4. ICT as Enabling Infrastructure

4.1 Broadband infrastructure – Next Generation Networks

Why invest in Next Generation Networks?

It is estimated that just a 10% increase in broadband take-up could result in a 0.9-1.5% increase in GDP growth.52 Universally available, fast and reliable telecom network infrastructures are and will increasingly be a precondition to efficient communication in business and social environments; it is also underpinning innovation and further increases in the overall productivity of the economy.

By 2020, Europe will see the emergence of a new generation of services and technologies in areas such as cloud computing, Internet of things (machine-to-machine communication), smart cities, smart grids, e-Health applications, e-Government, high-definition and interactive audio-visual services, etc. All these services will require high-speed connectivity, for the processing power of “big data” and storage capacity will increasingly be “in the net”. In addition, the simultaneous use by households or business of different terminals (PC, tablets, smartphones, connected TV, smart boxes, sensors, etc.) and multi-media, interactive and high-definition applications will substantially increase demand for bandwidth above 30 Mbps.

Ensuring access to this critical infrastructure – the so-called Next Generation Networks (NGN) – is therefore essential not just for the development of a digital economy but also for stimulating social and economic cohesion, i.e. ensuring that there will not be a “digital divide”, but rather harnessing ICT capacity to bring down barriers between urban and rural areas, central and periphery, or between social groups or generations. For these reasons, the Digital Agenda for Europe foresees that:

(i) by the end of 2013, basic broadband should be available to all Europeans,

(ii) by 2020, all Europeans should have access to much higher Internet speeds of above 30 Mbps,

(iii) by 2020, at least 50% of European households should subscribe to Internet connections above 100 Mbps.

While it is expected that most of the investments necessary for the NGN will be made by telecom operators, European Structural and Investment Funds and other national public funding can also support and accelerate this deployment in all Member States and Regions, notably in areas of market failure.

How to act?

1. Analysis: The planning of a broadband project financed under an ERDF operational programme or EAFRD rural development programme needs to be embedded in a comprehensive plan for investment in NGN infrastructure set at national or regional level (2nd ICT ex-ante conditionality). The NGN Plan should be based on the main indicators of NGN coverage and take-up used in the Digital Agenda scoreboard. It may also address other dimensions such as quality of service, reliability/resilience, open access, etc. The NGN Plan or the “Digital Growth” document (1st ICT ex-ante conditionality) may also look into issues related to supply and demand, such as affordability of services, as well as related socio-economic factors explaining penetration rates in business and households (e.g. education, ICT training, ageing, employment level, etc.).

A critical tool for the planning of broadband infrastructure measures is the mapping of existing broadband infrastructures and of forthcoming private investments (typically in the next three years, in line with State aid guidelines) enabling regional and local authorities to identify the areas of interventions where there is a market failure.

2. Governance/stakeholder involvement: Stakeholders engagement at an early stage would typically include:

- National, regional and local authorities responsible for planning, implementation or monitoring of broadband projects, as well as other public stakeholders such as the Telecom National Regulatory Authority (NRA), relevant agencies/authorities (development & innovation, competition, broadcast, etc.), entities in charge of mapping broadband and other infrastructures, etc.

- User communities and other groups of potential final beneficiaries: business, schools/universities, hospitals, local administrations, rural development communities, etc.

- Potential broadband network and services providers in the region: telecom operators and ISP, utility companies, ICT industry, content providers, etc.

The involvement of the national regulatory authority for electronic communication (NRA) in all stages of the programming and particularly at monitoring stage would help the project development and the respect of relevant regulation including the compliance of certain aspects of competition (state aids), setting wholesale access price, open access regulation, interconnection standards, etc.

3. Priority setting: In setting priorities for investment, planning authorities should:

- Identify the objectives of the broadband projects. In order to allow benchmarking with the objectives of the NGN Plan and the Digital Agenda targets set by 2020 (see Section 1), these should be expressed in terms of household coverage/access and/or take-up/penetration based on download speeds. Other dimensions worth considering are upload speeds, reliability and affordability. However, the definition of the objective(s) in terms of specific technologies (e.g. 4G networks (LTE)) with 79% in rural areas to be compared with just 10% before the project. The scheme contributed to the Swedish EU-leading position of having 53% of all households and businesses connected with at least 100 Mbps Internet and 93% of all Swedish households and businesses having access to mobile broadband via 4G networks (LTE) with 79% in rural areas to be compared with just 10% before the project.

RAIN project (Lithuania): The objective of the project is to improve access to broadband with ERDF in rural areas and achieve 98% broadband coverage in Lithuania by 2014. Some 4,400 km of broadband cables have been laid, with network infrastructure and 775 sub-distinct and municipal connection points installed. As a result, 660,000 citizens (20.6% of the country’s population), 2,000 businesses and 9,000 public institutions can now benefit from broadband. The creation of backhaul networks (i.e. middle-mile) in not-served areas has reduced the entry barriers (by lowering investment costs) for commercial operators thereby encouraging them to extend their broadband network coverage in last mile in rural areas. The rain project is providing connectivity to many public institutions (e.g. 524 public libraries), contributing to increased digital literacy among rural communities and sectors of the population at risk of exclusion, by making Internet access centres publicly available and supporting rural businesses (e.g. declaration of agricultural lands and crops).
fibre, cable, wireless LTE or satellite) is not recommended in order to respect the principle of technology neutrality.

- Consider the financial cost/benefits and socio-economic impact of phased and/or territory targeted interventions (e.g. giving priority to schools, universities, hospitals, business parks, white areas, etc.) versus more integrated interventions. An articulation between ERDF and EAFRD and other ESI funding interventions should also be examined.

- Select the best-suited investment model – principally considering models based on financial instruments (e.g. through the Connecting Europe Facility) – for the objective to be reached. For further information, see the Guide to Broadband Investments).57

- Concerning the financing of broadband satellite services there is a guide about a Voucher Scheme to access satellite broadband services in remote areas to close the last white gaps of basic broadband.58 It is based on successfully completed pilot projects in France, England and Scotland in areas of market failure with public support.

4. Policy mix: The use of public funds should not crowd out private investment as this is a sector that is normally driven by market players. This therefore requires the respect of the EU State aid guidelines on broadband59 and other competition rules set by the national NRA.

Public authorities should also strive to reduce civil engineering-related costs of investment by putting in place transparency and coordination measures between telecom operators and utility companies (water, energy, transport, etc.) - see the Commission proposal60 to that effect. This may notably facilitate co-investment or co-deployment of infrastructure from the relevant interested parties.

5. Monitoring and evaluation: Relevant broadband indicators to monitor the achievement of these targets should be aligned with the ESIF Regulation’s output indicator (see p. 21) and categories of expenditure, as well as with the main Digital Agenda scoreboard indicators and thus enable comparison at national and EU level. Ideally, they should also be complemented with further broadband indicators, if any, commonly collected by the NRA for its own purposes.

Further reading & forthcoming events

http://s3platform.jrc.ec.europa.eu/broadband-infrastructure