



NGNBN Case Studies

Next Generation National Broadband Network Country Profiles

NGNBN Initiatives in Asia Pacific: Overview

Country	Date Announced	Total Investment (USD Mn ¹)	Investment Per Capita (USD)	Type of Investment			Industry Structure Post Separation		
				PPP	Ownership	Financial Incentives	New Network Co.	New Network Co. & Separation	Existing Industry Structure
Australia	April 2009	3,300	159	X				X	
Hong Kong	2004-2007 (multiple initiatives)	n/a	n/a		X				X
Japan	2006	267	2		X	X	X		
Korea	1995-2009 (multiple initiatives)	1,500	31			X			X
Malaysia	August 2008	680	27	X					X
New Zealand	March 2009	980	233	X				X	
Singapore	Sep. 2008 & Apr. 2009	700	152	X				X	

1) Refers only to state-aid financial support

Source: Booz & Company analysis

NGNBN Country Profile: Australia

Incumbent Position

- Telstra initially submitted a proposal for participating in country's national broadband network deployment plan; its proposal has been rejected as non-compliant to the tender documentation
- Since, Telstra is examining its possible options vis-à-vis the recently announced government's NGNBN plan: it can either proceed in building own fiber access network, reduce fixed Capex and migrate customers gradually to NGNBN and/or vend fixed network into the NGNBN and in return possibly receive a stake in the NGNBN network

Regulatory Position

- The open access NGNBN network will naturally transform the competition dynamics in Australia
- Until the network roll-out, the government is determined to improve competition through regulatory reform
- The government initiated a comprehensive public consultation process in April 2009 and is considering key options for reform including: access regulation processes by ACCC, stronger ACCC powers to tackle anti-competitive conduct and measures to better monitor Telstra's functional separated entity

Key Takeaways

- Expected to reach 100% broadband coverage and speeds approx. 100 times faster than current speeds, by 2017
- Targeting to create around 25,000 jobs per year for the duration of the project
- Government will finance only 11% of the total AUD 43bn (US\$ 30.2bn) project; PPP scheme

Competitor Position

- All key fixed and mobile competitors, either on a stand-alone basis or by forming consortia, have submitted proposals to participate in government's NGNBN plan
- However, all have been rejected on the grounds of lacking "fully developed project plan" or not proving "value-for-money"
- Currently, they are all preparing to participate in government's NGNBN PPP plan, by bidding for network rollout in individual territories/areas

Government Position

- Government's intentions to proceed with NGNBN build-up have been mainly triggered by the lack of high-speed fiber access in the country, lack of effective competitive landscape in broadband markets and challenges faced by operators in achieving 100% fiber access population coverage
- Hence, government decided to establish a new independent company responsible for building the next-generation broadband access network, targeting to cover 100% Australian households by 2017

- Possible network duplication in the country especially if Telstra does not cooperate
- Difficulty in achieving effective competition for the coming 8 years

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Australia	April 2009	3,300	159	X				X	

Source: Booz & Company analysis

NGNBN Country Profile: Hong Kong

Incumbent Position

- Although incumbent operator PCCW has been the last, of the four to launch its national NGNBN network, it currently controls around 60% of the broadband market
- PCCW tries to remain competitive in the market by launching new and innovative services and applications (e.g. quad-play, digital pay-TV), fully leveraging its own high-speed access network and customers' loyalty
- It currently enjoys very healthy operational margins, in excess of 25%

Regulatory Position

- OFTA has in general adopted a "hands-off" approach, allowing market dynamics to lead sector growth
- Its role is to restrict anti-competitive behavior and ensure all end-users enjoy innovative services
- It has been one of the first countries to examine regulations in the new NGN environment
- In parallel, OTFA has undertaken a number of initiatives to increase the expansion of broadband use within the community (e.g. it launched an education program about the use of PCs and internet in home)

Key Takeaways

- Hong Kong's geography along with the government's early policies succeeded in making the country a global ICT leader
- Availability of four highly competitive, private-owned high-speed access networks allows end-users to enjoy new and innovative services and applications

Competitor Position

- Currently three operators, HKBN, HGC, HKCTV, in addition to PCCW, cover most of the territory through independent networks
- As such the competition in the market is mainly "facilities-based" rather than "services-based"
- HKBN was one of the first operators in the world to launch FTTH deployment
- HKBN offers world's fastest connection that could reach up to 1 Gbps for residential customers; it has invested HK \$ 2.6Bn in establishing its own network

Government Position

- The government of Hong Kong, as early as 2000, set a policy to push for NGNBN and licensed several facility based providers to compete
- Government's role, in general, is limited to creating and maintaining a healthy environment for investors to compete fairly and obtain reasonable return; it has not imposed any restrictions on foreign ownership
- Telecommunication infrastructure and services are predominately operated by the private sector

- Regulatory burden in mandating and defining interconnection and access to NGN infrastructure for the provision of services, applications and content
- Lack of government's control in operators' decision making process

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Hong Kong	2004-2007	n/a	n/a		X				X

Source: Booz & Company analysis

NGNBN Country Profile: Japan

Incumbent Position

- Incumbent operator NTT deployed the first fiber network across the country, excluding rural areas
- It has invested JPY 1.8Bn (US\$ 18 Mn) on its own FTTH network, offering retail services to its end-users as well as fiber access wholesale services to ISPs

Regulatory Position

- Ministry of Internal Affairs and Communication (MIC), also acting as country's regulator, played a pivotal role in establishing "U-Japan" policy in the country
- Its main focus has been on the one hand to regulate open wholesale access on operators' fiber access networks, enabling ISPs to compete on fair grounds, while on the other to ensure that rural areas are not excluded from the transition to the digital era
- Hence, it launched relevant policies to eliminate broadband-zero areas by 2010

Key Takeaways

- Japan's early vision along with its focus on broadband coverage in rural areas helped Japan become an ICT leader
- Government played a complementary role in operators' deployments in commercial areas
- In parallel, it stimulated demand through promoting ICT literacy, facilitating e-commerce, subsidizing rollout

Competitor Position

- Several competitor operators and utility companies have deployed their own fiber access and backhaul network
- Key characteristic for all of them is their focus only in commercial areas, not covering rural areas
- Examples of TTNNet, Chubu Telecom Network, Osaka Media Port offering services in Kanto, Kinki, Chubu as well as Tokyo Electric Power (TEPCO) and Usen, utility companies, in similar regions

Government Position

- Triggered by country's low broadband penetration, low speeds and very high prices, government launched in 2004 the "U-Japan" policy, further complementing previous "e-Japan and "e-Japan II" strategies
- "U-Japan" targets to eliminate broadband zero area by 2010 and make 90% of households to access ultra high-speed interactive broadband by 2010
- Grant-in-aid was provided for local self-governing bodies to establish next-generation broadband network companies in their respective areas, offering open access to service providers

- Lack of ability to put pressure on operators to also deploy networks and offer services in rural areas
- High project's investment risk as demand and services uptake in rural areas not yet proven

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Japan	2006	267	2		X	X	X		

Source: Booz & Company analysis

NGNBN Country Profile: Korea

Incumbent Position

- Incumbent operator, KT, became a privately owned company in 2002 and since began concentrating on building its own broadband network
- KT is the main broadband provider in the country, controlling around 45% of the market
- Due to its rather late privatization, government played an important role in ensuring the creation of a national broadband champion in the country
- It also recently merged with its mobile arm (e.g. KTF), in an attempt to offer converged services

Regulatory Position

- The newly established regulatory entity, Korea Communications Commission (KCC) has been in close cooperation with the Ministry (MIC) in implementing national broadband strategy
- One of the primary goals is to enable both wireline and wireless broadband technologies diffusion; it supports WiBro technology for wireless access
- Overall, infrastructure investment is enabled by the minimization of regulatory risk, through the creation of a stable and transparent regulatory environment

Key Takeaways

- Korea's geography and demographics along with its conducive regulatory regime helped it become a leader in ICT development
- Government has contributed in NGNBN development but allowed market forces to pave the way
- In parallel, it stimulated broadband demand by embarking several initiatives

Competitor Position

- KT main competitors include SK Broadband, MSO and LG Powercom (market shares of 22%, 18% and 14% respectively)
- They all compete on speed, price, reliability and customer service in urban areas, being able to offer services of up to 1Gbps
- Intense competition on the high-speed broadband access allows end-users to enjoy new and innovative services as HDTV, telemedicine etc., in low prices

Government Position

- The Korean government has established a comprehensive plan for the Korea Information Infrastructure (KII), as early as March 1995
- The initial plan was to provide broadband networks to all households in the form of FTTH by 2015; target date was brought forward to 2010 in 1999
- The entire plan was estimated at US\$ 24.5bn out of which government would invest US\$ 1.5bn
- Government also provided low interest rate loans, of up to US\$ 1bn, to private entities for NGNBN deployment

- Late privatization of the incumbent operator, has given KT a competitive advantage, in the broadband market, compared to other operators
- Current policies and regulations are possibly not sufficient to significantly alter market structure, on the way forward

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Korea	1995-2009	1,500	31			X			X

Source: Booz & Company analysis

NGNBN Country Profile: Malaysia

Incumbent Position				Regulatory Position			Key Takeaways		
<ul style="list-style-type: none"> In August 2008, Malaysian Government announced that TM will undertake the RM 11.3bn (\$3.3 Bn) High-Speed Broadband (HSBB) project, under PPP scheme The government will invest RM 2.4 Bn (\$0.68 Bn), over the first 3 years (phase 1) matching TM's contribution; phase 2 will be fully financed by TM TM plans to connect 1.3 Mn households to HSBB by 2012 (phase 1) and 2.2 Mn households by 2018 (phase 2) - all in high economic impact areas HSBB project is in line with TM's strategic aspirations to become the domestic broadband champion 				<ul style="list-style-type: none"> MCMC has been quite supportive of the HSBB plan, trying to ensure in parallel a competitive landscape Incumbent operator, TM, is obliged to offer a set of wholesale services to all qualified licensed operators, based on commercial negotiations Overall principles of "open and equal access at competitive pricing" will apply, over the course of the project However, TM, will be obliged to operate under a regulated "open access" regime after 2015 			<ul style="list-style-type: none"> In line with Government's Master Plan to transform country into a knowledge-based economy by 2020 Expected project to yield to 0.6% GDP growth and create 135 thousand new jobs Target to increase broadband penetration to 50% by 2010 		
Competitor Position				Government Position					
<ul style="list-style-type: none"> High Speed Broadband Technology (HSBT) is another company that has announced the built-up of a fiber access network, targeting to connect more than 0.57mn users in the area of Kuantan HSBT is backed by the Pahang government (third largest state in Malaysia), Japanese and Korean vendors With regards to other key ISPs (around 20), when TM published HSBB project's Indicative Terms & Conditions (ITC), in May 2009, they all expressed their interest in purchasing wholesale services 				<ul style="list-style-type: none"> HSBB is part of the government's 2000 Master Plan of transforming the country from production-based to knowledge-based economy by 2020 Government expects to achieve 0.6% GDP growth (approx. \$1.5bn) and create 135 thousand new jobs Also, it targets to increase broadband penetration to 50% by 2010 (approx. 10% fiber access) Allocating HSBB project to TM has been justified on the grounds that TM is the best suited operator to undertake the deployment of the national fiber access network 			<ul style="list-style-type: none"> No transparency in assigning contract to incumbent operator, TM Lack of warranties for a fair access on fiber network, at wholesale level Lack of transparency on wholesale pricing (first 7 years) Not ruled out the possibility of other operators deploying fiber access networks (investment duplication) 		
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Malaysia	August 2008	680	27	X					X

Source: Booz & Company analysis

NGNBN Country Profile: New Zealand

Incumbent Position

- In March 2008, incumbent operator Telecom New Zealand (TNZ) created its functional separated entity, Chorus
- TNZ planned that Chorus would play a key role in offering equivalent passive and active NGN wholesale services, on a nationwide scale; however, its suggestion was rejected by the government
- TNZ is currently examining its positioning on whether to proceed with its fiber access plans or participate and co-invest on government's CFIC (Crown Fiber Investment Co.) project

Regulatory Position

- The state-owned investment company, Crown Fiber Investment Co, (CFIC) will drive the government's investment and will work alongside private sector co-investors,
- Under a PPP scheme, 25 regional Local Fiber Companies (LFCs) will be established, mandated to offer wholesale dark fiber access services to providers, under an open access regime
- Necessity for regulatory intervention and price controls is yet to be defined

Key Takeaways

- Government realized that a radical move is requested to change market dynamics; hence it launched the state-owned CFIC project
- It is expected to yield to 75% FTTH population coverage by 2019, create economic benefits of US\$ 1.6bn-2.9bn and assist country move out of the financial recession

Competitor Position

- Country's three major mobile operators have been highly critical of the plan (commissioned joint study with TNZ), arguing that market forces should predominately drive fiber access deployment
- Other ISPs, alternative operators and utility companies have been strongly supporting government's proposal and they have all expressed their interest in participating in LFCs (Local Fiber Companies) scheme

Government Position

- The newly elected government of the National Party has decided to proceed with its NZ \$3 Bn (US\$ 1.9 Bn) FTTH plan, as of early-2009
- It targets to reach 75% FTTH population coverage by 2019 while yielding annual economic benefits of NZ\$2.4 Bn (US\$ 1.6 Bn) to \$4.4 Bn (US\$ 2.9bn)
- Government speculates that a radical plan, like the creation of CFIC is needed in order to assist the country reach its goals and create a truly competitive market

- Lack of transparent legal and regulatory framework with regards to ownership / governance structure of regional LFCs
- Still have not ruled out the chance that incumbent also deploys its own fiber network (duplication)

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NGNBN Country Profile: Singapore

Incumbent Position

- SingTel, Singapore's incumbent operator, has been the main shareholder of the consortium (OpenNet) that has won government's NetCo tender
- In addition to the three-tier model suggested by the government (NetCo: wholesale wireline, OpCos wholesale bandwidth services and Retail service providers), SingTel further proposed to separate asset ownership into OpenNet and AssetCo, that would lease SingTel's passive infrastructure
- SingTel will receive subsidies of up to SGD 750 mn (US\$ 525mn)

Regulatory Position

- As part of iN2015 announced in 2006, the IDA identified a need to develop a next generation fixed National Broadband Network
- The fixed National Broadband Network (NBN) is intended to be nationwide and reach across Singapore, targeting to offer a minimum of 50 Mbps uplink and 100 Mbps downlink per end-user connection, scalable up to 1 Gbps
- IDA is now requested to enforce all necessary regulatory levers in order to monitor project's successful implementation

Key Takeaways

- Two-tier governmental intervention in order to ensure supply as well as boost demand
- Adoption of an innovative business model to ensure open, fair and transparent access to high-speed broadband access network
- Stimulate demand through educating communities and fostering next-gen applications

Competitor Position

- Second mobile operator, StarHub, has been the winning entity of the OpCos RFP, based on its Nucleus Connect proposal
- NetCo (e.g. SingTel consortium) has been forbidden in owning OpCo, in order to ensure independence
- OpCo will be subject to price controls through an Interconnection Offer (ICO)
- StarHub will receive subsidies of up to SGD 250 mn (US\$ 175mn)
- Other competitors have also bid for the two tenders (NetCo, OpCo) with no further success

Government Position

- Launch of NGNBN project is in line with Singapore's iN2015 strategy to constitute country No.1 in harnessing infocomm, adding value to the economy and society
- Government, in conjunction with IDA, has adopted the most innovative business model, enforcing both functional and structural separation to industry players
- Government has committed to invest up to SGD 1,000 mn (US\$ 700mn) in supply and demand initiatives (e.g. network rollout / waive installation charges etc.)

- No precedent of such business model worldwide
- Requirement for close regulatory monitoring
- Creation of extra layers of relationships that are time consuming

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