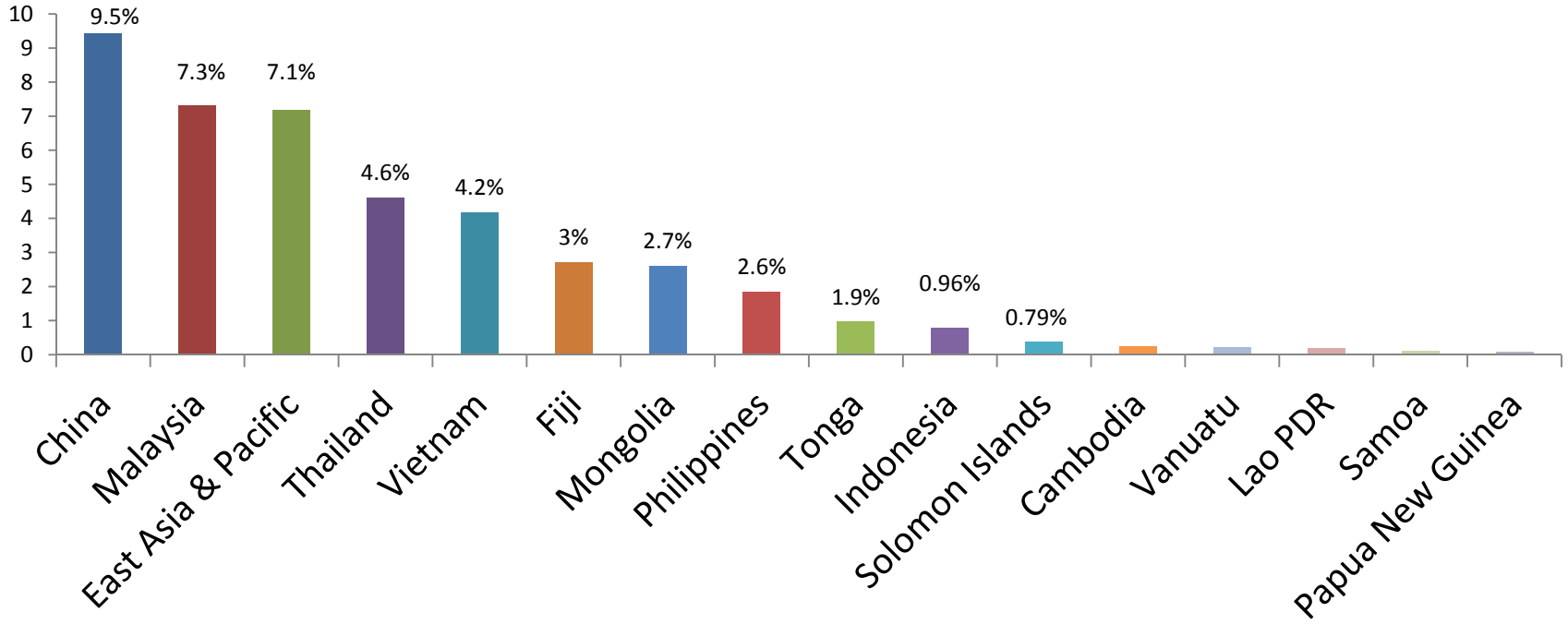
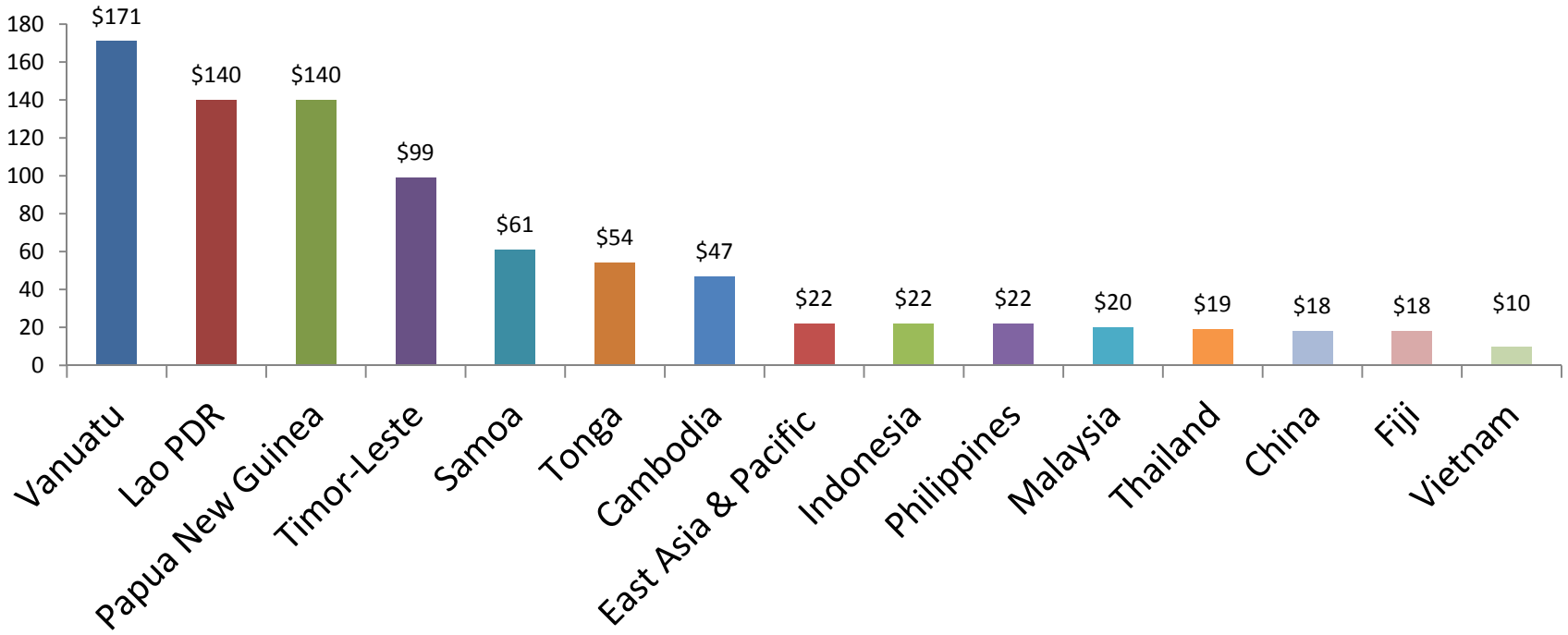
East Asia & Pacific: Fixed broadband penetration (%)



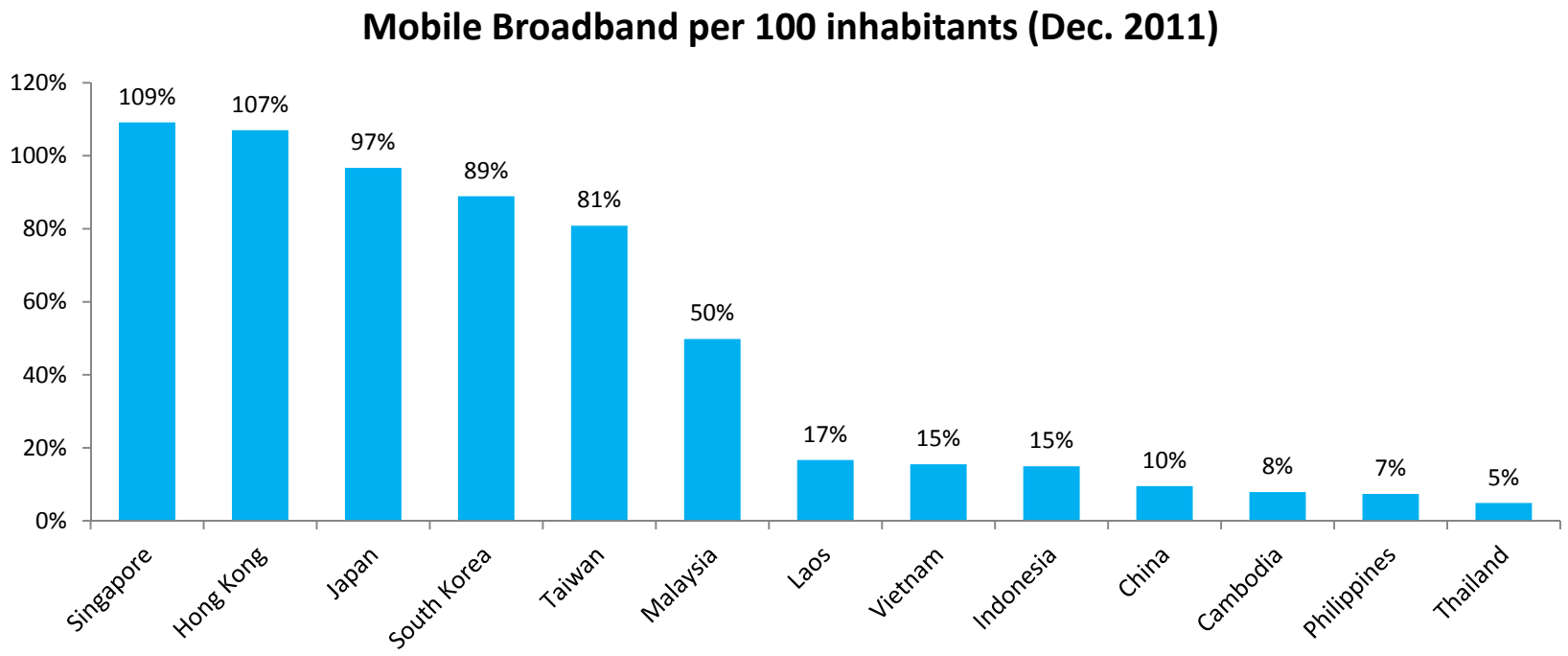
Source: ITU, Telegeography 2011

East Asia & Pacific: Fixed broadband tariffs US$/month



Source: ITU, Telegeography 2011

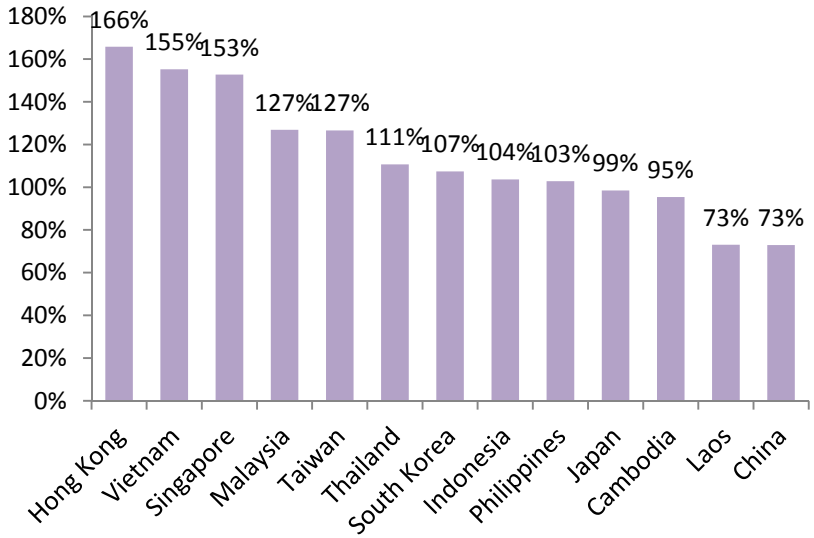
East Asia & Pacific: Mobile Broadband



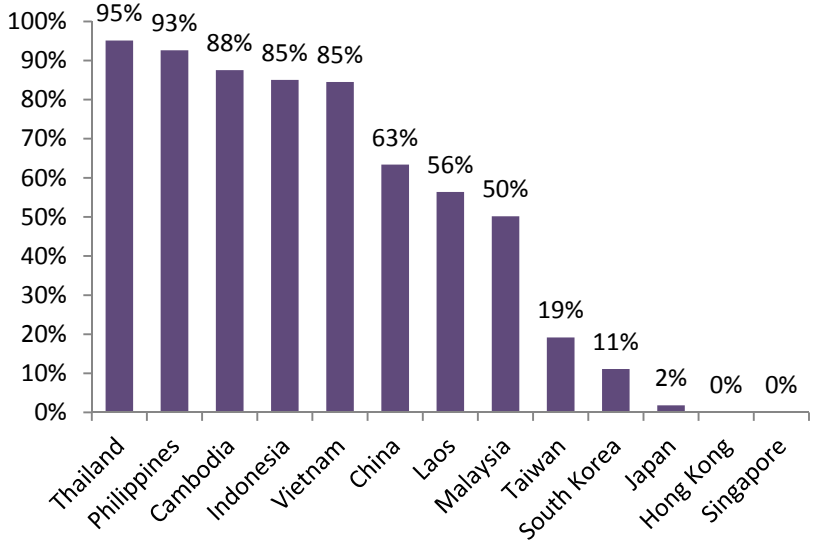
Sources: ITU, Telegeography 2011

EAP Mobile Broadband Potential

Mobile Telephony per 100 inhabitants (Dec. 2011)



Mobile broadband Gap (adjusted, Dec. 2011)

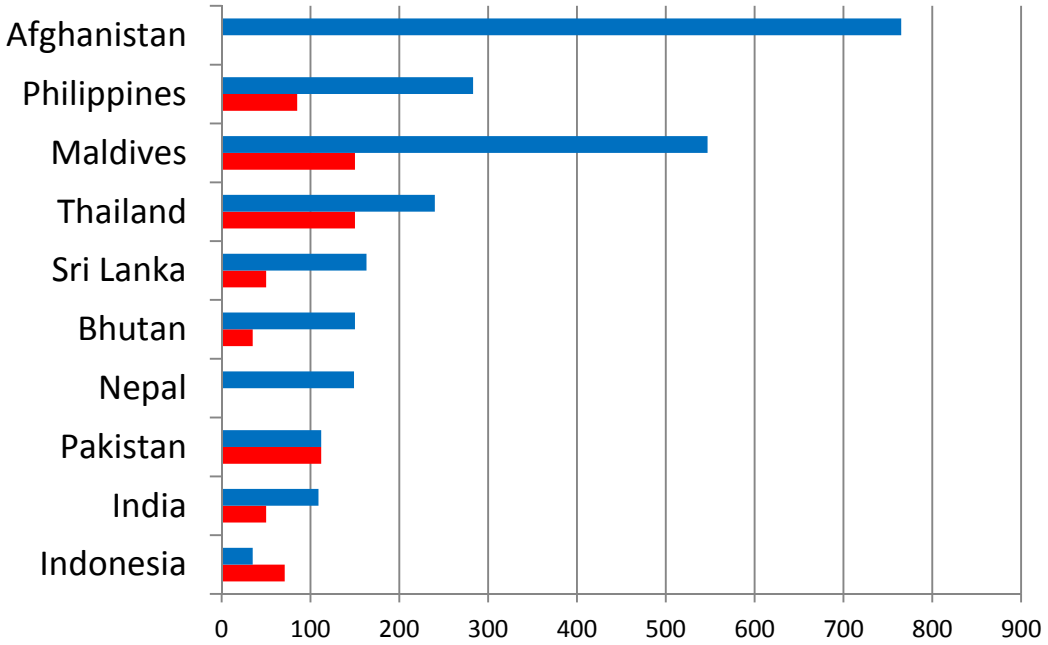


Sources: ITU, Telegeography 2011

Broadband access gaps

- Backbone Networks (terrestrial)
  - Insufficient international/regional backbone
  - Limited domestic backbone
- Access Networks (3G, 4G, LTE, WiMAX)
  - Extension beyond major population centres
- Access Devices/Points
  - Affordability
- Content
  - Relevance, scale (individual, institutional)

Affordability of Broadband (USD)



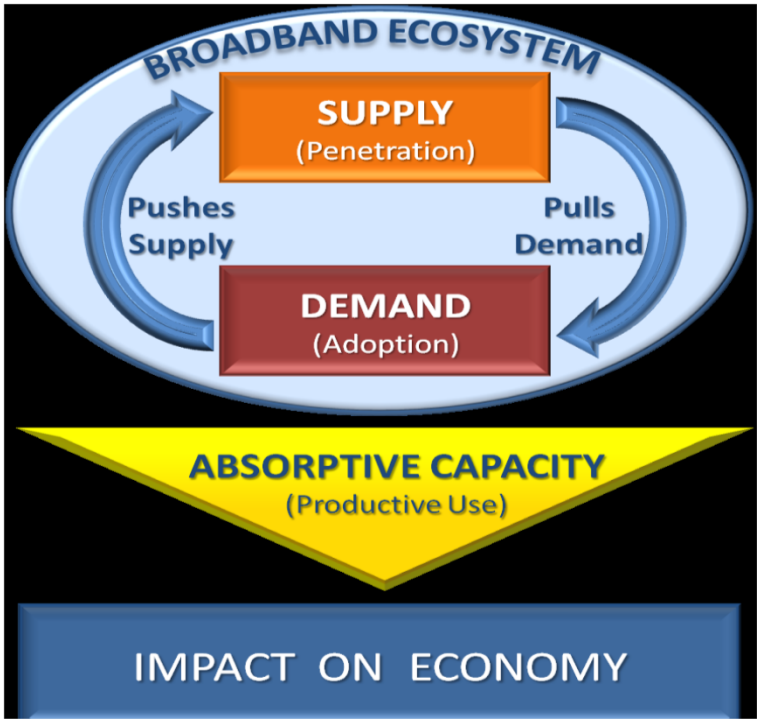
Source: LirneAsia, 2011

Addressing the Broadband Access Gaps

Requires combination of actions by **Governments**…

- Policy reforms, e.g. national broadband policy
- Regulation, including: spectrum, licensing, open access, infrastructure-sharing
- Subsidization of supply (catalytic funding, private-public partnerships)
- Demand stimulation/Demand aggregation:
  - Promoting **ICT in Education programs** (school broadband access, digital educational materials).
  - Adopting **ICT for health service delivery, monitoring**
  - **Business support services** (national, local level): e.g. online permits, licenses, land administration
  - **E-procurement**: informational and/or transactional
  - **Trade facilitation services** e.g. customs clearances, quarantine, other certifications

…and **private investors** (financing, innovation)



International Examples

	Approach	Country examples
1	Competitive tender &/or Government initiative to build new backbone &/or access infrastructure, including use of universal services funds or similar	Canada, Chile, India, Pakistan, Sri Lanka, Singapore, Malaysia, other USF countries
2	Create / Underwrite Demand	Malaysia, Singapore, OECD countries
3	Stimulate Private Demand in the ICT Sector – e.g., PC initiatives, industry & educational initiatives, local services	Korea, China, Egypt, Thailand, OECD countries
4	Regulatory Reform, liberalisation, competitive fixed & unified licensing, creative spectrum policies	Pakistan, India, S. Africa, Chile, Brazil, Peru, New Zealand, Germany, UK, USA, some ASEAN
5	Broadband investments as part of Economic Stimulus packages	USA, UK, Canada, Japan, Finland, Singapore, Korea, Australia

>>These approaches can be combined

Ongoing Projects (PPPs) addressing broadband/backbone access gaps

ANNEXES

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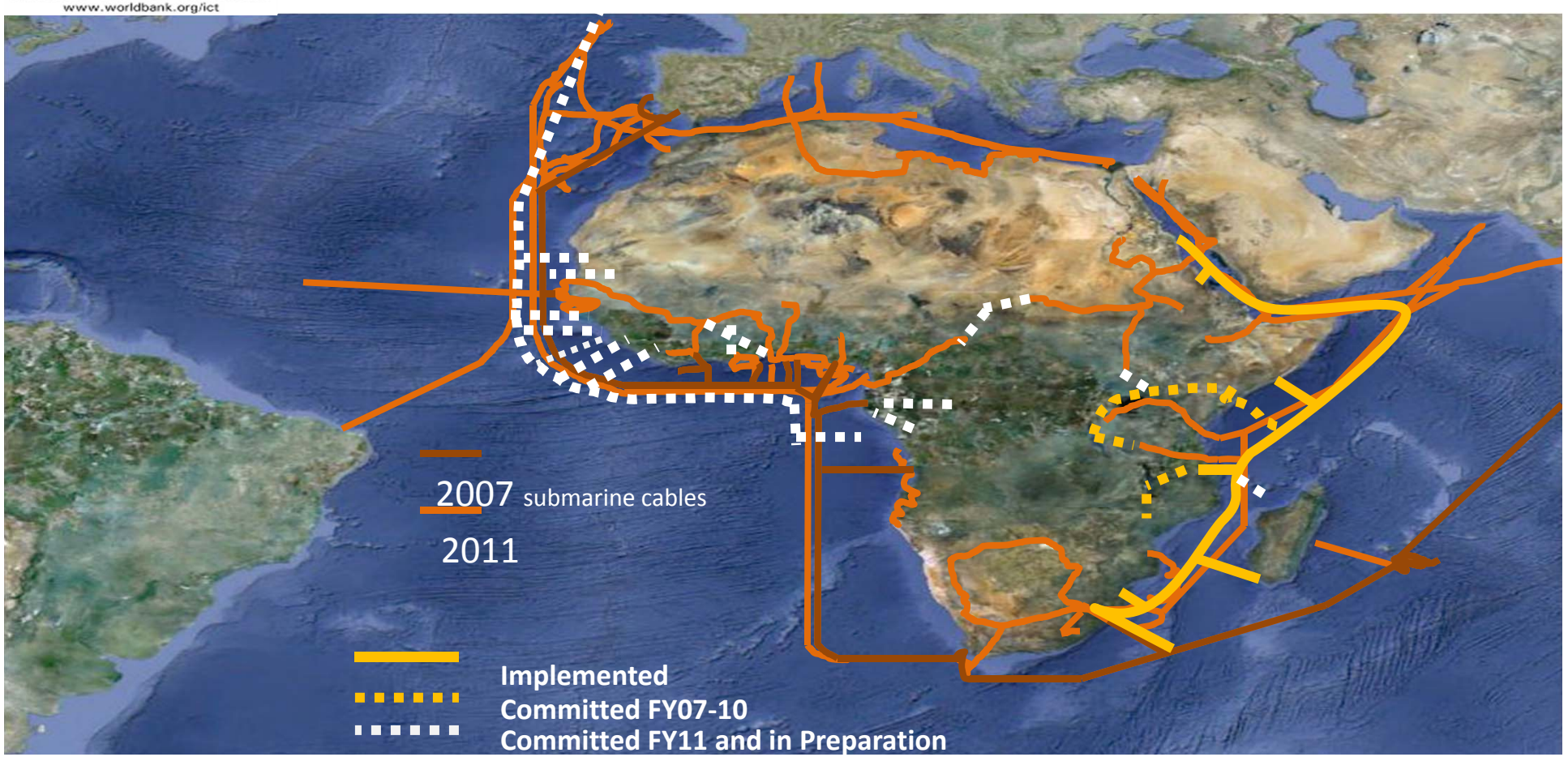
Africa Regional Connectivity



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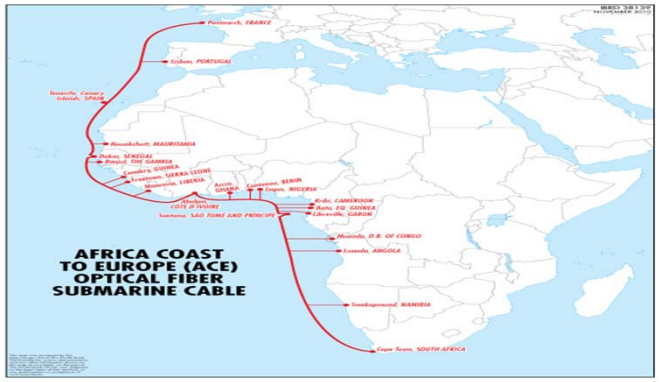
Africa Coast to Europe Cable (ACE)



ACE submarine cable is a unique opportunity for international connectivity for least connected countries in West and central Africa. Through World Bank support countries without or with limited access to global optical fiber network are now plugged in to the information age

- 17,000 km from South Africa to France, connecting 23 countries for a total cost of US $700 million
- A private sector led consortium
- Due to enter commercial service in the first half of 2012

Through West Africa Connectivity Program (WARCIP) and Central Africa Backbone (CAB), the World Bank in supporting 5 countries to gain access to ACE submarine cable

- Liberia- SRL and STP approved in January 2011),
- Guinea and The Gambia approved in June 2011)
- Gabon (expected in December 2011).

Based on PPP framework and open access principles, The ACE projects will change the communications landscape of participating countries

- Reduction of cost of communications
- Improved access to broadband services

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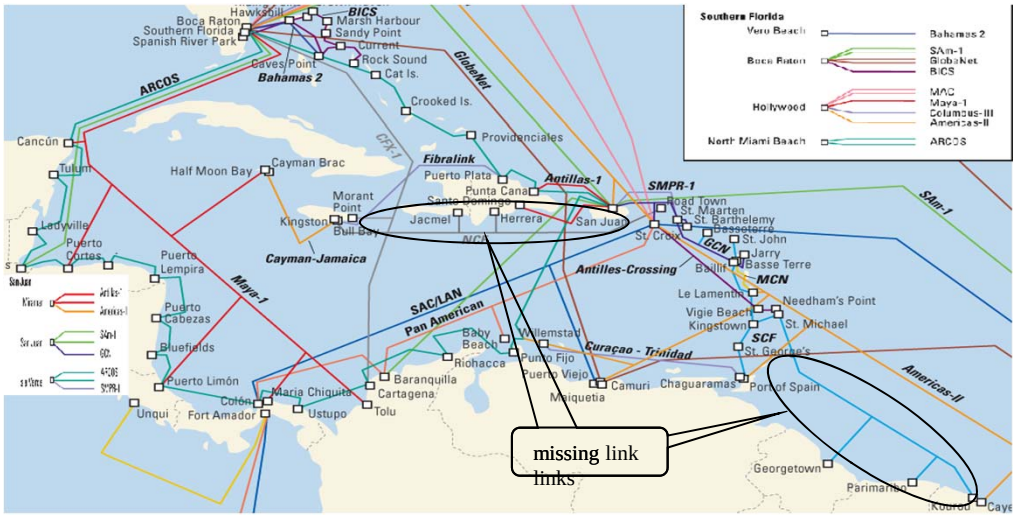
Caribbean Regional Connectivity

Significant improvement in ICT infrastructure in the region, but gaps remain:

- National level: little investment in broadband networks beyond main urban centers, especially in the form of fiber backbone
- Regional Level: Inadequate connectivity between countries
- International level: Most countries served by only one alternative international cable
- Phase 1: Grenada, St. Lucia, Dominican Republic, Haiti (possibly)



Caribbean Governments realize benefits of investing in ICT for economic growth and diversification, employment generation, competitiveness, resilience to natural disasters and overall regional integration

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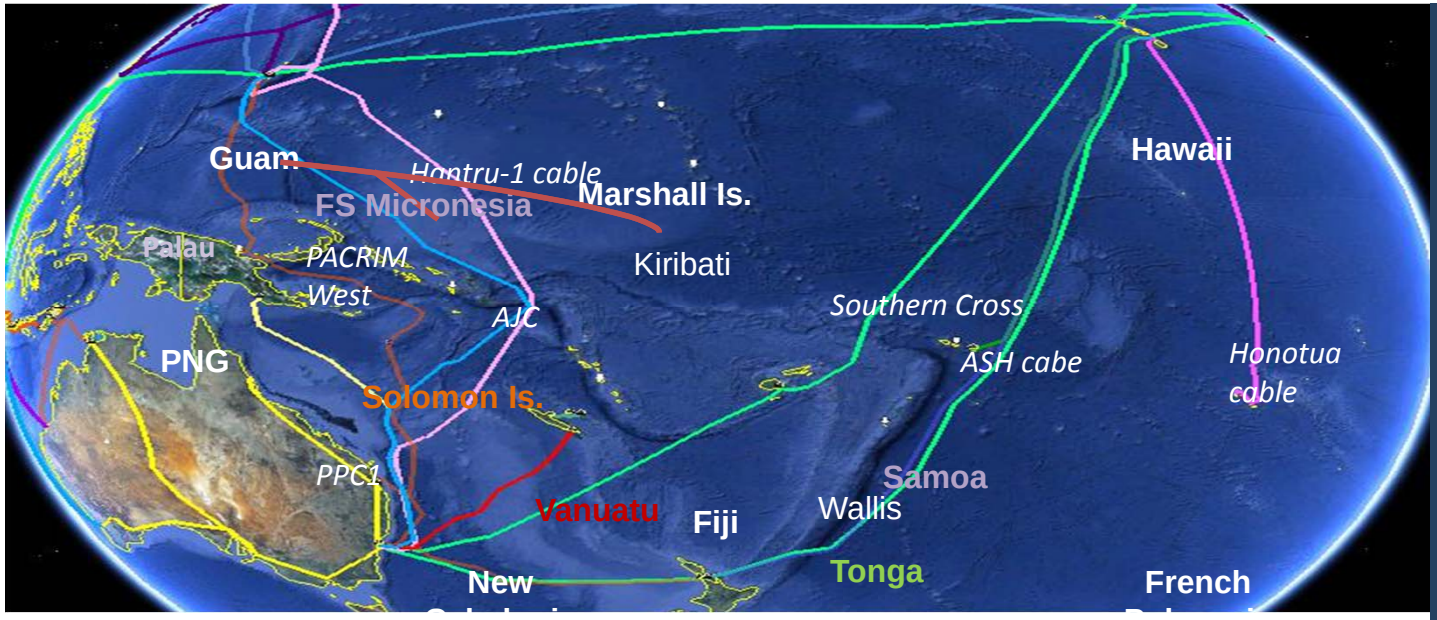
Pacific Regional Connectivity



Legend

Connected country

Non connected country

Financed & launched project

Financing phase

WB study currently underway

Private project seeking to mobilize funding

- Extreme isolation of region, high costs, small markets
- Successful telecoms liberalization in most countries, boosting mobile access, improving regulatory environment.
- Growing demand for bandwidth justifies investments
- Internet access the main challenge; constrained largely by high international bandwidth costs (US$2000-3600 Mbps/mo.)