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## **Broadband stimulation in France, Ireland and Sweden**

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Prepared by Cullen International  
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## Contact information:

Cullen International SA  
Rue St. Jean 6  
B-5000 Namur, Belgium

Tel: +32(0)81 25 74 80

[www.cullen-international.com](http://www.cullen-international.com)

## I. INTRODUCTION

Investor sentiment regarding telecommunications stock has changed dramatically over the last two years and the deterioration in financial markets is discouraging investments in broadband projects. In the first three years of liberalisation, from 1998 to 2000, governments focused on regulation and the creation of a level playing field between incumbent operators and new entrants. The accepted wisdom was that, in this regulated framework, the market would naturally deliver the new types of telecommunications services that are needed to turn Europe into an Information Society. However, things did not work out all that well. Today, the shortage of investment available for the sector is such that new inventive solutions are needed quickly if all SMEs<sup>1</sup> – let alone citizens – are going to benefit from these services, especially outside large urban areas. The risk of a digital divide between different areas in the same country and across Europe is greater than ever. This is why some governments started exploring inventive solutions that would encourage the deployment of broadband beyond urban areas.

This report presents the different solutions devised in France, Ireland and Sweden. The common theme across these three countries is that public authorities have invested in telecommunications projects where there were demonstrated market failures. Each of these three countries has developed a unique solution on the basis of their specific needs, priorities, geography and spread of GDP. However, there are a number of common traits that seem to indicate the emergence of a new philosophy in telecom policy:

- All three countries promote the idea of a third party infrastructure provider that constructs and manages broadband infrastructure to be leased to several operators on a cost-oriented basis. The role of this third party infrastructure provider is limited to the very basic elements of telecommunications infrastructure. It thus leaves plenty of room for competition among operators on technological solutions, applications, services...
- All three countries consider this to be the most competition neutral way to support the sector while enhancing competition in networks and services.
- None of three countries does seek to replace the private sector. To the contrary, they seek to involve the private sector in these projects and limit the public involvement to the minimum necessary.
- All three have had difficulties to delineate how far in the value chain a third party infrastructure provider should be allowed to go. If the third party infrastructure provider is legally prevented from activating this infrastructure and as a result from providing itself services to end users, there will be no conflict of interest between infrastructure providers and telecom operators. The infrastructure manager will have a strong incentive to accommodate the largest possible number of telecom operators in order to increase the number of its clients and therefore its revenues. Competition will thus be enhanced. On the other hand, if the third party infrastructure provider is legally prevented from activating this infrastructure and no operator is interested in operating its infrastructure in particular area, this infrastructure will have been built in vain. This is why there is currently a heated debate on whether and under which conditions this infrastructure maybe activated by the infrastructure provider itself.

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<sup>1</sup> Small and Medium Enterprises

## II. FRANCE

### A. Introduction

The “aménagement du territoire” (loosely translated "town and country planning") is at the centre of French policies in many areas ranging from railways to telecommunications. This is largely explained by the migration of population from the countryside to a few large cities since the 1950s. In the field of telecommunications, there are concerns that small communes or rural areas will not benefit from new telecommunications networks in the same way as large cities. Nine new entrants offer DSL<sup>2</sup> services but only two offer them outside Paris. According to some estimates<sup>3</sup>, 20 to 25% of the population will not have high-speed access to the Internet at acceptable cost by 2005.

In 2001, the French government decided to set itself a target whereby a 2 Mbit/s connection should be available at an affordable cost across the whole country by 2005.

The government policy focuses on:

- encouraging local authorities<sup>4</sup> to invest in telecommunication infrastructure as well as in content delivery likely to drive demand (see B. below);
- providing a mandate to the state-owned bank Caisse des Dépôts et des Consignations (CDC) to support new telecommunications infrastructure and content projects (see C. below);
- encouraging the use of electricity infrastructure networks to facilitate the provision of fibre optic networks between areas outside cities (see D. below).

### B. Regulatory framework

The law in France prohibited local authorities from operating public<sup>5</sup> telecommunications networks. However, a number of towns had already expressed the wish to set up their own telecommunications infrastructures. As a first step towards implementing its policy the French government decided to amend the law in order to clarify the legal framework governing investments by local authorities in telecommunications projects.

#### 1. Article L.1511-6

The now famous article L.1511-6<sup>6</sup> reads as follows (free translation, CI underlining):

*“Local authorities ... may, subject to a public consultation aimed at identifying operators’ or users’ needs, establish infrastructures aimed at supporting telecommunications networks.*

*Local authorities may not act as telecommunications operators themselves.*

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<sup>2</sup> Digital Subscriber Line

<sup>3</sup> Conseil économique et social – June 2001 Report and Observatoire des télécommunications dans la ville – June 2001

<sup>4</sup> “Local authorities” is a loose translation for the French concept of “Collectivités territoriales”. The latter is a catch-all concept designating municipalities, “départments”, regions, association of communes or of “agglomerations” (large cities)...

<sup>5</sup> Local authorities may operate networks serving closed user groups (schools & hospitals).

<sup>6</sup> of the Code général des collectivités territoriales

*Infrastructures established by local authorities may be made available to operators and users under objective, transparent and non-discriminatory conditions. Prices must cover the costs incurred. In some geographical areas where subsidies are granted, prices will have to reflect the costs minus the subsidies.*

*The provision of infrastructures by local authorities is without prejudice to the licensed operators' rights of way.*

*Local authorities must keep separate accounts for the building up, the maintenance and the leasing of infrastructures.”*

## **2. The draft circular**

In February 2002, a public consultation was launched on a draft Prime Minister's Circular (not yet adopted) regarding the involvement of local authorities in the development of telecommunications networks in rural areas, where the needs for high bit rate connections are not met by the market. The underlying idea was that local authorities would be allowed to invest in "passive elements" of the infrastructure such as ducts, dark fibre, poles, power supplies, shelters... but not become network operators. Many local authorities contributed to this consultation and demonstrated a genuine interest in being actively involved in the development of telecommunications networks.

The draft administrative circular has begun to clarify some ambiguities of this law.

- The objective of the government is to encourage local authorities to enter into public-private partnerships with private sector companies in order to create an infrastructure that will then be leased to operators. Preferably this infrastructure would be constructed and managed by 'infrastructure managers' which can be joint ventures between the local authorities and private sector companies, private sector companies alone with minimal or no participation from the local authorities or an entity supported by the local authorities (“Groupe d’Intérêts Economique – GIE).
- Local authorities have to consult with operators and users to identify their needs and therefore minimise the risk of making investments that do not address market needs;  
NB. In the early 1980s, many local authorities were led to invest heavily in fibre networks under the so-called “Plan Cable” (advanced Cable TV network) that did not deliver on its promises. There were a number of reasons explaining the failure of the project but one of the most prominent was the unevenness in its deployment, which often followed social considerations rather than business and economic objectives.
- Local authorities may establish infrastructures aimed at supporting telecommunications networks but are not allowed to act as telecommunications operators. In practice, the demarcation line is the following: local authorities are allowed to lay dark fibre but are not allowed to activate it; although this is subject to debate.  
NB. In fact, the main point currently being studied by the French authorities is the distinction between telecommunications equipment constituting passive infrastructures and equipment necessary to activate a network.

In August 2002, the new Government decided to ask the Conseil d'Etat to look into article L.1511-6 with a view to clarifying whether local authorities are allowed to invest in active elements such as routers but without actually activating them.

### 3. ART's view

In July 2002, ART issued a report<sup>7</sup> entitled "Adapting regulation to the new context of the telecommunications market". The report advocates a clearer distinction between:

- local authorities' role as providers of financial incentives to foster operators establishment on their territory; and
- local authorities' possible role in the establishment or operation of telecommunications networks.

According to ART, the two roles are incompatible in the same territory.

In the first case, the new legislative framework should specify the conditions under which local authorities may subsidise the development of networks in their territory. ART believes that under EU competition law, such subsidies would only be justified in certain areas.

In the second case, ART takes the view that, in some areas, local authorities should be allowed to become operators (prohibited under the current regime). According to the regulator, it is clear that even with subsidies, some regions will not be served by telecommunications operators because they would not be profitable.

ART stresses the point that local authorities' involvement does require a strong involvement of the regulator.

### C. The role of the Caisse des Dépôts et Consignations

In July 2001, the Government made the following decisions<sup>8</sup> regarding the financing of local telecommunications infrastructure projects.

- The Ministry of Industry should investigate how the electrical network could be used as infrastructure network. That was done through a report<sup>9</sup> in February 2002.
- The State-owned bank Caisse des Dépôts et Consignations (CDC) will invest up to € 228 million in local projects.
- CDC and other banks will earmark € 1.5bn in long term loans (15 to 25 years) at reduced interest rates (4.95%) for local authorities.

CDC also assists local authorities in the development of their projects. It has developed a methodology<sup>10</sup> aimed at providing the authorities with:

- a step-by-step roadmap;
- common methods and vocabulary to facilitate the dialogue with all parties: operators, infrastructure managers, manufacturers...;

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<sup>7</sup> [www.art-telecom.fr](http://www.art-telecom.fr) select un rapport sur l'adaptation de la régulation

<sup>8</sup> Decision of the Comité Interministériel pour l'Aménagement et le Développement Territorial (CIADT) of July 9, 2001

<sup>9</sup> <http://www.telecom.gouv.fr/cp0602.pdf>

<sup>10</sup> <http://www.internet.gouv.fr/francais/textesref/ciadt2001/hdcdc.pdf>

- criteria for the involvement of CDC as a financial partner.

The purpose is to assist the local authorities in:

- the development of a viable business plan integrating all aspects including a detailed analysis of operators and users demands, technical feasibility and assessment of the profitability of the project;
- identifying suitable private partners and establishing solid and commercially viable partnerships.

It is worth highlighting the role of the bank. CDC is a state owned bank but it remains an AAA-rated financial institution which wants to receive its money back. As a result its active involvement ensures an increased business and financial discipline in the projects. Furthermore, and possibly most importantly, the bank aspires to involve the private sector in the projects in order to ensure dynamism and entrepreneurship. CDC, as both possible investor and lender, ensures that the projects are legal, financially sound and technically feasible and therefore potentially attractive to private investors. CDC's methodology is composed of 5 phases.

#### Phase 1: Initialisation

The objective is to ensure that all local political parties agree on the importance of Information and Communications Technologies (ICT) infrastructure for the area and show sufficient commitment to a long term project. This addresses the political risk. A steering committee is established.

#### Phase 2: Strategic analysis

The aim is to identify where and how new infrastructure can potentially be used and what can be the broader economic and social benefits for the region.

#### Phase 3: Feasibility study

In the feasibility study, surveys of local companies, the public sector and citizens are conducted in order to identify users' needs. Different techniques are used.

- Status and coverage of existing telecommunications infrastructures;
- Geomarketing: analysing surveys of telecommunications operators' needs in terms of infrastructures;
- Technical study: architecture of the infrastructure and interconnection with other infrastructures.

#### Phase 4: Setting up of the project

As a bank, CDC's objective is to involve more private partners to build public-private partnerships. To this end they conduct business, legal and technical analyses as follows.

- Business plan: assessment of the profitability of the project and consultation with financial partners
- Legal study of both the establishment of the infrastructure and its operation

- Phasing and technical engineering: validation of the construction phases with local partners and operators.

On the basis of these analyses, they try to attract as much private investment as possible.

### Phase 5: Implementation

In the implementation phase, a calendar is agreed and the project is launched. Particular attention is devoted to the coordination of the “usage” and “services” projects.

#### **D. The use of electricity networks to facilitate the building of fibre optic networks**

In July 2001, the Government also decided<sup>11</sup> to use regional electricity networks to reduce the shortage of high-capacity communications networks in rural areas. RTE, a company demerged from Electricité de France (EdF), has over 70,000 km of high tension lines. The idea is to use the poles of regional electricity companies to bring fibre networks outside cities without investing more money than is strictly necessary. Two thousand km of fibre have already been installed in this way and RTE hopes to reach 15,000 km over five years.

The new infrastructures would act as backhaul circuits providing the missing link between the national backbones of the various operators and France Telecom’s local loops.

#### **E. Actual projects – a few examples**

According to the CDC, there are actually 106 projects at various stages of development. Around ten are in the implementation phase. Some illustrative examples are provided below.

##### **1. Irisé**

From 2003, 3 million inhabitants located in three “départements” (80 communes) near Paris (Hauts de Seine, Val de Marne et Seine St-Denis) as well as the 200,000 companies located in the area will have access to Irisé<sup>12</sup>. Irisé is a 276 km telecommunications infrastructure of dark fibre.

The infrastructure, built by LDcable (part of Louis Dreyfus – a large French group), will connect telecommunications operators’ points of presence and France Télécom’s local exchanges.

The cost of using Irisé is reported to be only a twentieth of the cost that an operator would have incurred when establishing themselves a similar infrastructure. The basic price is € 11 per meter for the 15-year lease of a fibre pair (or 73 eurocents per meter per year for a fibre pair).

##### **2. E-Tera**

A 300 km fibre optic network connecting 22 towns East of Toulouse and providing many services such as satellite broadcasts for schools. The network is interconnected to network operators’ points of presence and to metropolitan networks in this area.

The shareholding for this project is composed of:

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<sup>11</sup> Decision of the Comité Interministériel pour l'Aménagement et le Développement Territorial (CIADT) of July 9, 2001

<sup>12</sup> Infrastructure pour des réseaux intercommunaux de services

- Local authorities: Tarn, Gers and Tarn-Garonne areas;
- Banks: CDC, Dexia, Banque Populaire du Tarn et de l'Aveyron and Société Régionale de Participation Midi-Pyrénées.

### **3. Amiens – Phileas Net project**

The Phileas Net project<sup>13</sup> aims at connecting 300 sites around Amiens. The network will serve a Closed User Group serving local authorities, schools, hospitals and the local chamber of commerce. A first investment of € 3million was completed in Spring 2002 with the connection of 89 sites in the centre of Amiens.

A separate FTTH<sup>14</sup> network is being rolled out by France Citévision to provide companies and residential users with high speed access to Internet, digital TV and telephony.

Both infrastructures use common trenches.

### **4. New project in l'Oise**

In May 2002, a public consultation was launched in the “département de l'Oise” on the establishment of a telecommunications infrastructure. The key objectives of the consultation are to determine telecommunications operator’s needs and ensure the integration with other private or public initiatives.

### **5. 2G coverage – going beyond 99% of the population**

As of July 2001, the three 2G networks together covered 91.6% of France and 99.3 % of the population. This leaves 396,000 inhabitants, 1480 communes and 46000 km<sup>2</sup> without mobile coverage.

Public authorities and the mobile operators worked jointly on possible ways of boosting geographical coverage. In December 2001, the following commitments were made.

#### **a) Commitments made by public authorities**

The State and local authorities will spend up to € 76m over the next two years to finance passive network elements (masts and sites). The aim is to install 1150 additional antennas to cover 1480 communes that are not covered by any mobile operators. These new sites will be available to any of the three operators.

#### **b) Commitments made by Orange France and SFR**

The commitments made by Orange France and SFR to this project are that:

- at least one of them will cover each village of these 1480 communes by the end of 2003;
- they will both install base stations on 50% of the 1150 antennas proposed;

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<sup>13</sup> Call for tender available at <http://www.adntic.com/agence-tic/agenda/Cahierdescharges.pdf>

<sup>14</sup> Fibre To The Home

- the remaining 50% will be covered either by Orange or by SFR (50/50);
- each operator is expected to invest € 76m over two years on this project.

## **F. Outlook**

On July 31, 2002 an important consultation<sup>15</sup> was launched by the Government in order to amend the French legislation to comply with the new European legislative package.

This legislative process may have important consequences on Art. L. 1511-6 such as the convergence between telecommunications, Internet and broadcast regulation. It will also have a great influence on the concept of "service public des telecommunications".

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<sup>15</sup> [http://www.telecom.gouv.fr/telecom/index\\_com.htm](http://www.telecom.gouv.fr/telecom/index_com.htm)

### **III. IRELAND**

#### **A. Introduction**

In the last decade, the Irish economy has been thriving on its ability to attract Foreign Direct Investment. An increasingly important element in the investment location decisions of firms is the availability of advanced broadband services. However, according to the OECD<sup>16</sup>, as of June 2001, Ireland only ranked in 27<sup>th</sup> position among OECD countries in terms of broadband penetration ahead of Greece, the Slovak Republic and Turkey.

Another aspect of the Irish environment is the privatization of the incumbent operator, eircom plc, that was bought by Valentia Telecommunications Ltd. in November 2001 through a highly leveraged deal. This has left eircom heavily indebted and with limited capabilities to build broadband infrastructures on a massive scale.

Against this background, the Government decided that a competitive market alone would not ensure the provision of advanced communications services and networks to the extent required to contribute to national competitiveness and attract foreign investment. Therefore, public funding should be used as a catalyst. Under the National Development Plan<sup>17</sup> (NDP), € 200 million has been earmarked for investments in telecommunications in areas where it is clear that the market will not deliver – basically in almost every area outside the Dublin region.

#### **B. Objectives**

Some of the key objectives for the provision of aid to the development of broadband communications are:

- to contribute to a more balanced regional development by ensuring that the infrastructure required for enterprise promotion purposes are available in all regions;
- to accelerate the development of cost competitive advanced communications and electronic commerce infrastructure and services, including shared infrastructure and services solutions;
- to provide a stimulus to further investment in significant alternative communications and e-commerce infrastructure and services in the targeted regions, thus promoting greater competitiveness in the advanced communications market;
- to enhance access, reduce costs and deliver a wider range of services to all citizens, thus promoting the development of a more socially inclusive Information Society.

#### **C. Remedies to competition concerns**

Government's investments are focused on the underdeveloped parts of Ireland, especially outside the Dublin region. This translates into different funding rates available to commercial organisations

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<sup>16</sup> The development of broadband access in OECD countries – October 29, 2001

<sup>17</sup> The National Development Plan (NDP) is a large investment programme involving an investment of over € 50bn of Public, Private and EU funds over the period 2000-2006 in health services, social housing, education, roads, public transport, rural development, industry, water & waste services, childcare and local development.

ranging from 17.5% in the Dublin area to 40% in the poorer Border Midlands and West region. This implies that projects open to commercial organisations have to be at least 60% funded by the private sector.

A funding rate of 90% is available for investments by public authorities into passive infrastructure elements. However, third parties must be given open access to these infrastructures. The intention is not that local authorities get involved in the actual provision of services or even transmission equipment, but that they build passive infrastructures ( i.e. duct/sub-duct, dark fibre and collocation space) for renting to commercial operators.

Another potential concern from a competition law point of view was the possible overlap between existing commercial projects and the new projects funded by NDP. However, the key objective of the government is the provision of dark fibre, of which it quickly became clear that there was a general shortage. Therefore, project assessment focussed on financial viability rather than possible overlap.

## **D. Projects launched under the NDP**

This section provides brief status reports on the telecommunications projects launched under the NDP after two calls for tenders. It outlines the results of the first call for tenders and presents the selection procedure followed under the second call.

### **1. The first call for projects**

The first call for projects was launched in January 2001 and thirteen projects were selected. Today nine of these projects are still going ahead and four have stopped. These projects are aimed at improving business access to broadband communications in areas where the economic case for providing the services is not complete. Most of the projects are running to plan, although some face small delays resulting from movement restrictions imposed by the agricultural foot and mouth crisis in 2001. A short presentation of these projects is included in section E. below.

### **2. The second call for projects**

A second call for tenders was issued by the Department of Public Enterprise in August 2001 with NDP funding of € 55 million. This was subsequently raised to € 60-70 million but it remains unclear what the total amount will be. As of July 2002, the deployment of broadband fibre optic loops and fibre connections to businesses had commenced in 25 towns.

The plan is for each of those infrastructures to be owned by the respective local authority but to be managed as a whole by a central agency (Management Service Entity – MSE), removing the risk and cost of separate management for each individual ring. MSE is expected to be set up in 2003.

There is an important difference between the first and the second call for tenders. The first, in 2000, was intended to provide financial incentives to commercial operators to address less profitable areas. The second, in 2001, focuses on the creation of neutral dark fibre infrastructure by local authorities to be leased to operators on a cost oriented basis (although funding was also available for commercial organisations). A very high funding rate is attached to these projects (90%). In return, local authorities have to grant third parties open access to this infrastructure. The two main factors underlying this shift of focus are:

- a) *scarce private capital to co-finance the projects;*
- b) *the government's desire to encourage and promote competition in telecommunications services and content.*

### 3. Project selection

This section describes more specifically the approach followed by the Irish authorities to fund projects under **the second call for tender**. A fuller explanation may be found on the website of Norcontel, the organisation that managed the tendering process<sup>18</sup>.

#### Types of projects and organizations eligible for funding

Three programme lines were supported under the second Call for Tender, as shown below. Public authorities were invited for all programme lines. One of the key reasons for inviting them to bid was the poor state of the telecommunications industry that may have resulted in a very limited response from commercial organisations. Indeed, it is understood that as of July 2002, only one commercial organisation is likely to receive a contract. Local authorities were offered higher funding rates, subject to them providing open access to their networks.

Programme line	Title	Description	Eligible Tenderer	Funding rates	Obligations tied to funding	
A	Commercial Broadband Rollout	<u>Any type</u> of Commercial Broadband Rollout projects aimed at providing commercial broadband services.	Any organisation	17.5% and 40%.	None	
B	Commercial DSL rollout	This programme line is aimed at addressing geographical deficits in the <u>availability of DSL</u> services.	Any organisation	17.5% and 40%.	None	
C	Public Broadband Rollout Projects with economic development objectives	Public bodies (Local Authorities, Government Agencies, Health Boards, etc.) may now seek support for broadband infrastructure projects. Additional funding may be available for these projects subject to the public service nature of the project. These projects are aimed at the facilitation of public service delivery or economic development.  In practice metropolitan fibre rings are rolled out in 25 towns	Non commercial Public Body (as defined in section 1.5.3)	90%	Open Access for third parties	

<sup>18</sup> <http://www.norcontel.ie/ndpcomms/itt.pdf>

a) *Line A - Commercial Broadband Rollouts (basically any broadband project)*

Typical examples of broadband projects under this programme line are:

- provision of broadband infrastructure and services to residential and SME<sup>19</sup> customers;
- deployment of Dark Fibre;
- provision of Broadband Infrastructure to Regional Digital Parks and Industrial Parks;
- enhancement of existing broadband infrastructure and services such as upgrading of links to local exchanges or transmission systems or upgrading of fibre network capability to provide, for example, DWDM<sup>20</sup> based broadband services.
- connection of public services, local authority laboratories, hospitals and public utilities;
- provision of broadband residential services in areas of low population density.

b) *Line B - Commercial Digital Subscriber Line (DSL) Rollout*

This programme line is aimed at addressing geographical deficits in the availability of DSL services.

c) *Line C - Public Broadband Rollout Projects with Economic Development Objectives. (passive infrastructure elements)*

This programme line covers broadband rollout projects with economic development objectives proposed by non-commercial public bodies. The objective is to encourage private sector telecommunications service competition. Typical infrastructure elements that could be supported under this line include: fibre cable, ducted routes and appropriate civil works, distribution frames, and the fitting out of floor space. Telecommunications companies and other private entities must be given open access to the infrastructure on terms agreed with the Minister. Tenderers had to include in their tenders the proposed charges for such access and an outline of their proposed contractual relationship with users.

#### 4. “Value for public money”

The bids had to include a “value for money” assessment i.e. the amount of grant sought compared with anticipated benefits. Tenderers were asked to provide clear and explicit information on the scale and development schedule of the proposed project, its benefits to different categories of users and other information with respect to two scenarios viz.:

- in the absence of the grant sought via this tender;
- with the additional funding provided by the grant sought.

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<sup>19</sup> Small and Medium Enterprises

<sup>20</sup> Dense Wave Division Multiplexing

## **5. Business Plan: feasibility & viability**

Bidders had to present a comprehensive business plan covering all aspects of the proposed project (economic, financial, technical and planning) and demonstrating its viability. Tenderers also had to provide evidence of their capability of investing matching funds. Over a 10-year period, the business plan had to detail the proposed investments, with and without National and EU funding. All sources of funding had to be clearly identified. The plan also had to show the evolution of prices for the advanced services.

### **E. The nine projects launched under the first call for tender**

The nine projects selected under the 2001 call for tender and still going ahead are:

- Kerry Broadband Communications Corridor (South West): upgrade of the microwave backbone between Limerick and Cork and the provision of broadband services in the area - led by Chorus – a telecommunications operator;
- South East Broadband Communications Corridor: provide broadband access to much of Leinster and Munster – also led by Chorus;
- BMW Broadband Corridor: provide broadband access to the north Midlands and north Connaught – again led by Chorus;
- Regional e-Commerce Hubs: develop four regional "points of presence" in the west of Ireland. It is intended that these centres will be connected over a broadband IP infrastructure and become regional e-commerce hubs offering a range of services including Web hosting, high-speed Internet access, application services and competitive telephony services – led by Nevadatele<sup>21</sup>, a telecommunications operator;
- Broadband Wireless Local Loop: install broadband wireless local loop base stations in nine regional towns – lead by ESAT<sup>22</sup>, a telecommunications operator;
- Accelerated xDSL Rollout: rollout of Broadband DSL access to 35 exchange areas outside those already planned by ESAT;
- SW Cork Digital Link: provide connectivity from the existing ESAT national trunk network in Cork City to the areas of Ballincollig, Bandon, Clonakilty and the West Cork region – led by ESAT;
- National Fibre Optic Network: install a national 48-fibre optic network linking major centres including Dublin, Limerick, Cork, Waterford, Wexford, Dundalk, Cavan, Sligo and Galway – led by ESB Telecom (a subsidiary of the Electricity Supply Board company);
- Longford Broadband Infrastructure: provide Longford town with a broadband communications infrastructure offering Internet access and other e-commerce and digital services– led by Crossan Telecom a telecom installer with a cable TV arm (Crossan Cable).

For a fuller report on the status of these projects, including maps, please refer to [www.norcontel.ie/ndpcomms](http://www.norcontel.ie/ndpcomms)

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<sup>21</sup> [www.nevadatele.com](http://www.nevadatele.com)

<sup>22</sup> [www.esatbt.com/esatcom](http://www.esatbt.com/esatcom)

## **IV. SWEDEN**

### **A. Background**

Sweden achieved full liberalisation with its new Telecommunications Law of 1993. Shortly afterwards in 1994, the City of Stockholm took the initiative to establish a commercial company, Stokab, to provide dark fibre infrastructure capacity for operators and other organisations. This was, and still is, an extremely successful activity which has influenced later broadband infrastructure developments, both in Sweden and internationally. Stokab claims that Stockholm is now the city with the highest penetration of optical fibres in the world. It is probably not a coincidence that Sweden was the first country in Europe to develop a broadband policy and to start discussing public funding for broadband infrastructure. Stokab is further discussed below.

Also in 1994 the Swedish Government established the ICT Commission to provide recommendations and guidance related to the development of the Information Society. In 1999, upon request by the Government, the ICT Commission provided a report on broadband infrastructure and recommended that the State take responsibility for the development of a sophisticated new optical fibre network to serve all households and organisations and to provide high capacity communications for all purposes.

In the public debate that followed, the idea of a massive Government investment in infrastructure without proven demand was rejected. Industry pointed out that there were many technology alternatives. A consensus for a more 'private sector focused' approach developed. This policy was based on a report, also published 1999, from the so called IT Infrastructure Committee, a special committee appointed by the Government.

In March 2000, the Government submitted a proposal on "An Information Society for All". It represented a political ambition that Sweden should be the first country in the world to achieve this goal. The proposal included a range of measures on various objectives and in particular it included an action plan to accelerate the development of a national broadband infrastructure. The idea was that broadband development should be largely market driven, but that the State would have an overall responsibility to ensure that the whole country would be covered. The key measures are described below.

### **B. National Broadband Infrastructure programme**

The Swedish national programme for broadband infrastructure is one of several elements contained in the Government proposal to the Parliament in 2000 with a view to stimulating development towards the information society. Some proposed actions consist of financial aid while others are the introduction of regulatory measures intended to facilitate competition.

#### **1. Financial support.**

SEK 8, 350 billion (€ 1 billion) was earmarked to support a fibre optic network with a four-level hierarchical structure. Of this sum SEK 5,8 billion would consist of public, financial aid. The remaining SEK 2,5 billion was the estimated cost of building a backbone network to be financed on purely commercial grounds.

- Backbone network - the top level is the backbone network, which is supposed to cover the whole country in such a way that it covers the principal town in each of the 289 administrative areas (municipalities).
- Regional networks - the regional networks are supposed to connect the local communities that exist within each administrative area (or municipality). The regional networks would interconnect with the backbone network in the principal town of the municipality.
- Local access networks - a local access network is a fine meshed distribution network within a local community intended to give private and commercial subscribers access to the higher level networks.
- Private access - at the lowest level there may be private access networks serving, for example, a residential building or an industrial campus.

Each of these four levels is supported by its own support programme, which is further described below.

a) *Backbone network*

There are several organisations in Sweden that have nationwide backbone networks for communications. Telia, the incumbent operator, obviously has a very extensive network reaching all 289 administrative areas. Railroads and power utilities also have their own networks, although not as extensive as that of Telia.

In August 2000 the Swedish National Grid was tasked with building this network with fibre optics before the end of 2002. The Swedish National Grid, which provides the national power network, is owned by the Government. The total backbone network was planned to cost SEK 2500 million (€ 300 m), and the original intention was that this investment would be covered within its own budget without any State aid.

The construction and operation of the network is the responsibility of a business subsidiary of the Swedish National Grid, which was supposed to provide dark fibre to communications operators under commercial conditions.

By June 2001, the network of the Swedish National Grid and its partners had reached 159 of the 289 municipalities covering 85% of the population. Following the downturn in the telecommunications industry in 2001, however, the Swedish National Grid reported to the Government that it would be unable to complete the assignment. In November 2001 the Government commissioned a special study to provide recommendations as to how to go forward. The report was published in May 2002 and acknowledged that the Swedish National Grid had found itself in a difficult position as a result of the changed market conditions. It recommended that the Swedish National Grid:

- should continue with its task to complete the national backbone network;
- would be allowed to provide other services in addition to dark fibre;
- would be allowed to join forces with the national railroad in order to establish the network;
- would have until the end of 2004 to complete the task;

- achieve connection with regional networks at another location than the principal town;

In addition, it was recommended that no dividends should be payable by the Swedish National Grid for these network activities from 2002-2006. This would in fact constitute an indirect subsidy from the Government.

No decision had been taken as of July 2002.

#### *b) Regional networks*

According to the architecture, there would be one regional network in each of the 289 municipalities. Many of these municipalities were deemed to have sufficient population density to enable the networks to be established commercially. A special support programme was designed to target those municipalities with sparse populations, where regional fibre optic networks would be unlikely to be commercially viable within the next five years. A list of municipalities eligible for state aid under these criteria was established. About 30% of the Swedish population is covered by the scheme. A total of SEK 2625 million (€ 315 m.) has been allocated for this purpose in the period 2000-2004.

In order to benefit from this aid, a municipality must:

- participate in the financing with a minimum of 5% of the relevant costs;
- develop an IT infrastructure plan to be approved by the county government. (The development of this plan had its own state financial support);
- document, as part of the IT infrastructure plan, how it intends to make sure that aid would be applied in a way that would be competitively neutral.

The state aid is not intended to cover 100% of the cost of the regional network. There is a maximum percentage that varies from municipality to municipality according to economic capacity. The range is from 33% to 89%, excluding those municipalities that are not eligible for support at all.

#### **Competitive neutrality of the scheme**

The question of competitive neutrality has been the subject of much debate. There is full awareness within the Ministry of the need to comply with EU rules on state aid and competition law. In fact, the scheme has been reported to, and approved by, the European Commission. However, it has taken time to convince the municipalities about the need for compliance. Many municipalities have expressed a preference for owning the network.

In general, the municipality will have to select the network installer as well as the network operator through competitive tender(s). The successful operator will be required to provide open non-discriminatory access to the network for other operators at prices that are fair in view of the subsidy received. Normally, the network operator would become the owner of this network. Only if there is no viable market alternative would the municipality be allowed to own the network. The Association of Municipalities has developed model contracts to be used *inter alia* in order to safeguard these requirements.

There is also a presumption that the network operator would concentrate on the provision of network facilities to other operators and not be directly engaged in the provision of telecommunications services. This is, however, not a firm requirement.

From a regulatory point of view, the situation is somewhat complex. The county state administrations have the responsibility of ensuring that all the rules concerning this programme of state aid are met. This involves approval of the IT infrastructure plan, ensuring that the state aid is applied correctly and that the network operator fulfills its contract.

PTS, the national regulator, has the responsibility to ensure that the Telecommunications Law is respected. In addition, it is tasked with a general oversight of the national broadband infrastructure programme, and it has to provide an annual report to the national government.

If there should be a conflict between a network owner and a competitive operator over an alleged discriminatory condition, it is likely to be a breach not of national telecommunications law, but of the specific undertaking between the network owner and the municipality. As such, it would be the municipality under the supervision of the county administration that should take appropriate action. In case of an unresolved conflict, the case would be referred to the courts. Another possibility could be an action by the EU on the basis of misuse of state aid.

PTS, in its role of advising the national government on the progress and status of the support programme, is of course in a position to raise the alarm if necessary. It should also be noted that there is good communication between the county administrations and PTS on these questions.

Problems between network owners and competitive operators remain largely hypothetical at this time, because there have not yet been many municipalities that have received any aid. As of March 2002 only 10% of the total budget had been allocated. It is expected that the bulk of the allocations will be made in 2003.

The reason for the delay is that the task of establishing the IT infrastructure plan in many cases has taken more time than foreseen. For many of the municipalities, it represents a new activity for which they do not have any previous experience.

#### *c) Local access networks*

State aid is also available for investments in local access networks serving properties that otherwise would be very expensive to connect to the national broadband infrastructure. The conditions upon which this aid is made available are similar to those for aid to regional networks.

- The municipality must have a plan for IT-infrastructure in place - and this plan must explain how to avoid network monopoly and achieve reasonable and non-discriminatory conditions.
- There must be co-financing from the municipalities.
- The local network would serve areas other than a township with more than 3000 inhabitants.
- The local area is expected not to be served by a broadband network under commercial conditions for the next five years.
- The local network would not cover that part of the network that would be installed on private property to serve only the subscribers of that property.

The conditions were relaxed somewhat in 2002 after complaints from the municipalities that some of the conditions made the support programme unaffordable.

- The co-financing requirement was reduced to 5% of the eligible costs.
- The bandwidth requirement was reduced from the original threshold of 2Mbit/s so that upgrading of existing networks would also be eligible. This means that upgrading copper based local loops with xDSL would be eligible as well as cable TV networks and radio based access networks. (This means that Telia, the incumbent operator, would be eligible to receive such subsidy, but only after public tender.)
- In practical terms, the municipalities must follow the same selection procedures as described above for the regional networks. In particular, the installation and the operation of the network that will receive state support must be subject to public tender with a view to exploiting the possibilities for competition. Only if no reasonable proposal comes forward can the municipality step into the role of network owner. If so, presumably, the municipality would have to meet the same type of open network conditions.

As for the regional network, the county administrations have the responsibility of ensuring that the conditions are met.

The support is available for investment made in the period from July 1, 2000 until December 31, 2005. The total budget allocation for state aid for local access network and private access arrangements (see below) is SEK 3200 million (€ 380 m). The recommendation is to allocate SEK 2400 million (€ 285 m.) evenly between the two measures and keep a reserve of SEK 800 million (€ 95 m.) for reallocation. The financing is expected to cover 10-15% of the total costs.

#### *d) Private access arrangements*

The support programme also includes aid to private subscribers for whom the cost of getting broadband access would be higher than average. The aid is available in the form of tax relief.

A new law, applicable from 2001, provides a tax deduction of 50% of certain access costs that exceed SEK 8000 (€ 950). The maximum tax deduction is SEK 5000 (€ 600). The tax deduction is limited to income in 2001 and 2002.

The budget allocation for this tax relief is included under that for local access networks.

## **2. Other actions**

In addition to financial support for the development of broadband infrastructure, Sweden has adopted two regulatory measures to support the same objective.

#### *a) Law on rights of way*

The law on rights of way for public networks was changed in 2000 to authorise power companies to install cables for telecommunications purposes where they already have rights for power cables. The rationale was that low voltage signalling cables for communications represented no additional intrusion on private property owners when high voltage power cables were already in place.

*b) Local loop unbundling*

Local loop unbundling, which also is an EU requirement, is considered an integral part of the broadband infrastructure strategy.

**C. Stokab**

Stokab was established in 1994 by the City of Stockholm<sup>23</sup> with the objective of accelerating the introduction of advanced telecommunications services to its commercial and residential citizens. Under Swedish law, a municipally-owned company must benefit citizens at large rather than serving a profit objective.

Stokab benefits from easy access to all the city's tunnels and ducts for transport (metros), water, sewer and electricity. The close links to the city ensure minimal red tape for new installations.

Stokab is a dark fibre utility. It offers dark fibre in the interest of the general public and not for profit. Beyond having the operational responsibility for a transmission network serving the internal needs of the city administration, it is not engaged in transmission services. It does provide a broadband switching centre for those of its customers that wish to communicate among themselves and it is also engaged in leasing space for mobile communications antennas on suitable buildings owned by the city.

The fibre network extends from the city centre out to the suburbs and is being further extended throughout the Stockholm region. It includes now more than 4000 km of cable (500,000 km of fibre).

The customers are different categories of telecommunications operators as well as local government institutions (for example hospitals) and major banks, insurance companies and media organisations.

Stokab has been a commercial success and was able to present solid growth in revenue, profits and investments even in 2001, which was a difficult year for most of the telecommunications industry. Stokab does not have any monopoly for infrastructure but argues that its offerings represent less risk in comparison with a vertically integrated operator because if the subscriber wishes to change operator, Stokab can easily lease the cables to the next operator. In fact, the industry downturn may make Stokab's alternative even more attractive.

Stokab claims that Stockholm is now the city with the highest penetration of optical fibres in the world.

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<sup>23</sup> Stockholm County Council had a minority share, which was taken over by the City of Stockholm in 2001.