Development of a National Broadband Strategy
Outline of Broadband strategy

Workshop

Gaborone, 9-10 April 2013

Agenda

- Mobile Broadband Licensing
- Fixed Wireless Access Infrastructure by VANs
- xDSL infrastructure
- FTTX Infrastructure
- Satellite Access
- Funding and Implementation Mechanisms
- Implementation Methodology

Mobile Broadband Licensing

Mobile Broadband licensing (1/4) – Section 6.1.1

Recommendation 19: All mobile operators shall provide broadband services in Clusters 4, 5 and 6 (49 Villages/Towns):

a) BOCRA should require all operators with 3G-spectrum to provide broadband services in Clusters 4, 5 and 6 without any subsidy from BOCRA or the Government.
b) Each operator shall provide full 3G/4G coverage in each village/town in Clusters 4, 5 and 6 accordance with boundaries and coordinates defined by BOCRA and within a period of no more than 3 years.
c) BOCRA should identify and assign 4G spectrum to all operators who agree to comply with requirements (a) and (b). Operators with 4G spectrum should be allowed to determine villages and towns where they will use 3G or 4G spectrum.
d) 4G spectrum shall only be made available to operators who agree to comply with requirements (a) and (b).

Question 4: All mobile operators shall provide broadband services in Clusters 4, 5, 6 (mainly urban areas):

a) Which parts of Recommendation 19 do you agree with?
b) Please state which parts of Recommendation 19 you do not agree with. State you reasons for disagreement.
c) Provide alternatives to the recommended proposals with supporting arguments for your proposals.

Mobile Broadband licensing (2/4) – Section 6.1.2

Questions 5: Which option should be adopted as regards rolling out mobile broadband infrastructure in Clusters 1, 2 and 3 (mainly rural areas)?

a) Issue a single **non-exclusive** nationwide mobile broadband licence?

   i. Advantages:

      - Large market => Competitive bids => Lower Subsidy
      - Large market => Increased chances for sustainability

   ii. Disadvantages:

      - Rollout would take a long time
      - Creates a monopoly for bb services in Areas 1, 2 &3

b) Should BOCRA subdivide the country into regions and issue a mobile broadband licence for each region?

   i. Advantages: - Faster rollout

   ii. Disadvantages:

      - Reduces market size => may lead to higher total subsidy
      - Risk of perpetual subsidies to sustain services

Mobile Broadband licensing (3/4) – Section 6.1.2

Questions 5: Which option should be adopted as regards rolling out mobile broadband infrastructure in Clusters 1, 2 and 3?

c) Feasibility of a joint company to rollout 4G infrastructure?

i. Advantages:

- Shared CAPEX => Reduces cost for each operator
- May reduce subsidy
- Diverse services for consumers
- Reduced cost of services for consumers

ii. Disadvantages:

- Agreement on structure, operation etc. of co difficult
- Creates monopoly broadband operator in Areas 1 – 3.
- Might be no business case for a 4G co in Areas 1 – 3 only.
- BOCRA – Prefers competitive process for PTOs licences.

Mobile Broadband licensing (4/4) – Section 6.1.2

Questions 5: (Continued):

d) RAN equipment sharing. Two options:

- Jointly owned infrastructure (shared CAPEX)
- Single owner with Indefeasible Rights of Use (IRUs) for others.

i. Advantages:

- Share the cost of network
- Each operator keeps its identity
- Consumers benefit – All operators at each location
- Retains benefits of full competition with shared cost.
- Shared cost increases prospects for profitability

ii. Disadvantages:

- For shared CAPEX – Agreed formula for CAPEX sharing.
- Shared CAPEX – Delays due to procurement procedures.
- Shared CAPEX – Defeats benefits of licence tendering
- For IRU – Above N/A for IRUs but operators must publish IRU conditions for fair and transparent tendering.

BOCRA

Fixed Wireless Access Infrastructure by VANs

ICT

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FWA Infrastructure by ISPs (1/2) - Section 6.2

Recommendation 20: Potential means of increasing the roll out of Local Internet Access Points (LIAPs) in rural areas

a) The cost of backhauling internet traffic from LIAPs to ISP's main centres should be assessed.

b) PTOs to offer excess backhaul capacity to ISPs to establish internet LIAPs. The LIAPs collocated with PTOs' base stations or at the Kitsong Centre to reduce the cost of rolling LIAPs.

c) Expansion of PTOs' backhaul links to cater for ISPs' capacity requirements should be subsidised by BOCRA, the Government and/or USF.

d) BOCRA and the Government should prepare a rollout schedule for internet LIAPs, starting with urban areas and large villages and eventually smaller villages as the demand for broadband service develops.

e) The programme for the rollout of internet LIAPs should be synchronised with the rollout of e-Government services to ensure a quick adoption of broadband services.

FWA Infrastructure by ISPs (2/2) – Section 6.2

Question 4: Potential means of increasing the roll out of Internet LIAPs in rural areas

a) Do you agree with proposals in Recommendation 20? If not, state what you do not agree with, and offer alternatives for addressing the lack of internet LIAPs in rural areas.

b) How should the problems of sustainability of the PTO's Kitsong Centres versus BP's Kitsong Centre be addressed?

c) In cases where both are allowed to co-exist, which one should be upgraded to include a LIAP and why?

d) Please outline other issues which you believe should be considered and state your reasons.

FTTx Infrastructure - Addendum

FTTH roll-out CAPEX	All sites	Industrial, Commercial, Civic & Community
Gaborone	1,400 million Pula	222 million Pula
Francistown	900 million Pula	165 million Pula
Total Cost	**2 300 million Pula**	**387 million Pula**

Recommendation 1: Development of FTTx in major cities

In view of the high cost of deploying FTTX infrastructure, it is recommended that an FTTx network connecting Commercial, Industrial, Civic and Community Areas should be deployed in Gaborone and Francistown.

Question 1: Development of FTTx in Gaborone and Francistown

(a) Do you agree with Recommendation 1 above?

(b) Do you agree with the recommendation to exclude residential areas from consideration? If not, please explain/justify your reasons.

(c) If you do not agree with the Recommendation 1, how can Botswana attract FDI in high technology and high value-added services that require robust broadband infrastructure?

(d) Should Gaborone and Francistown FTTx infrastructure be rolled out as one project or as two separate projects?

(e) If the FTTx cannot be rolled out at once (e.g. due to financial constraints), how should the rollout be prioritised? That is, which areas should be rolled out first and why?

Options for rolling out FTTx Broadband Infrastructure – Addendum

- FTTX => Natural monopoly => Open Access Network
- Open Access Network Principles:
  1. Consumers must be free to choose any service provider on the OAN;
  2. Any authorised service provider must be free to deliver services over the OAN;
  3. Any authorised service provider should be allowed to add access points to the OAN, subject to technical feasibility and the service provider paying for the cost of establishing the access point;
  4. Service providers should be offered Transport Layer services at various levels depending on their requirements;
  5. All service providers must be offered services on fair and non-discriminatory terms and conditions;
  6. The OAN operator should not compete with its customers (service providers) by offering retail services (directly to end users).

Option 1: Use a reverse auction open to PTOs

- ***Advantages of this option:***
  - Competition => Least subsidy.
  - Competitive process => best operator selected (business plan, system design and innovative services).
- **Disadvantages of this option**
  - PTOs => Clusters 4 – 6 at own cost, 1 – 3 Competitive bidding.
  - Creates a monopoly in segment that is a main constraint for broadband.
  - Condition 6 => OAN operator should not compete with service providers => Functional or Structural Separation.

Option 2: BOFINET operate the FTTx as an OAN

- Advantages of this option:
  - BOFINET is wholesale operator only – Should meet all OAN Principles
  - Bofinet has substantial metropolitan infrastructure => Reduce cost of FTTx
  - Govt and BOCRA can set Bofinet tariffs to meet other Govt policies (e.g. Diversification of the Economy, FDI, Universal Service, Increasing Competition ICT Sector, etc.)
- Disadvantages of this option
  - Establishment of Bofinet could delay FTTx rollout.
  - Bofinet can hold back FTTx services if it fails to deliver => BOCRA and Govt should set targets for BOCRA which should be made public.

Question 2:

a. If it is decided to rollout FTTx, should the rollout be based on Option 1(Reserve Auction) or Option 2 (Bofinet).

b. Provide reasons in support of your response.

xDSL Infrastructure

Recommendation 21: Upgrading of xDSL Infrastructure

a) BTC should upgrade its xDSL infrastructure to incorporate SDSL so as to provide symmetrical broadband speed for professionals, businesses and Government institutions.

b) Since BTC has no competitor in this market segment, it (BTC) should cover all costs associated with upgrading the xDSL infrastructure with its own funds.

Note: as for ADSL, wholesale conditions should make it possible for all ISPs to build competitive retail offers.

Satellite Access

- Total Population (20111) = 2 024 787
- Total Population covered by proposed BB Networks = 1 809 470 (89.4%).
- Total Population not covered = 215317 (10.6%).

Question 5: Should the National Broadband Strategy define an action plan aimed at helping the most remote areas to get equipped with satellite connections? If so, what should be criteria for choosing areas that should be eligible for public funding?

Funding

Question 7: Does the principle of a subsidy granted through a reverse-auction mechanism similar to Nteletsa II or another competitive process appear adequate for the funding of a Next Generation Access network deployment in rural areas?

Question 9: What kinds of obligations should be imposed as conditions for subsidised funding? Please provide reasons for your proposal and identify quality control mechanisms that would be relevant without being disincentives for operators.

Question 10: Could you identify other financial instruments that could be mobilised for the funding of new generation access networks?

PTO versus ISPs

Question 11: PTOs Versus ISPs

a) Should tenders for the rollout of broadband infrastructure and services be open to PTOs only or should ISPs also be invited to bid?

b) If ISPs are invited, how should BOCRA and the Government reconcile the differences in the technologies which PTOs have access to versus ISPs who are only limited to fixed wireless technologies?

Thank you for your attention

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