Regional Seminar on Costs and Tariffs for Asia and Pacific and meeting of the SG3RG-AO

Providing broadband services through PPP (Public Private Partnership) models

Mr. David Bernal

Tokyo, Japan, 8-9 April 2013
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2. Spectrum auctions: impact on broadband plans
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4. International benchmark: public-private projects
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Introduction.

Broadband in urban or rural areas?

- Accessibility and availability of broadband networks are generally lower in rural than the urban areas in both developed and developing countries due to low population density and poor economies of scale.

  - The provision of high speed broadband is critical to communities in regional and rural areas as it serves to expand economic capacity and stimulate commerce.

  - Whilst last-mile can be very expensive for carriage service providers deploying wired technology, deployment of wireless technologies, typically characterized by lower capital and operational costs, can provide a more effective solution.

  - While internet access in urban areas will be mainly financed and funded by the private sector, there are considerably greater challenges in extending coverage to less populated rural areas.

  - Some international agencies have developed different programs ("Broadband Plans"). In that respect, the European Commission ("EC") has set out an ambitious program for increasing the accessibility of Internet provision in Europe under its Next Generation Access ("NGA"), a program with ambitious roll-out targets that include improving download speeds so that all EU citizens will have Internet access at 30 Megabits per second ("Mbps") by the year 2020 and that 50% of households will have the ability to access the Internet at speeds of 100 Mbps or more.

How can governments incentivize the use of fiber optic in non profitable areas?
Introduction.

Europe: delivering Next Generation Access

- Ambitious plan to provide high speed broadband coverage across the EU
- Advanced technologies (LTE, WiMax, FTTH…) require substantial investments simply to make them available in the more accessible, densely populated urban areas
- Meeting NGA objective will require private investment combined with European, national and local government support.

The Digital Agenda is Europe’s strategy for achieving a flourishing digital economy by 2020. It outlines policies and actions to maximise the benefit of the Digital Revolution for all.

- Improve ICT standard-setting and interoperability
- Enhance trust and security
- A new Single Market delivering the benefits of the digital era
- Unleash the potential of ICT to benefit society
- Empower Citizens with digital skills and accessible services
- Boost cutting-edge research and innovation in ICT
- Increase Citizens’ access to fast and ultra-fast internet

Objectives

- Allow access of European households to affordable very fast internet, allowing the development of an economy based on knowledge and services
- Attract investments in broadband through credit enhancement mechanisms
- Provide guidance on how to encourage investments in fibre-based networks

Specific targets

- 100% Internet coverage by 2013
- 100% coverage at >30Mbit/s by 2020
- 50% household take-up at >100Mbit/s by 2020
Introduction.

European Policy areas to promote broadband investments

• The implementation of the EU’s cohesion policy, as outlined in the Strategic report 2010 on the implementation of the programmes 2007–2013

• The implementation of the EU's rural development policy, as outlined in the report on the implementation of the national strategy plans and the Community strategic guidelines for rural development (2007-2013);

• The EC Communication on Regional Policy contributing to smart growth in Europe 2020 and the accompanying Staff Working Document.

• The EC Communication on Digital Agenda for Europe.

• The EC Communication on European Broadband: investing in digitally driven growth.

• Policy actions aimed at the achievement of EU targets for broadband networks.
Introduction.

Key points regarding EU treatment of broadband investments in non-profitable areas

- There are **different sources of EU funds** that can be combined with national or local sources of public sector funding.
- The European Commission **has published a guide for public authorities managing EU funds**. It considers the use of structural funds to finance the roll-out of high speed networks.

### EU Funds

- The EC monitors the investment of public funds to **ensure that State aid is not used to unduly favour one or more private entities** in a way that would distort a market.
- The key activities for achieving compliance with **State aid regulations relate to justifying the need for public intervention**. There are four situations in which a State aid notification is **not required**:
  - If the investment is made on terms that are equivalent to those available to the market
  - If the level of aid is below a threshold of EUR200 000
  - If the broadband network is only used for public services
  - If the broadband project is being implemented as part of a national framework scheme which has already received State aid approval

### State aid regulations

- Pre-qualification questionnaire (PQQ)
- Invitation to participate in dialogue (ITPD)
- Dialogue process
- Invitation to tender (ITT)
- Contract award, aid approval
Introduction.

Different technologies for urban and rural areas.

- Service provider needs to achieve an acceptable **ROI for installed infrastructure** and ongoing operational costs under an **expected IRR and payback**.

- The availability of **services over fibre-optic connections** for the Internet have been **significantly lower in Europe** compared to the USA and Japan.

- With **unlicensed spectrum** a wireless broadband service could be offered to consumers in a certain location, but at any time unacceptable service interruption may arise (interferences).
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Spectrum auctions: impact on broadband plans

Wireless broadband growth

Internet access through mobile phones has experienced a double digits growth, initially through 2G networks (offering relatively low data speeds) and later over higher-speed 3G/LTE networks:

wireless broadband is a relatively new service category and includes many consumer and business applications/services,

Forecast of wireless broadband traffic

Source: CISCO
Spectrum auctions: impact on broadband plans

Spectrum auctions

In Europe and globally, TV digitalization and frequency ‘re-farming’ have opened new opportunities with regards to the spectrum for mobile communications. Some examples:

<table>
<thead>
<tr>
<th>Country</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>UK</td>
<td>The UK’s 4G spectrum auction has raised £2.34 billion ($3.62 billion), with BT and the country’s four main mobile carriers winning new spectrum that will allow them to roll out LTE services. The auction took in 250MHz of spectrum in the 2.6GHz band, which is high-bandwidth and good for urban deployments, and the 800MHz band.</td>
</tr>
<tr>
<td>Germany</td>
<td>Out of €4.400 m raised in the auction in Germany, €3.600 m were related to 6 blocks (2x5 MHz) in 800 MHz band. In Germany, e-plus chose not to acquire 800 MHz spectrum due to the demanding obligations to cover remote areas, as well as the high price.</td>
</tr>
</tbody>
</table>

Digital dividend:

- The essence of the digital dividend is to open the possibility of re-allocating a large part of the radio spectrum.
- The size of the digital dividend is determined by the trade-offs underlying the choice of the basic parameters of digital transmissions, in particular the type of digital TV reception.

Figure 1: Concluded and planned LTE spectrum auctions in Europe

Source: Arthur D. Little, regulator homepages
# Spectrum auctions: impact on broadband plans

## Benchmark of LTE spectrum auctions

<table>
<thead>
<tr>
<th>Band</th>
<th>High bid competition</th>
<th>Low bid competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 Mhz</td>
<td>€0.81 (Italy 2011)</td>
<td>€0.42 (Sweden 2011)</td>
</tr>
<tr>
<td></td>
<td>€0.73 (Germany 2010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>€0.68 (France 2011)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>€0.47 (Spain 2011)</td>
<td></td>
</tr>
</tbody>
</table>

## Common spectrum and deployment strategies

### 800Mz+2600Mhz approach

- **800 Mhz** deployment for rural outdoor and for indoor coverage + urban 2600 Mhz deployment for LTE capacity reasons, complementing existing nationwide GSM 900/1800Mhz and UMTS 2100 Mhz networks
  - Germany: Vodafone, T-mobile and Telefónica
  - France: ramge, SFR & Bouygues Telco
  - Italy: TIM, Vodafone, Wind
  - Spain: Telefonica, Vodafone and Orange

### Hybrid multiband 1800/2600 Mhz FDD/TDD approach

- a) 1800 Mhz: only deploy LTE only on 1800Mhz, possibly before other operators have free spectrum
  - Poland: Polkomtel
  - Spain: Yoigo
  - a) Hybrid 1800 Mhz + 2600Mhz strategy: get as much 1800Mhz as possible plus 2600Mhz. Then deploy LTE 1800Mhz in semi-urban areas and cities (for indoor coverage). Deploy LTE 2600Mhz as a capacity overlay in cities.
  - Germany: e-plus
  - France: Free (2600 Mhz only)
  - Italy: H3G

Source: ADL, regulator homepages
### Spectrum auctions: impact on broadband plans

#### Benefits for consumers

As it has been said, spectrum allocation is due to digital dividend and re-farming to provide not only broadband wireless services but also digital TV.

<table>
<thead>
<tr>
<th>Digital TV</th>
<th>Broadband services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>- Consumer benefits:</strong></td>
<td><strong>- Consumer benefits:</strong></td>
</tr>
<tr>
<td>• wider choice in TV and radio channels</td>
<td>• wider choice in wireless and fixed services with higher rates and capacity for video and data services</td>
</tr>
<tr>
<td>• improved picture and sound quality</td>
<td>• Tables, Smartphone, and last generation devices require next generation networks (LTE or fiber networks)</td>
</tr>
<tr>
<td>• greater flexibility due to portable and mobile reception</td>
<td>• Lower prices for voice services</td>
</tr>
<tr>
<td>• enhanced information services including the EPG or enhanced ‘teletext’ services</td>
<td>• Flat tariffs for data services</td>
</tr>
<tr>
<td>• increasing market competition and innovation</td>
<td><strong>- Industry benefits:</strong></td>
</tr>
<tr>
<td></td>
<td>• lower prices for broadcasters</td>
</tr>
<tr>
<td></td>
<td>• pay-tv services</td>
</tr>
<tr>
<td></td>
<td>• new transmitter networks including new transmitters, antennas and transport networks</td>
</tr>
<tr>
<td></td>
<td>• new receiver devices: market competition and innovation</td>
</tr>
<tr>
<td></td>
<td>• conditional access systems</td>
</tr>
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PPP funding mechanism

What is a Public Private Partnership (PPP) project?

PPPs are a means by which the public and private sectors can work together as they provide a contractual and formalized framework needed for easier cooperation between all parties. A typical PPP structure can be quite complex involving contractual agreements between a number of different participants including Financiers, Government, Engineers, Contractors, Operators, and Customers.

**RISK DIVERSIFICATION**

SPV facilitates the allocation and diversification of risk and financing requirements to more than one party.

**RISK MITIGATION**

The SPV facilitates the use of project financing which is intended to keep the specific risks of that project separate from the existing business of the private sponsors.

**PROJECT FINANCE**

The SPV borrows the funds and the debt is paid back using the cash flow generated from the project.
PPP funding mechanism

Why PPPs are attractive to Governments?

- Lack of government budget: Although the lack of government funding has been the main reason for considering a PPP option, there are other reasons: the cost of borrowing money, transaction costs, liabilities on the government or the access to advanced technology.

- Governments:
  - Enhance the supply of broadband needed infrastructure services.
  - Government may not require any immediate cash spending.
  - Transfer many project risks to the private sector.
  - Better project design, choice of technology, construction, operation and service delivery.
PPP funding mechanism

Key points to be considered

PPPs allows to implement projects with the appropriate scope and accelerated time scales, ensuring public funds will be used in the most effective and efficient manner while encouraging as much private sector involvement and especially risk sharing as possible.

1. Better project structure and design.
2. Better choice of technology based on life-cycle costing (wireless, fiber, ...)
3. Better service delivery, especially if performance based payment is considered.
4. Better chances of completion on time and within the budget
   - Limitation of Risk of default.
   - Project risks can easily turn into government risks.
   - Various liabilities on government (direct and indirect).
   - A long-term contract management system needs to be in place.
PPP funding mechanism

Basic issues of PPP models

- Supply & Management
- Turnkey
- Leases
- Concession
- Private Ownership

Private sector vs. Public sector

Risks, obligations and durations
## General classification of PPP models

<table>
<thead>
<tr>
<th>Broad category</th>
<th>Main variants</th>
<th>Ownership of capital assets</th>
<th>Responsibility of investment</th>
<th>Assumption of risk</th>
<th>Duration of contract (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply and management contract</td>
<td>Outsourcing</td>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td>Maintenance management</td>
<td>Public</td>
<td>Public/Private</td>
<td>Private/Public</td>
<td>3-5</td>
</tr>
<tr>
<td></td>
<td>Operational management</td>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>3-5</td>
</tr>
<tr>
<td>Turnkey</td>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>Private/Public</td>
<td>1-3</td>
</tr>
<tr>
<td>Affermage/Lease</td>
<td>Affermage</td>
<td>Public</td>
<td>Public</td>
<td>Private/Public</td>
<td>5-20</td>
</tr>
<tr>
<td></td>
<td>Lease</td>
<td>Public</td>
<td>Public</td>
<td>Private/Public</td>
<td>5-20</td>
</tr>
<tr>
<td>Concessions</td>
<td>Franchise</td>
<td>Public/Private</td>
<td>Private/Public</td>
<td>Private/Public</td>
<td>3-10</td>
</tr>
<tr>
<td></td>
<td>BOT</td>
<td>Public/Public</td>
<td>Private/Public</td>
<td>Private/Public</td>
<td>15-30</td>
</tr>
<tr>
<td>Private ownership of assets and PFI type</td>
<td>BOO/DBFO</td>
<td>Private</td>
<td>Private</td>
<td>Private</td>
<td>Indefinite</td>
</tr>
<tr>
<td></td>
<td>PFI</td>
<td>Private/Public</td>
<td>Private</td>
<td>Private</td>
<td>10-20</td>
</tr>
</tbody>
</table>

* BOT = Build-Operate-Transfer

** BOO = Build-Own-Operate; PFI = Private-Finance-Initiative
## PPP funding mechanism

### Financing PPP projects.

<table>
<thead>
<tr>
<th>Project Finance</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PPPs in telecom infrastructures are normally financed on project basis <em>(project finance)</em>: lenders looking to the cash flows of an investment for repayment, without recourse to either equity sponsors.</td>
<td>Reduces the financial risk of the investors; may allow more debt in the financing structure; results in limited liability on project sponsors.</td>
<td>More complex transactions than corporate or public financing; higher transaction costs; requirement of close monitoring and regulatory oversight.</td>
</tr>
</tbody>
</table>

### Sources of funds

- **Equity**: capital invested by the sponsor(s) of the project and others.
  - project sponsors, government, third party private investors, and internally generated cash.
- **Debt**: borrowed capital from banks and other financial institutions, and capital market. Lenders of debt capital have senior claim on the income and assets of the project. (70%/80% of total funds)
  - Commercial loan, Bridge finance, Bonds and other debt instruments, subordinated debt
- **Government grants**: public funds to make PPP projects commercially viable. It reduces the financial risks of private investors.
### PPP funding mechanism.

#### Different PPP models for NGA networks

<table>
<thead>
<tr>
<th></th>
<th>Model Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Private design, build and operate</td>
<td>Demand for broadband is sufficient <strong>to attract the private sector</strong> but where additional financial support is required in the form of public grants in order to create an acceptable investment case. The private sector <strong>builds, owns and operates the infrastructure</strong> but is subject to strict controls.</td>
</tr>
<tr>
<td>2</td>
<td>Public outsourcing</td>
<td>‘Government Owned – Contractor Operated’ (&quot;GOCO&quot;) Construction and operation of a fully functional broadband infrastructure where the <strong>funding itself is being provided from public sector sources</strong>. The private sector operator is appointed after a competitive tender and takes responsibility for implementing the infrastructure.</td>
</tr>
<tr>
<td>3</td>
<td>Joint venture</td>
<td>(“JV”) implies a <strong>split in ownership between the public and private sectors</strong>. Construction and operation are undertaken by the private sector. Initially the <strong>public sector makes a larger financial commitment</strong> (control in the crucial early stages) but progressively the private sector takes control and responsibility.</td>
</tr>
<tr>
<td>4</td>
<td>Public design, build and operate</td>
<td>Higher level of <strong>involvement by the public sector</strong> that is justified by greater control. The public sector develops the required infrastructure in a conventional way. The design, implementation and operation of the network itself are all directly managed by the public sector. A separate publicly owned established company makes the network available to private sector on a competitive basis.</td>
</tr>
</tbody>
</table>
Case studies for the different NGA models in Europe

<table>
<thead>
<tr>
<th>#</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1  | Private design, build and operate | Superfast Conwall in UK  
BT won a public tender to provide fast fibre optic based broadband services to more than 266,000 premises including 30,000 businesses in Cornwall  
Investment of GBP 132 million (out of which 53.5 million are supported by European Regional Development Fund ) in providing the network infrastructure which will then be available to third party service providers on a wholesale basis. |
| 2  | Public outsourcing            | MAN in Ireland  
The individual MANs are managed by e|net for a period of 15 years. Collectively, they have a network of over 1,000 km of fibre-optic capacity throughout 66 towns in Ireland. Total investment is up to € 170 million with local and regional authorities providing 10%, ERDF 45% and the balance funded by the Irish Government. The infrastructure remains in State ownership. |
| 3  | Joint venture                 | Metroweb in Italy  
It has invested €400 billions in fibre network that serves the Milan region.  
It was established by a municipal utility and has now evolved to position where the company is entirely privately owned. |
| 4  | Public design, build and operate | Asturcon PPP in Spain  
Implementing and managing the wholesale network itself (EUR 55 million invested) in order to keep control of its roll-out objectives.  
A wholly public owned, special purpose company has been established (GIT), that offers wholesale services to private service providers |
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International benchmark: public-private projects

Superfast Cornwall

• **Build a superfast next generation broadband** (FTTP and FTTC) to a minimum of 80% of premises by 2015.

**Collaboration model**
- Private design, build and operate with a public grant, aiming for high level of FTTP. It is an example of Private DBO.

**Investments**
- Overall budget estimated at **GBP132 million:**
  - **BT Group** (incorporating BT Wholesale, Openreach and its retail businesses) will invest up to **GBP 78.5 million**
  - **ERDF** will provide up to **GBP 53.5 million**
  - **Cornwall Council** is investing jointly in marketing along with ERDF and BT

**Wholesale**
- Active wholesale products via BT Wholesale and Openreach plus passive access in line with UK regulatory requirements

**Business Model**
- BT will be offering the **same active wholesale products and pricing as it is offering** nationally through its Openreach and BT Wholesale divisions.
  - Three different levels:
    • Service provider: Open market
    • Active network: BT Wholesale
    • Passive infrastructure: Openreach*
## International benchmark: public-private projects

### Superfast Cornwall

- A state aid application was submitted in July 2009 in accordance with Article 88(3) of the EC treaty, as part of the EU Convergence funding programme for 2007-13. Approval was granted in May 2010.

- The application argued that it was compatible with state aid requirements published in September 2009. In particular:

  - Lisbon Agenda – the Lisbon categories of intervention for broadband networks and ICT infrastructure;
  
  - European Information Society (i2010) – supporting development of comprehensive national broadband strategies;
  
  - EU sustainable development strategy – using NGB to cut energy requirements (e.g. reducing travel);
  
  - UK national Next Generation Broadband (NGB) strategy – “Digital Britain” report;
  
  - compatibility with state aid guidelines for broadband networks which are likely to remain a NGB white area for some time, for example:

    - open access – active wholesale access on a non-discriminatory, equal and transparent basis and passive access where a demand arises and is commercially viable;
    
    - separate accounts are provided by BT for the project; and
    
    - BT receives the grant once it submits expenses demonstrating how the money has been spent.
**International benchmark: public-private projects**

**Metroweb**

PPP between the local gas and electricity utility company (A2A) and e.Biscom, a new telecom service provider, with the objective of accelerating the roll-out of a large metropolitan access network. Complete separation between infrastructure (Metroweb) and services (Fastweb)

Metroweb now operates a **2700km metropolitan and access network**. Its infrastructure **extends over almost the whole municipality of Milan and Northern Italy**

<table>
<thead>
<tr>
<th>Collaboration model</th>
<th>- Metroweb is an example of a <strong>joint venture</strong>, where the ownership of the network is split between the public and private sectors by setting up a SPV.</th>
</tr>
</thead>
</table>
| Investments         | - Approximately EUR 400 million invested to date.  
  - 2006 saw a major governance change as private equity group, Stirling Square, backed a EUR 230 million management buy-in of Metroweb.  
  - In 2007, Metroweb signed an agreement with Telecom Italia ("TI"). TI gained the right to use the Metroweb access network for 15 years.  
  - In May 2011, Metroweb was taken over by F2i and Intesa Sanpaolo which are keen to boost |
| Wholesale           | - Leases point-to-point, dark-fibre services |
| Legal               | - Metroweb is a private initiative that started as a local plan. Metroweb has not gained from any state aid approved funding, but a close relationship with the municipality has allowed it to roll out almost 2,000 km of infrastructure in four years in the largest, most densely populated city in Italy. |
Metroweb

- Metroweb’s market opportunity came from the fact that TI’s legacy HFC network was not laid in Milan. The initial exclusivity arrangement allowed Fastweb to become the most significant competitor to TI.
- The three levels: Service provider (Open market), Active network (Open Market), Passive infrastructure (Metroweb)
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</table>
Case study: Catalonia’s Fiber Broadband Network.

CATALONIA

Generalitat de Catalunya, the institutional system around which Catalonia's self-government is politically organized, planned to build and exploit an electronic communication network based on optical fiber that allows to provide high bandwidth connectivity to the Public Administration entities: Government of Catalonia and Local Administration.

Catalonia is an autonomous region of Spain located in the North East of the country. It exercises its self-government, in accordance with the Spanish constitution, with the main institutional body being the Generalitat de Catalunya.

- Area: 32,000 km²
- Population: +7M of inhabitants
- Cities and Counties: 946 municipalities and 42 counties, Barcelona is the capital
- Companies: 440,000 (Y2002)
- Internet Access: 51,3% households (Y2007)
- Net Income per Capita: 9,109€ (Y2005)
Case study: Catalonia’s Fiber Broadband Network.

Generalitat ‘s bandwidth needs

The Generalitat knows the importance of information society services and considers that broadband networks are one of the forces that will enable the growth of modern economy:

- its objective is that all local authorities, businesses and citizens in Catalonia should have the possibility to obtain broadband access at competitive conditions.

According to the Spanish authorities, the development of broadband in Catalonia faced two key problems:

1. the first is the lack of infrastructure to deliver the services required by the public authorities and citizens;
2. the second is linked to the lack of adequate competition reflected in high prices or inadequate services.

Fiber Based Broadband Services in Catalonia:

- Available with some restrictions in dense populated areas (metropolitan areas).
- Unavailable outside metropolitan areas.
- Severe restrictions in availability and high price when available.
- Absence of competition where available.
Transport is defined as the service that provides connectivity between two specific sites.

The region is divided into **3 zones**, depending on the competition:

- **Zone 1**: Full competition (TFCA and alternative operators)
- **Zone 2**: Regulated services availability (only TFCA).
- **Zone 3**: Without competition.

Access is defined as the service that provides connectivity to the homes or enterprises of the municipality.

The region is divided into **3 zones**, depending on the competition:

- **Zone 1** (**Black area**): Availability of several operators with its own infrastructure or leased to Telefónica
- **Zone 2** (**Grey**): Availability of limited competition throughout the incumbent (Telefónica)
- **Zone 3** (**White**): Non-availability of the service, lack of competition
Needs for a broadband network

1. There’s a market Gap in Catalonia where no fiber based broadband services are available and where available, no competition is present.

2. The Government of Catalonia plans to integrate Government services in all Catalan geography. It lacks the required extra capacity will allow to provide high bandwidth connectivity to the wholesaler market under an open access scheme.

3. Outside of metropolitan areas, Catalanian citizens have a reduced access to high bandwidth connections.

The objective is to build the network for self-provision.
Case study: Catalonia’s Fiber Broadband Network.

Project scope

- The long-term vision of the Government of Catalonia is to interconnect all the public entities with fiber (946 municipalities), but the initial scope of the deployment will reach 281 municipalities.
Case study: Catalonia’s Fiber Broadband Network.

Legal assessment

• The main benefits of the project for all the citizens in Catalonia will be the availability of high speed connectivity in equal conditions and the entrance of competitive offers.

• According to the Commission at that time (2009) “Spain has a broadband penetration rate below the EU average” and “Spain was paying about 20% more than the EU-15 average for high-speed Internet access” (Mrs. Kroes - SPEECH/07/460).

• Today the wholesale market does not provide high speed fiber based broadband services in all Catalonia, and where services are available, they are offered under a restricted competitive environment.

• Due to the above limitations, it is reasonable to provide all operators, under an equal access scheme, the fiber broadband network surplus capacity. This will contribute to the public interest.

• The project will be executed in full respect of EC rules

  • As it has been stated in previous Commission's decisions, “the mere fact that the municipality decided to build its own public-sector network in order to satisfy its own needs for internet connectivity instead of procuring such services from private operators does not raise concerns under Article 87 EC, this being an autonomous organizational decisional by a public Authority” Public Administration is entitled to create its own telecom infrastructure (See State aid NN 24/2007 Czech Republic § 30)

  • Therefore, State aid assessment only refers to the wholesale goal.
Case study: Catalonia’s Fiber Broadband Network.

Legal assessment & State Aid analysis

- In order to avoid distortion of competition, Catalonia will ensure a correct distribution of fiber networks costs and investments among self provision and wholesale under a Full Distributed Costs (FDC) model.

- For the Grey and White areas, the profit of the wholesale goal may not provide enough economic returns to fulfill the MEIP (Market Economy Investor Principles), so State aid might be granted upon Commission approval following its notification.

- **Distribution of common costs** depending on the proportion of bandwidth of SELFPROVIDE and WHOLESALE in the fifth year.

- **Distribution of CAPEX (Capital Expenditure) and Deployment Cost.**
  - The proportion of each area is calculated according to the wholesale bandwidth over the total in each area in the fifth year.
  - This proportion is applied over the costs imputed per municipality.

- **Municipality cost imputation**
  - An imputation of costs is made according to the bandwidth that flows towards Barcelona. In this way the cost of the Backbone Network is distributed completely among all towns that use it.
Case study: Catalonia’s Fiber Broadband Network.

How the project was structured

- **Open Tender**: Selection of the Telecommunication Infrastructure Provider (GIT, Gestor d’Infraestructures de Telecomunicacions) that will be responsible of the construction and exploitation of the network, through a concession contract.
- **Concession contract period**: up to 30 years
- **Network Property**: private initially and public at the end of the concession period

- Private sector has to **set-up a new Company (“GIT”)** assuming a minimum equity, to be paid in 3 years, of 10% of total estimated investment (90% bank debt).

(1) Localret, a public municipalities consortium, will participate in the project deployment by facilitating agreements with municipalities for available infrastructure.
Case study: Catalonia’s Fiber Broadband Network.

Public-Private Relationship

Corporate governance between the private company and the public company will be based on three levels:

- Strategic relationship
- Operational relationship
- Tactical relationship

Each level will have the following committees:

- Executive Committee, at Strategic and Contractual level
- Monitoring Committee, at Tactical level
- Operational Committee, based on 3 levels:
  - Network deployment
  - Operation & Maintenance
  - Services.
Case study: Catalonia’s Fiber Broadband Network.

Network topology and services to be provided

**NETWORK TOPOLOGY**

- **946 municipalities** in 2 phases:
  - Phase 1: 281 with 4,285 sites
  - Phase 2: 946 with 5,843 sites

- **Private company assumes the network operation** during the contract duration with the Government.

**SERVICES DESCRIPTION**

- Ethernet point-point
- Ethernet point-multipoint
- SDH point-point
- Fiber capacity
- Dark fiber
- Collocation
- Access to ducts
### Case study: Catalonia’s Fiber Broadband Network.

#### Main financial figures

| CAPEX | - Public (through the asset contribution) and private to deploy the new fiber network: €660m for 946 municipalities or €354m for 281 municipalities. - Main infrastructures contributed by Government:  
  • Rights of uses for inter-urban fiber.  
  • Ownership of inter-urban fiber and urban ducts  
  • Rights of use to connect Government sites and other sites  
  • Active equipment |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>OPEX</td>
<td>- Maximum operating expenses of €10m/year</td>
</tr>
<tr>
<td>REVENUES</td>
<td>- Maximum unitary revenue per connected site from Generalitat de Catalunya: €1.050/month (cpi indexed)</td>
</tr>
</tbody>
</table>
| INFRASTRUCTURE RETURN | - 6 months before the expiration of the contract, the private company must submit to the Government a Plan for returning the network to the Government:  
  • Passive infrastructure network  
  • Preventive and corrective maintenance plan  
  • Rights of occupancy with third parties  
  • Services contracts, others |
Case study: Catalonia’s Fiber Broadband Network.

Risk analysis and mitigation

- The project included several mechanisms to mitigate the economic and risk impact on the private company in case of mismatch with the private company projections:

<table>
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<tr>
<th>Price adjustment / Financial and Economic equilibrium</th>
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<tr>
<td><strong>Price review</strong></td>
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<tr>
<td>- Price/site linked to cpi, so in the year n:</td>
</tr>
<tr>
<td>[ P(n) = P(n-1) \times (1+cpi) ]</td>
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<tr>
<td><strong>Price adjustment for self-provision project</strong></td>
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<tr>
<td>- In case of varying the number of connected sites per year, it will be an extraordinary payment calculated on a yearly basis, and paid every “x” years:</td>
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<tr>
<td>[ \text{Payment ext} (n) = \text{Factor}_n \times P(n) \times \text{Number sites}_n ]</td>
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<tr>
<td>[ \text{Factor}_n ] considers the difference of number of connected sites</td>
</tr>
<tr>
<td>[ \text{Payment ext} (x) = \text{updated different payments during the 3 years according to the Tax and IIR required.} ]</td>
</tr>
<tr>
<td><strong>Economic and financial equilibrium (Concession)</strong></td>
</tr>
<tr>
<td>- There will be a financial and economic equilibrium at the end of the concession but only for the self-provision project (not wholesale). So the balance at the end of each year ( B(n) ) is:</td>
</tr>
<tr>
<td>[ B(n) = B(n-1) \times (1 + \text{IRR/(1-Tax)}) + \text{Investment} (n) - \text{Gross Profit} (n) ]</td>
</tr>
<tr>
<td><strong>Wholesale market adjustment</strong></td>
</tr>
<tr>
<td>- The wholesale balance (WB) calculated at the end of the concession, considering the accumulated EBITDA less the Investments</td>
</tr>
<tr>
<td>If WB is higher than 20% of expected initially in the BP with the proper values (IRR and Tax) to calculate the present value, the difference will be pay to the Government if positive.</td>
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8. Summary and conclusions.

• To fulfill the challenging NGA objectives, partnership between the public and private sectors is necessary.

• PPPs offer wider benefits for the consumer and industry than simply financing.

• PPP projects encourage innovation and a wide range of service providers.

• Gaining state aid support.

• Funding and planning – taking a long term view instead of short term opportunities.