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National Broadband Networks:

Lessons from Down Under

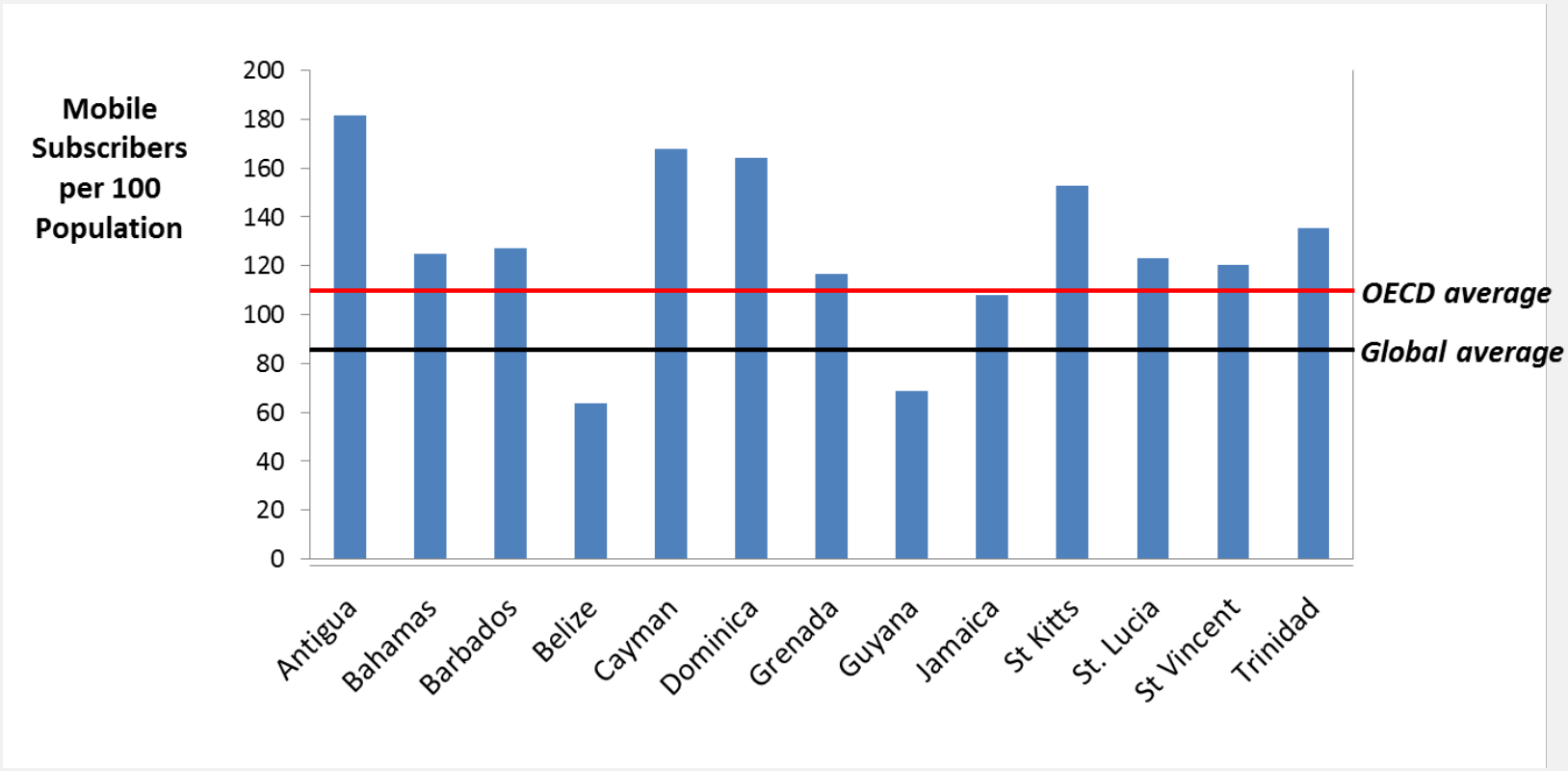
November, 2012

Agenda

- **Liberalization of telecoms market in the Caribbean has worked very well**
- **Governments may now seek ways promote rollout of faster broadband services:**
  - Broadband take-up matters
  - Existing fixed broadband take-up in Caribbean reasonable relative to GDP but speeds likely to lag behind OECD
  - Market forces alone may not deliver faster networks and services
- **Australia and New Zealand addressed these questions through public financing of new national broadband access networks**
- **Caribbean policy makers may find policy experiments from Down Under attractive but the lessons and suitability to the Caribbean need to be carefully considered**

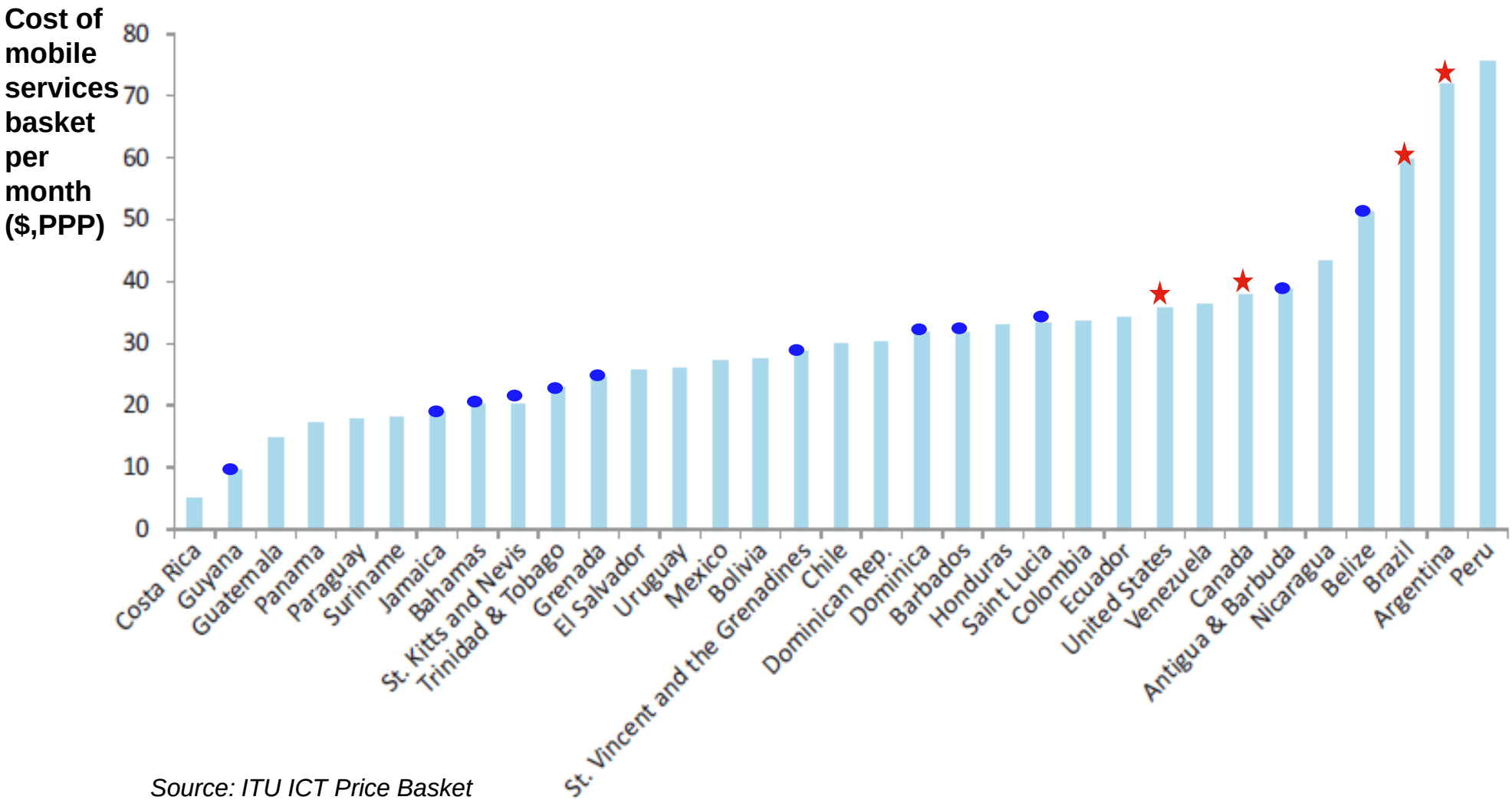
Telecoms liberalization has transformed mobile take-up…

Mobile penetration is amongst highest in the world…



Source: Castalia analysis based on World Bank data

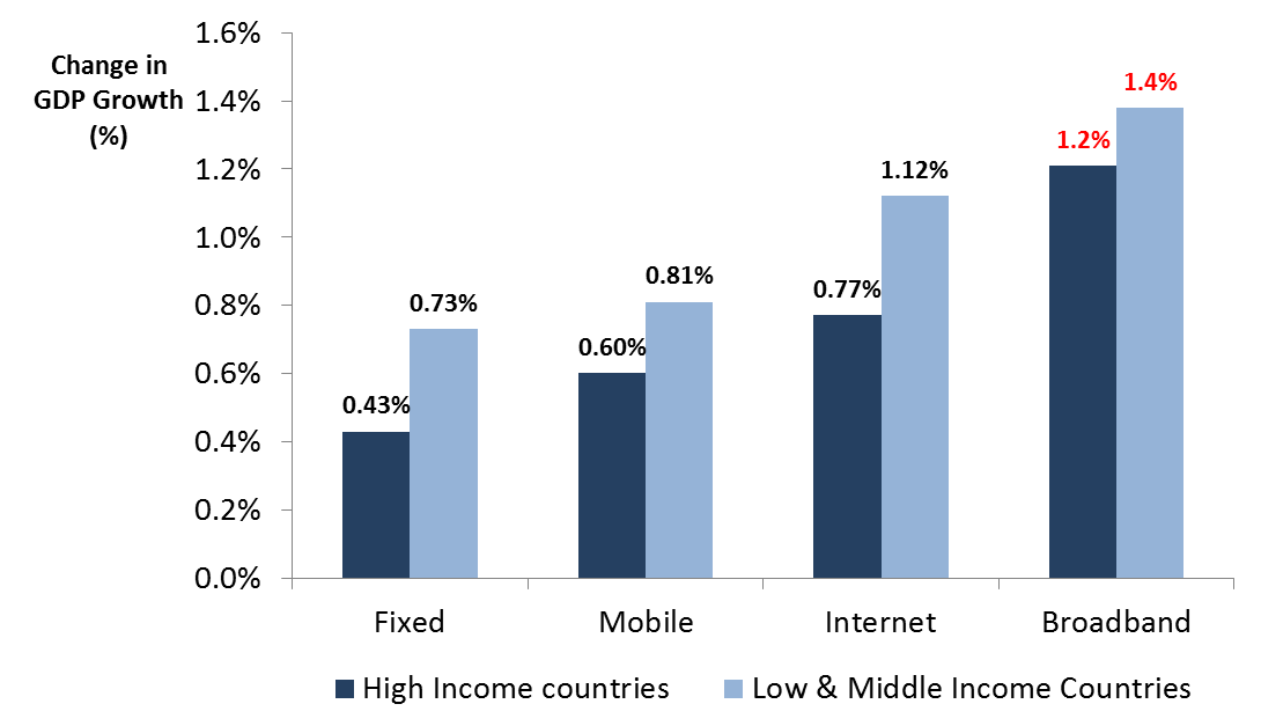
…and regionally mobile prices are competitive compared with larger neighboring markets



Source: ITU ICT Price Basket

Broadband take-up contributes to economic growth

GDP growth effects from a 10% increase in ICT take-up

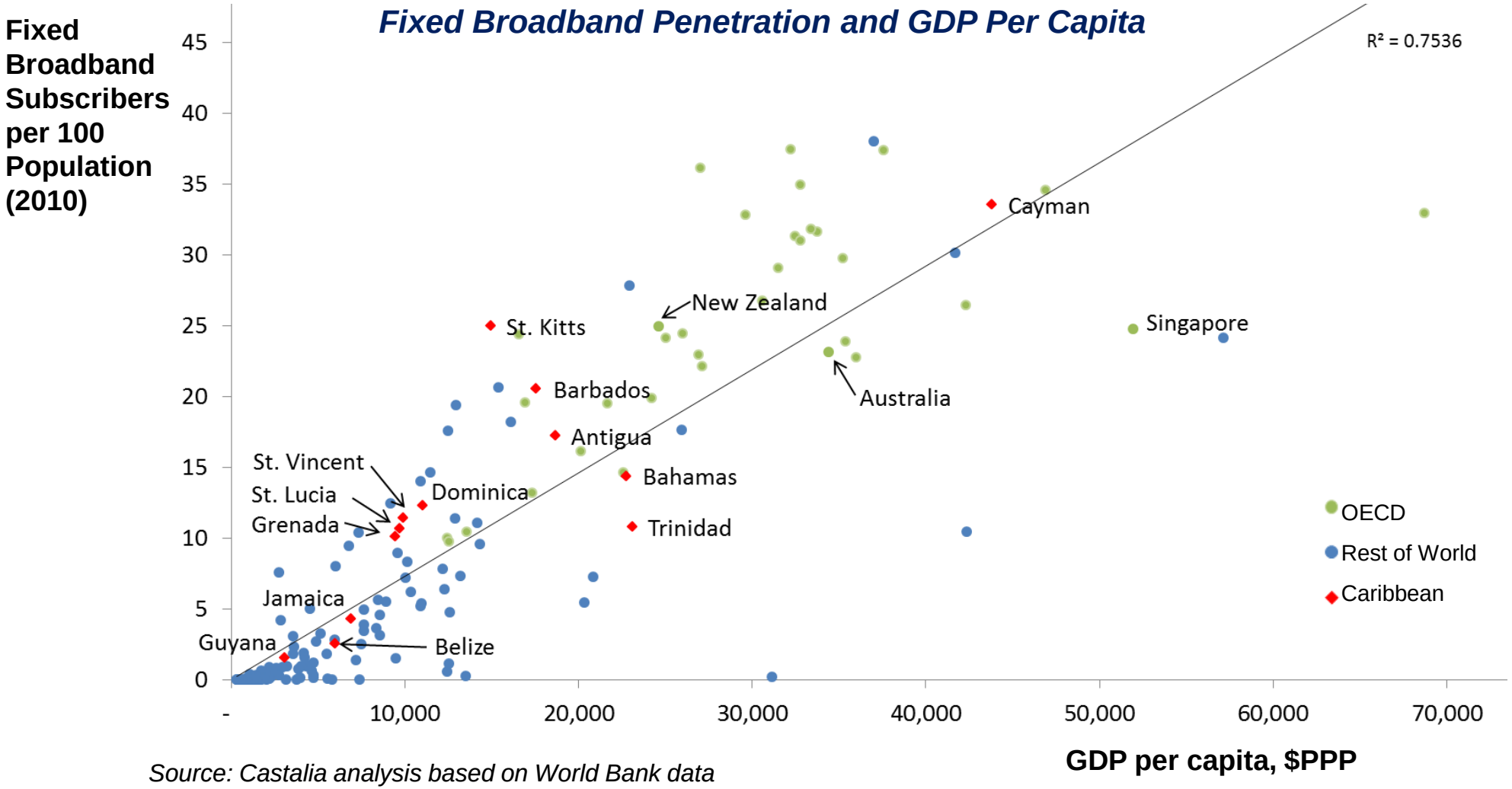


Source: World Bank, 2009

No standard definition of broadband

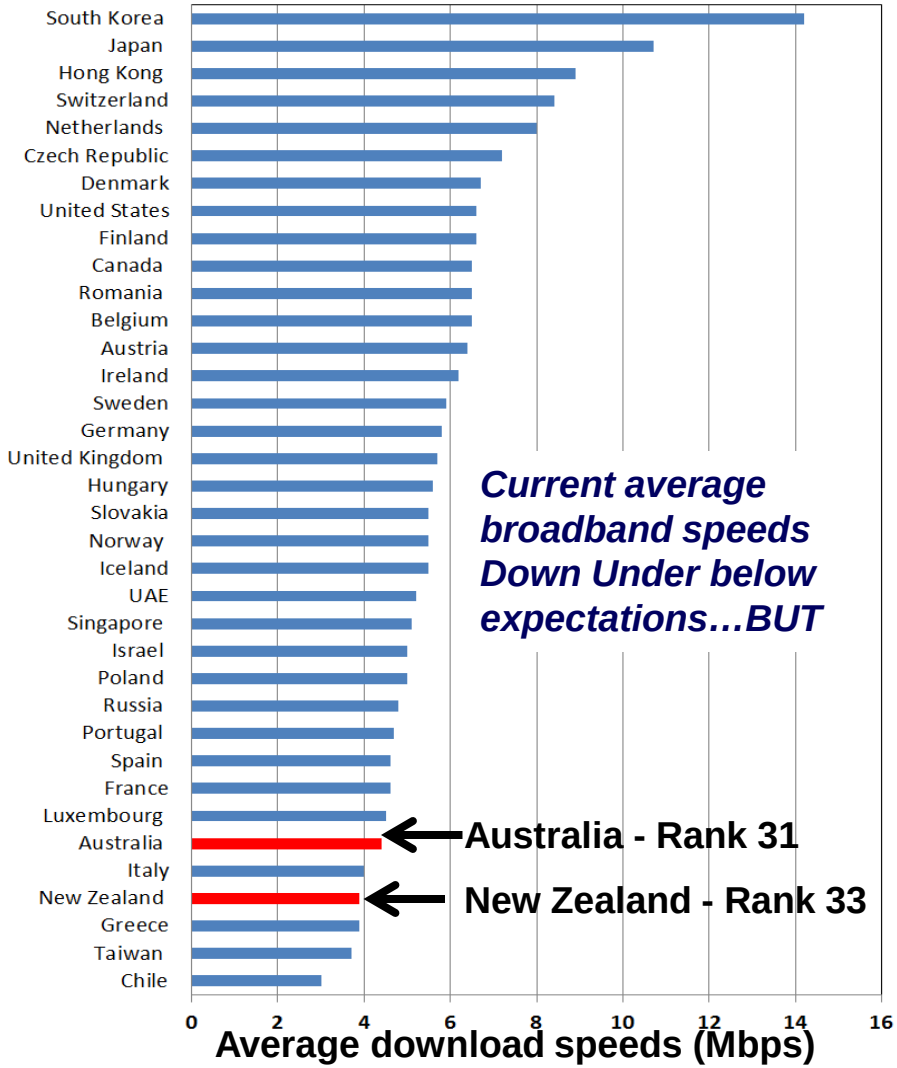
- ITU Recommendation: faster than 1.5 or 2.0Mbps:
  - BUT data currently used by ITU and World Bank based on "greater than 0.256Mbps"
- For the this presentation, we define **ultra-fast broadband** as greater than 40Mpbs

Caribbean fixed broadband take-up shows both over- and under-performers



Source: Castalia analysis based on World Bank data

Governments in the Caribbean may seek ways to promote access to faster broadband as was the case in Australia and New Zealand



Source: Akamai, "State of the Internet", Q2 2012

…recent policies have paved the way towards leadership

Selected countries with ultra-fast broadband targets (2020)

- *Japan*
- *Singapore**
- *Korea*

1,000 Mbps speed

- *Australia**
- *Germany*
- *New Zealand**
- *Sweden*
- *UK*
- *USA*

50-100 Mbps speed

Only 3 countries globally are rolling out new national fibre access networks (*) for ultra-fast broadband services

Australia and New Zealand are relevant to the Caribbean because they are similar

System of Government

Legal system

Small populations, unlike this!

- **Deployment of networks is challenging**:
  - Islands: large or small, archipelago
  - Rugged terrain
  - Remote communities
- **System of telecom regulation**: independent regulator and or competition authorities, licensing regime, *ex ante* and *ex post* regulation

Both countries adopted different policy models to rollout national broadband networks

Model 1: Private sector investment

- Encourage investment and promote competition
- Apply regulation to bottleneck facilities

Issues with this model: Views of Government

New model adopted to provide ultra-fast broadband services

Model 3: Public ownership of broadband access network (Australia)

Model 2: Public-private partnership for network build (New Zealand)

Key elements of the Australian approach

Objectives

- Ubiquitous ultra-fast access
- Uniform national prices
- Enhanced retail competition and avoid access network duplication

Network and rollout

- FTTP supporting 100mbps to 93% of premises;
- Remaining 7% fixed wireless and satellite providing 12mbps

Funding and ownership

- 100% government funded NBN Co, with subsequent possibility of privatisation
- US$40 billion, with US$30 billion provided by Government

Regulatory framework

- Wholesale-only access services (bitstream)
- Regulated through Special Access Undertaking

Competing networks

- Competing copper and HFC networks to be decommissioned – public monopoly
- HFC restricted to payTV services

Incumbent separation

- Structurally separate copper access network as customers migrate to NBN
- “Carrot” (payments from NBN Co for access to ducts and exchanges) and “Stick” (denial of access to LTE spectrum)

Take-aways from Australia: "Don't try this at home!"

- **Requires strong fiscal position of Government to fund 100% of network build**
- **Significant financial costs of shutting down competing networks**
- **Return to public ownership of fixed access network**
- **Raises concern about efficient operation of public monopoly**
- **Not justified by economic cost-benefit**
- **Highly political and subject to change with electoral cycle**

Key elements of the New Zealand approach

Objectives

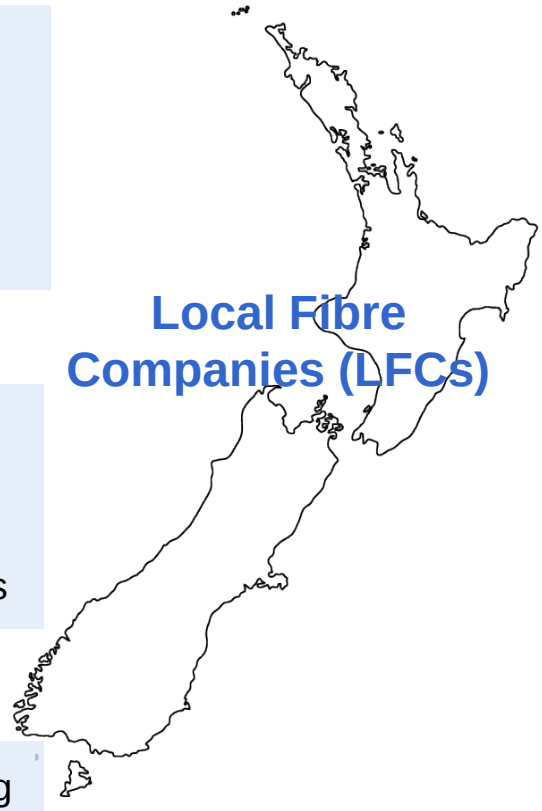
- Accelerate rollout of ultra-fast broadband
- Ultrafast Broadband (UFB) to urban areas and Rural Broadband Initiative (RBI)

Network and rollout

- FTTP supporting 100mbps to 75% (urban areas)
- RBI (mobile): 80% of rural premises to have 5mbps; other 20% at least 1mbps

Funding and ownership

- PPP – US$1.25bn Government funding through Crown Fibre Holdings (CFH) alongside private sector investors
- Creation of Local Fibre Companies (LFCs) in 33 areas with 10 year concession. Selected through tender,



Regulatory framework

- Wholesale-only access services by LFCs (dark fibre and bitstream)
- Price capped by tender process

Competing networks

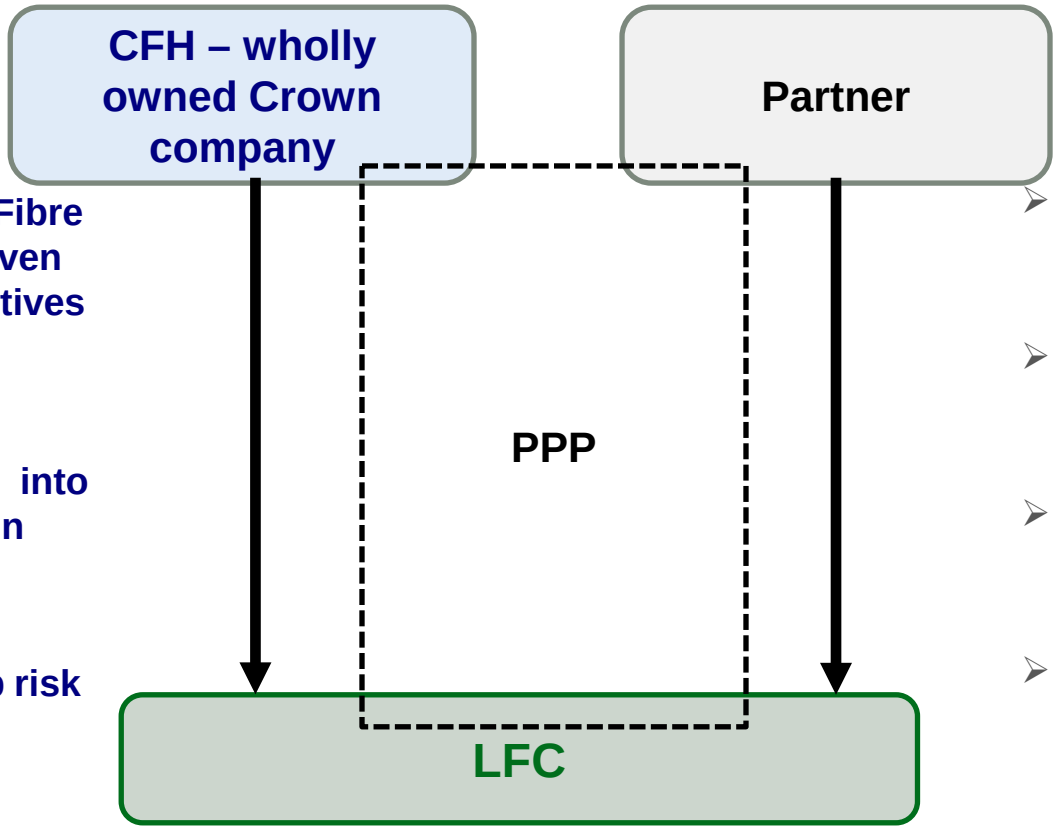
- Existing copper and HFC networks allowed to compete with UFB network

Incumbent separation

- Voluntary separation by TNZ to be eligible for UFB participation (separated access network company, Chorus)
- RBI – mobile operators allowed to operate on vertically integrated basis

Ownership structure of PPP in New Zealand

- Network Investment managed by "Crown Fibre Holdings" (CFH) – driven by Government objectives
- Monitors LFCs performance
- Initial equity injection into LFC to fund network in anticipation of future demand
- Bears service take-up risk
- Total funding capped
- Clear exit strategy



- Private investor/s chosen through competitive tender process
- Funds cost of establishing LFC and drops to customers
- Bears rollout risk: over-runs in cost of LFC infrastructure build
- As end-user take-up increases, Partner buys CFH out of its interest in LFC

- Deploy, own, operate network in a specified area
- Enters into network build agreement with Partners
- Does not provide retail services
- Non-discriminatory access to retail service providers

Take-aways from New Zealand: A more balanced approach

- **Efforts to justify through cost-benefit analysis**
- **Continued reliance on infrastructure competition**
- **Wider use of mobile: 25% of population (in rural areas)**
- **Allows for a staggered network build, initially focusing on business customers, and schools and hospitals**
- **Not purely reliant on government funding**
- **Risk sharing between government and private sector, with clear exit path for Government**

What are the lessons for the Caribbean?

Investment in national broadband networks can be a good way of meeting national economic and ICT objectives provided that:

- Policy makers have a clear Vision captured in a long-term strategy
- The decision to build is justified through a rigorous cost-benefit analysis
- Initiatives address supply of improved broadband services to underserved regions
- A technology neutral approach is adopted: making a technology choice risks crowding out private investment in competing technologies
- Government has the fiscal capacity to make contribution
- Public funding targeted at closing the gap between the full cost of providing desired level of service and available commercial revenues

Best practice is still evolving and approach likely to depend on prevailing policy model and extent of infrastructure competition

Questions?