الشركة العمانية للنطاق العريض
Oman Broadband Company

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Harnessing existing Utility infrastructure for a competitive and rapidly deployed NBN

9th of June 2014

Introduction of the speaker

Stewart White – Regulatory Specialist

AKHET Consulting
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Stewart is a regulatory lawyer by background with more than 30 years of experience. He has worked in many jurisdictions in developed and developing countries advising both the public and private sectors in fixed, mobile and satellite. He was the founding Group Public Policy Director of Vodafone Group plc (where he was known as Vodafone's "Foreign Minister"), and has been a director of many Vodafone operating companies and more recently a director of Etisalat's Nigerian operation.

He was the lead legal advisor on a number of World Bank projects in the Middle East including the privatisations of operators and creation of regulatory authorities in Jordan, Palestine and Oman. He was an advisor to the Australian Government regarding the creation of the NBN, including separation undertakings of Telstra, and other NGN related projects including in Kuwait and Qatar.

In a number of roles he has been involved in the resourcing of newly created regulatory authorities or regulatory departments of operators. He has conducted HR audits while at Vodafone and elsewhere as to core competencies and suitability for roles.

He has been an expert to the European Commission, an advisor to four Secretaries General of the ITU, and was Head of Telecoms for KPMG in Middle East and South Asia between 2010 and 2012. He founded Akhet Consulting in June 2012 and is resident in the UAE.

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1. National backbone (backhaul) infrastructure
2. How to accelerate the development of broadband infrastructure?
3. Mixed buildout and consumer take-up and uptake
4. NGN Regulatory Structure
5. Country Case Studies

Appendix: Other MENA Country Case Studies

National Backbone (backhaul) infrastructure

"Utility Companies with their nationwide infrastructures have a great potential in addressing competition in supply of the national backbone (including backhaul)".

- Source: World Bank Broadband Networks in the Middle East

- Some constraints are:
  - High cost of building new infrastructure and slow roll-out;
  - Low uptake levels until consumers see benefits;
  - Capacity deployed controlled by incumbents – locked in utility companies and telecoms operators' partnerships.
  - Restrictions on access or right to use 'passive' infrastructure for different purposes owing to national legal systems (e.g., on PPPs).
- Frameworks for lowering costs by coordination of civil works are an exception than a common practice
  - Notable exception in region is Bahrain

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How to accelerate the development of broadband infrastructure? (1)

- Promote facilities-based competition;
- Promote consumer awareness of the benefits of broadband;
- Allow use of utilities' dark fibre or even new build for access and 'poles and holes' for sharing;
- Address underserved areas of the country through, e.g., State Funding directly or through Universal Service Funds;
- Introduce new models of infrastructure supply; and
- Implement measures to decrease deployment costs such as coordinated civil works.

How to accelerate the development of broadband infrastructure? (2)

Utilise poles, ducts and dark fibre of utilities through:

- Regulatory frameworks suboptimal and result in barriers to entry
  - can be opened to competition through:
    - » passive Infrastructure Sharing – 'poles and holes'
    - » active Infrastructure Sharing - Utilities' 'dark fibre'
    - » deployment of own infrastructure
- Non-discriminatory and transparent access to utilities' networks;
  - enable utilities to wholesale capacity
- International and national interconnection regulation;
- Wholesale bitstream access; and
- Regulation of leased lines.

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Appendix: Detailed Country Case Studies

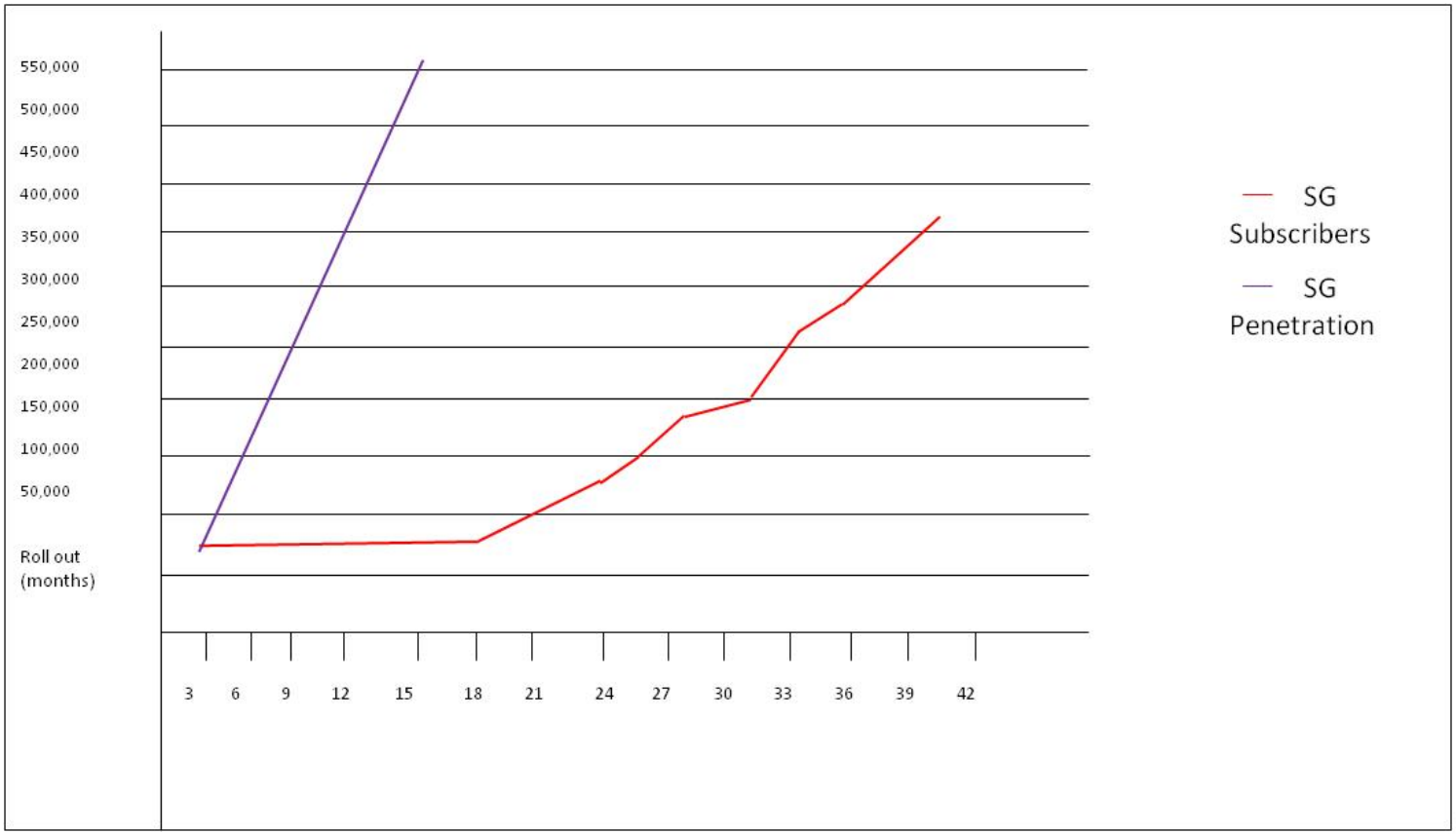
Mixed buildout and consumer take-up and uptake

- Hong Kong
- Singapore
- Australia
- New Zealand

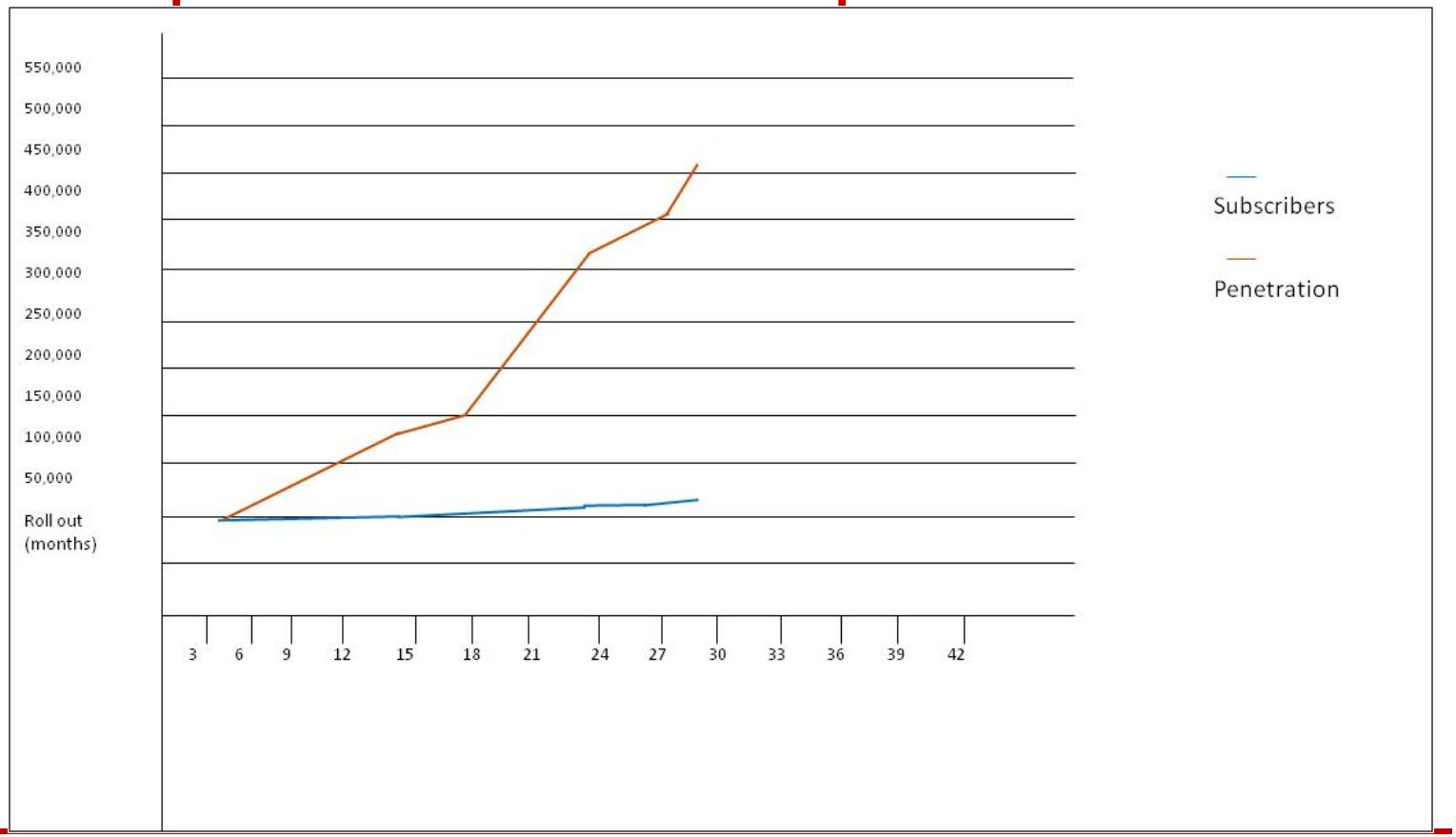
Hong Kong

- Penetration 95%+
  - 87% of residential subscribers take a fixed broadband service
  - 70% are fibre fixed subscribers compared to 30% DSL subscribers
  - Fibre uptake 65%

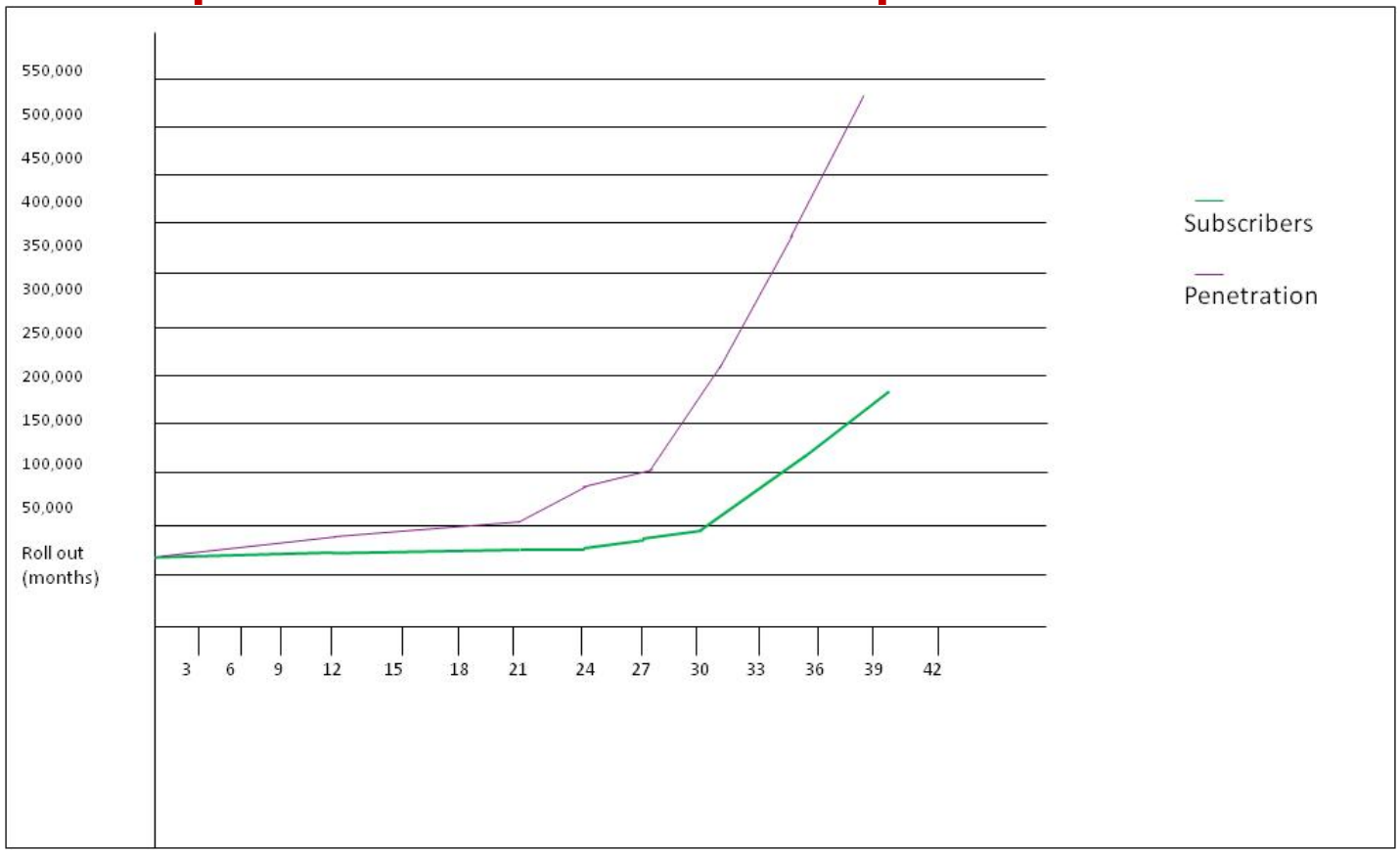
Fibre penetration and uptake: Singapore



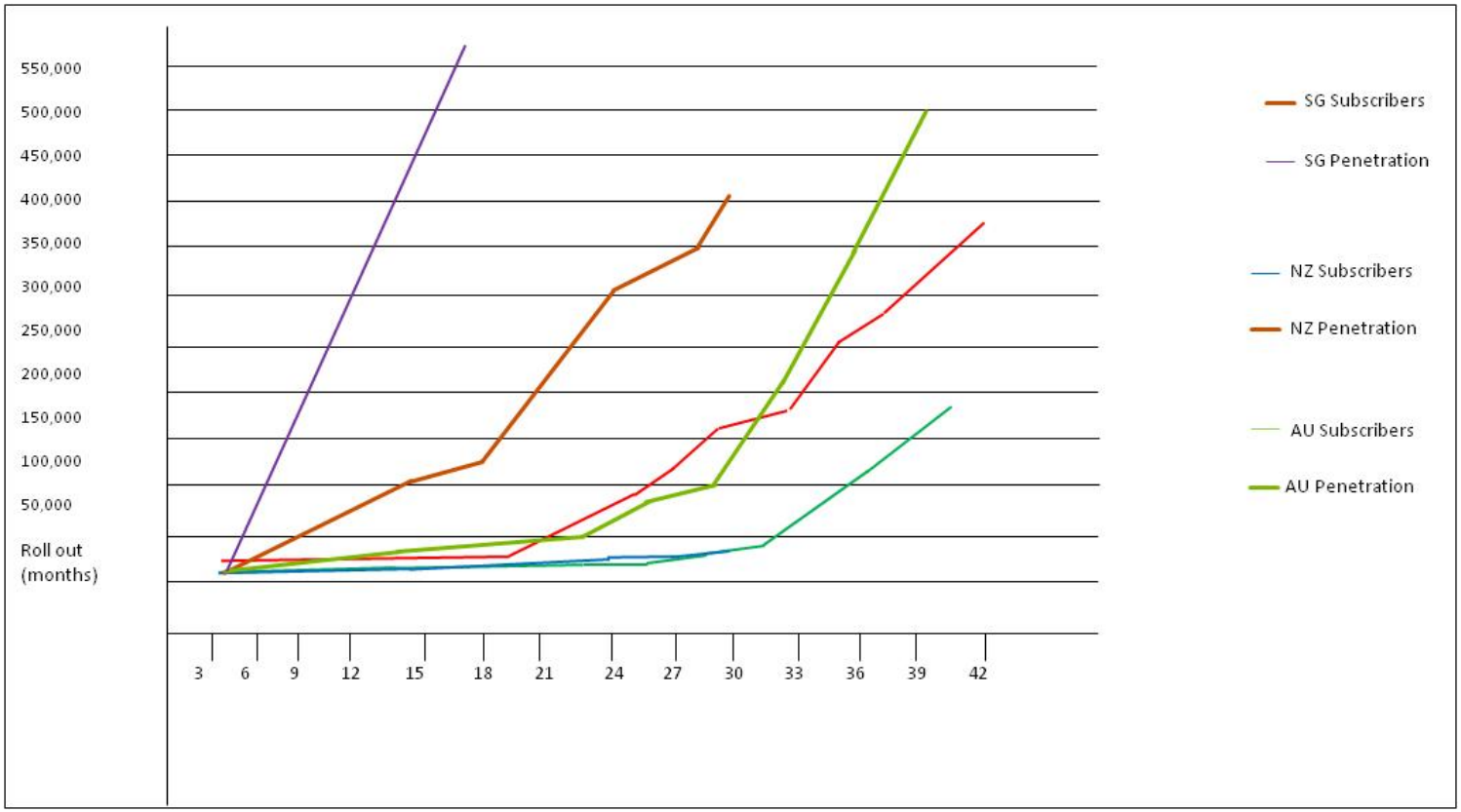
Fibre penetration and uptake: New Zealand



Fibre penetration and uptake: Australia



Fibre penetration and uptake: Singapore, New Zealand, Australia



State Funding

Hong Kong	**No State Funding**
Singapore	**SGD 1 billion ($750/$250m)**
	grant on reaching build/uptake target
New Zealand	**NZD 1.35 billion**
	concessional funding to private sector participants
Australia	**AUD 37.4 billion**
	$30.4 billion investment
	$7 billion debt

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NGN Regulatory Structure (1)

NGN regulatory structure is directly related to degree of state funding where the greater level of funding, needs more intrusive the regulatory model:

- **Hong Kong:**
  - Private sector roll out relying on market forces, with no state funded incentives
- **Singapore:**
  - Private sector roll out with state funded incentives
- **New Zealand:**
  - Private public partnership with state funding by way of equity, grant or subsidy
- **Australia:**
  - State owned and operated entity

NGN Regulatory Structure (2)

- **If significant state funding is provided, regulatory structure typically involves either:**
  - A structurally separated NBNCo; or
  - A functionally separated operator with operational separation between the network and downstream retail operations.
- **A common element of both structural and functional separation models is an open access obligation**
  - network services are provided on transparent and non-discriminatory terms to all customers, with self-supply on an equivalent basis
- **If no state funding, the traditional vertically integrated telecommunications service provider model is the norm**
  - Government should refrain from intervention when the market is functioning efficiently

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Country Case Studies

- **Algeria**
  - Licensed telecom operators – Mobilis-AT (state owned); Djezzy Orascom; and Nedjema (Ooredoo)
- **NZ**
  - Licensed telecom operators – Telecom NZ; Vodafone and 2 Degrees plus MVNOs

Country Case Studies: Algeria (1)

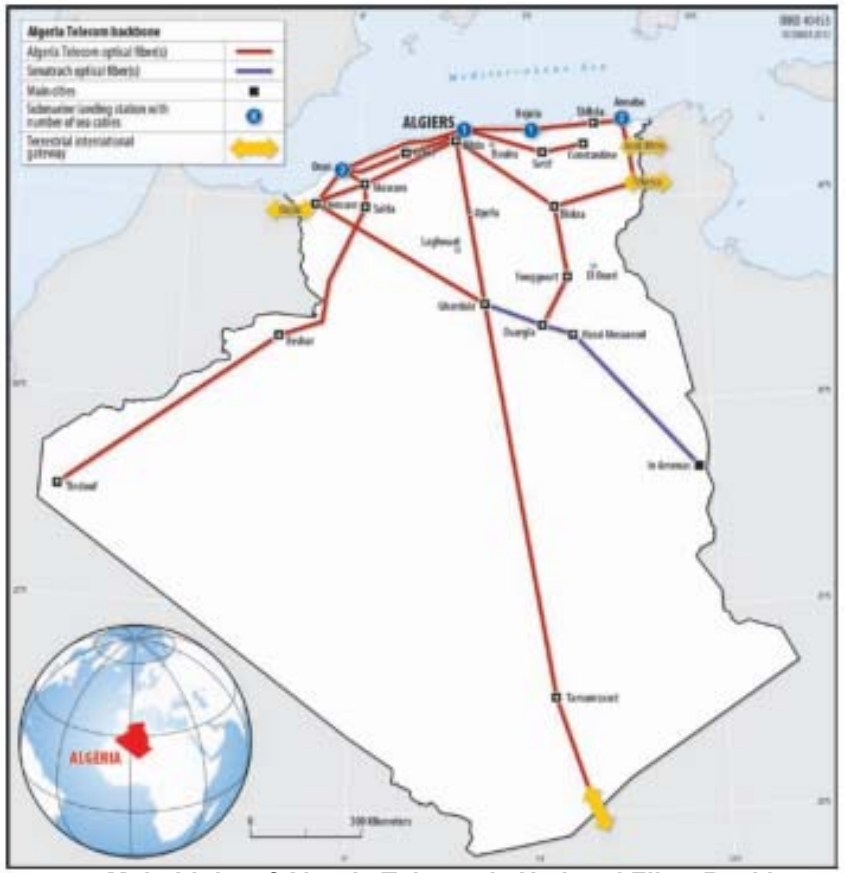
- Backbone connectivity addressed by leveraging 'passive infrastructure sharing' & 'deployment of own infrastructure'
- International backbone links expensive – need regulation
- Three infrastructure sources not used for ICT:
  - energy – Sonelgaz
  - oil & gas – Sonatrach (linked to STEG Tunisia and ONEE Marocco; and
  - railroads – SNTF linked to ONCF Tunisia and SNCTF Morocco
- CITA – government created to "manage the available resources in fibre optics…"
  - consortium of Algeria Telecom (51%), Sonelgaz (20%), Sonatrach (20% and SNTF (5%)

Country Case Studies: Algeria (2)

- Algeria Telecom ‘functionally’ separated from CITA
- Alternate infrastructure extensive coverage but not fully leveraged due to legal and regulatory constraints
- CITA should improve position
- Effective open access with regulatory oversight missing

Country- Case Studies: Algeria (3)

Red – Algeria Telecom Optical fiber(s)



Main Links of Algeria Telecom's National Fiber Backbone

Country- Case Studies: Algeria (4)

Red – Submarine Cable

Blue - Terrestrial Cable

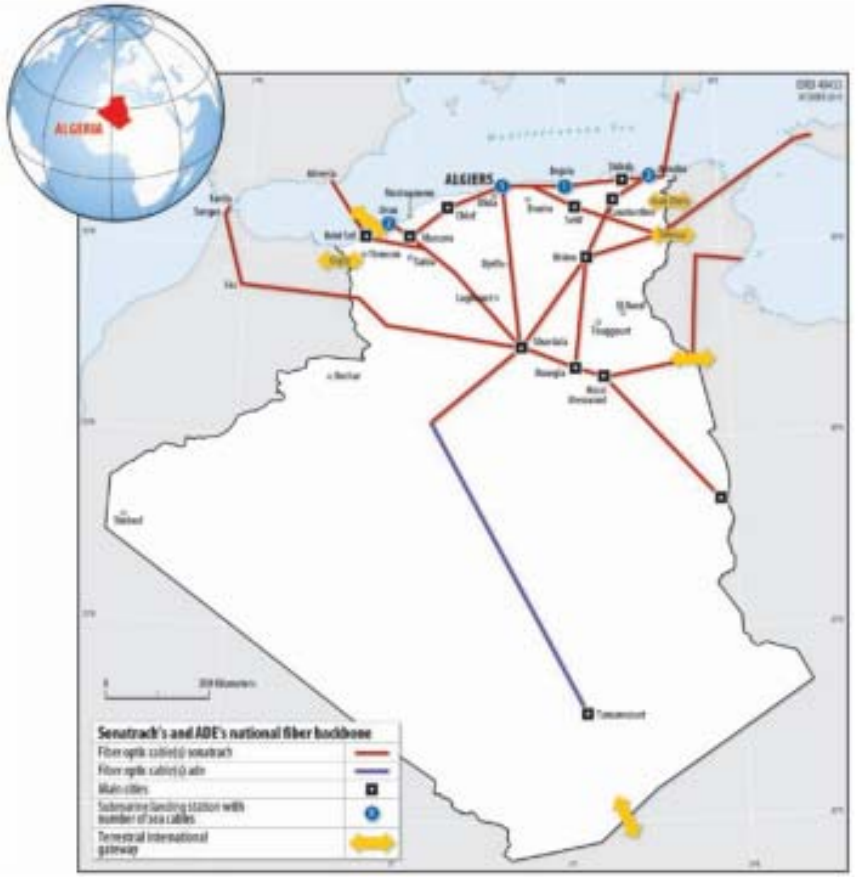
Main Links of Djezzy's National Fiber Backbone

Country- Case Studies: Algeria (5)

ADE - Algérienne des Eaux

Red – Fiber optic cable(s) Sonatrach

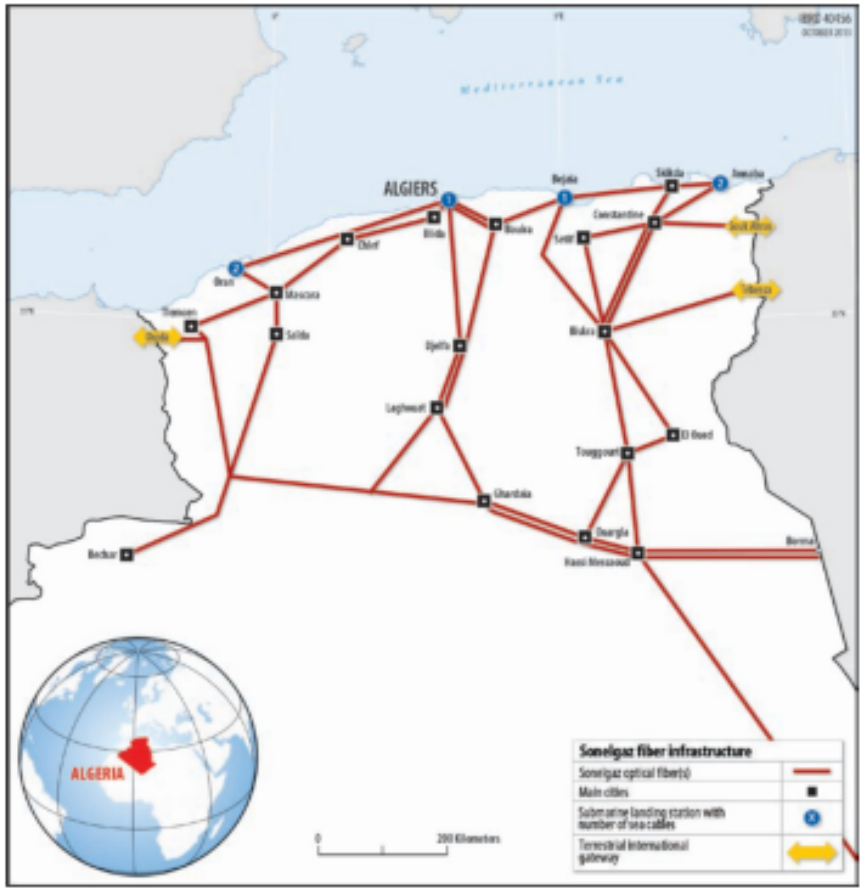
Blue - Fiber optic cable(s) ADE



Main Links of Sonatrach's and ADE's National Fiber Backbone

Country- Case Studies: Algeria (6)

Red – Sonelgaz optical fiber(s)



Source: World Bank. **Key Characteristics of Sonelgaz's Fibre-Optic Infrastructure**

Country- Case Studies: Algeria (7)

Red – SNTF Optical Fiber(s)

Source: World Bank

Key Characteristics of SNTFs Fibre-Optic Infrastructure

Country Case Studies: New Zealand (1)

- As result of New Zealand Ultra Fast Broadband (UFB) tender, two utilities (NorthPower and WEL) won contracts to build network in local distribution areas:
  - combination of new build plus existing passive infrastructure; and
  - can offer sharing in other candidate areas.
- NorthPower and WEL in these c-ontract areas:
  - must offer non-discriminatory local access; and
  - are restricted to being wholesale providers

Key Aspects of UFB Initiative

Open access fibre infrastructure

$1.5 billion of Government funding through Crown Fibre Holdings (CFH) alongside private sector co-investors

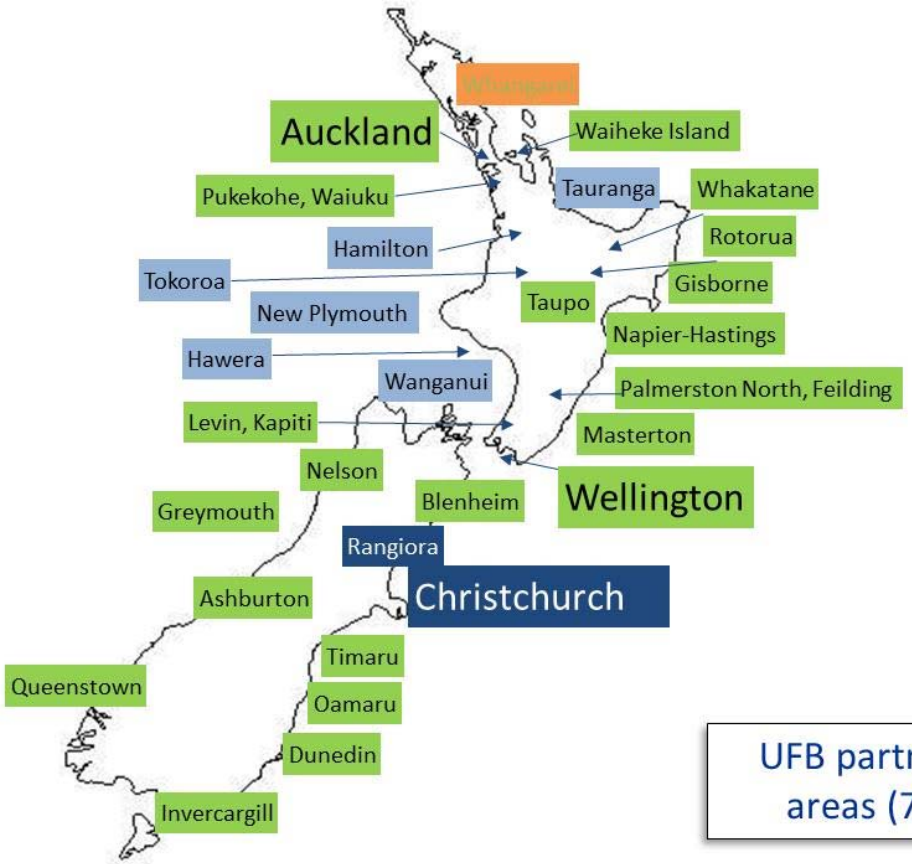
Creation of private Local Fibre Companies (LFC)– 33 candidate areas
TWO UTILITY COMPANIES SECURED 7 CANDIDATE AREAS

Priority to schools, hospitals, and businesses over the first six years

LFC's to provide Layer 1 and 2 services and are prohibited from entering the retail market

Therefore, to participate in UFB, Telecom was required to structurally separate

UFB Candidate Areas



	Candidate Areas	% of UFB
enable NETWORKS	2	15.3
Northpower	1	1.6
Chorus	24	69.4
WEL NETWORKS	6	13.7
	33	100.0

UFB partnerships will cover all 33 candidate areas (75% of NZ population) by end 2019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