Role of the Public sector in Broadband infrastructure development in European Union

Experience from the State Aid projects

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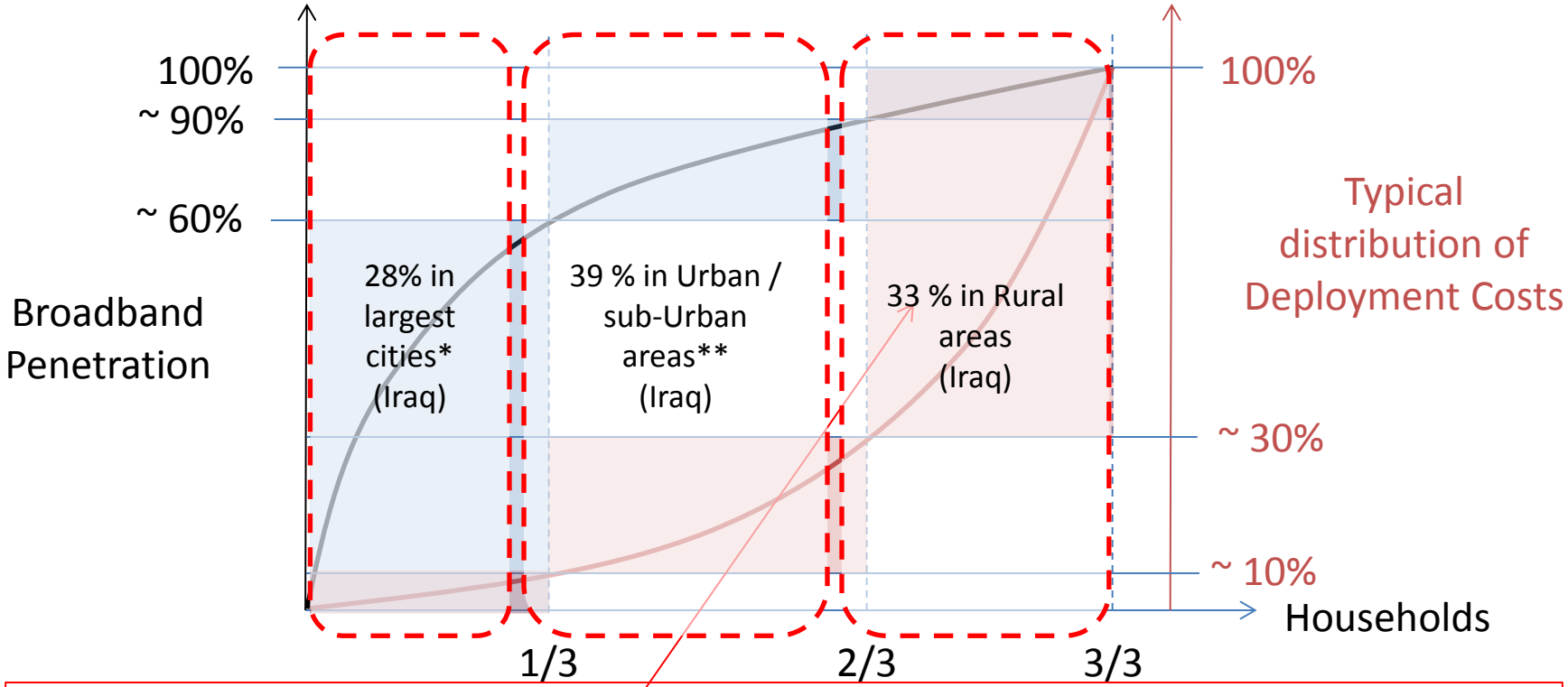
1 The role of the Public sector in infrastructure supply is increasing

European Union (EU) is increasingly supporting the initiatives of the countries to address connectivity gaps:

- State Aid principles and guidelines:
  - Areas with no more than one operator within the time horizon of 3 years (white NGA areas);
  - Open and non-discriminatory access, wholesale access prices allowing retail prices similar to those in competitive areas, etc.
- Structural Funds are adjusted to support Broadband development: European Agricultural Fund for Rural Development (EAFRD) , European Regional Development Fund (ERDF), Connecting Europe Facility (CEF), etc.;
- Role of the Public sector is essential to support private sector and ensure universality of Broadband.

But what are the reasons behind this trend?

2 Typical distribution of the Deployment costs per Penetration increment



For instance, it is estimated***, that the cost of deploying broadband (at least 30 Mbps download) to the last 10% of households is up to three times higher than the first two-thirds of the population.

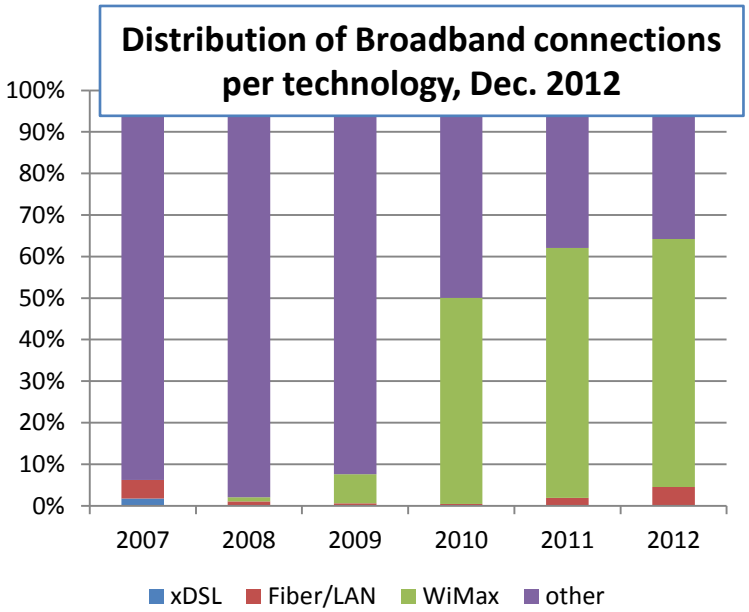
* - Population in largest city is the percentage of a country's urban population living in that country's largest metropolitan area, Source: World Bank Indicators;

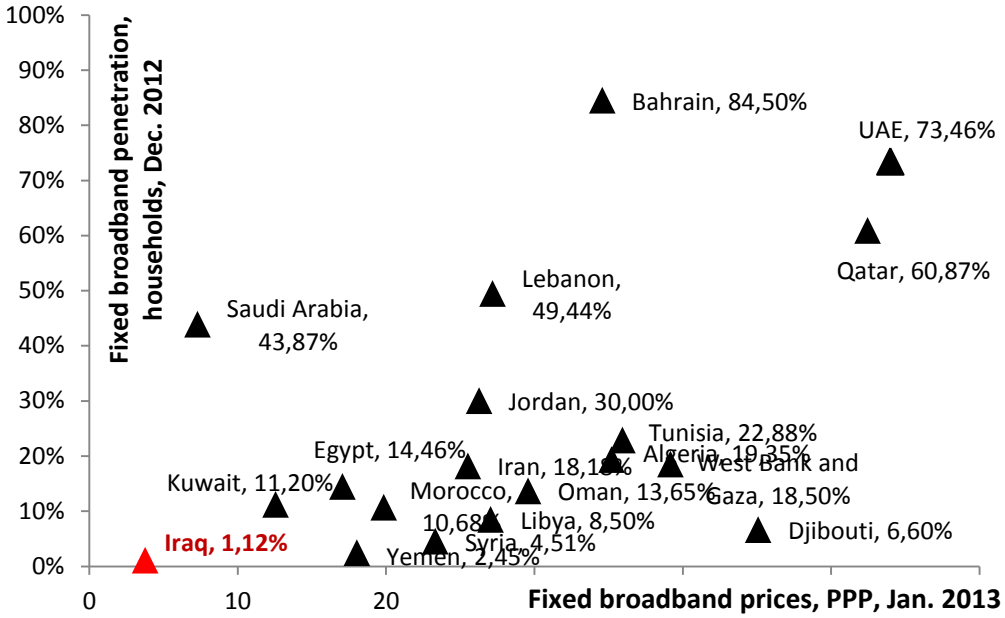
** - Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population, World Bank Indicators;

*** - State aid SA.33671 (2012/N) – United Kingdom, National Broadband scheme for the UK - Broadband Delivery UK, C(2012) 8223 final;

Experience of EU countries proves that some form of State support is essential to sustain the business case for infrastructure deployment for 2/3 of the country's households (even in case of developed countries).

2.1 Some observations about the Iraq broadband market





Note: Other refers mainly to Dial-up, WLL

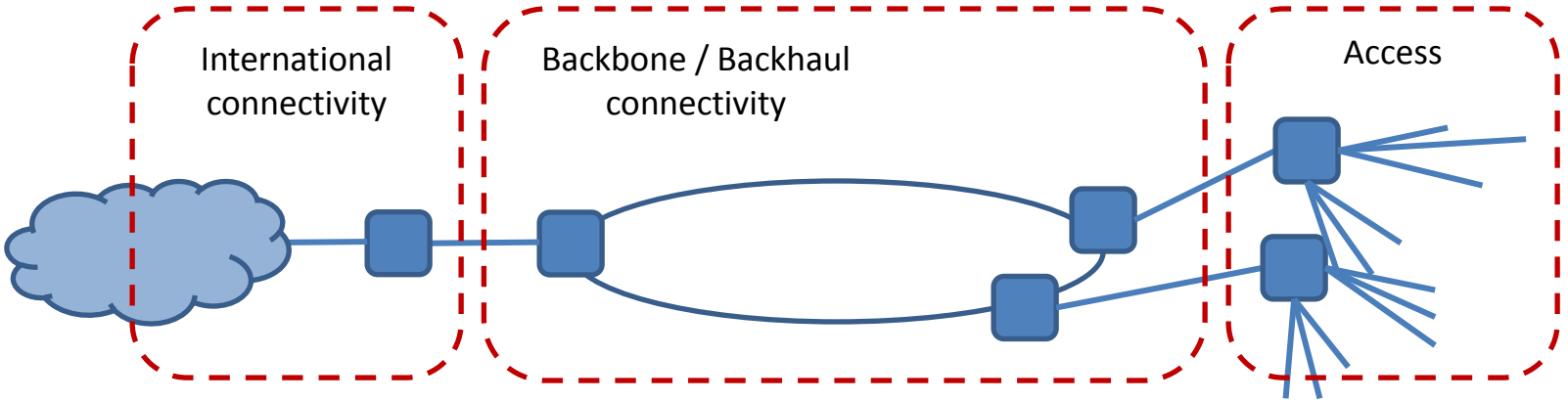
** Source Telegeography GlobalComms; ** WB analysis, Telegeography GlobalComms;*

- Technological choice of broadband connections is dictated by the price and the availability;
- E.g. price difference between the WiMax and xDSL is dramatic* (Apr. 2013):
  - xDSL (256 Kbps download) ~191USD;
  - WiMax (256 Kbps download) ~ 25USD (also we observed WiMax price ~5USD in Jan. 2013).
- Level of broadband pries in Iraq is quite low when compared to the rest of MENA** as well as penetration and connection speeds (up to 4Mbps only);
- Taking into account low prices Iraq may expect rapid increase of broadband connections in the near future.

BUT: Is everything ready for the infrastructure expansion? Are there available backhaul / backbone networks? What about prices?

3 Public investments in Broadband are increasing

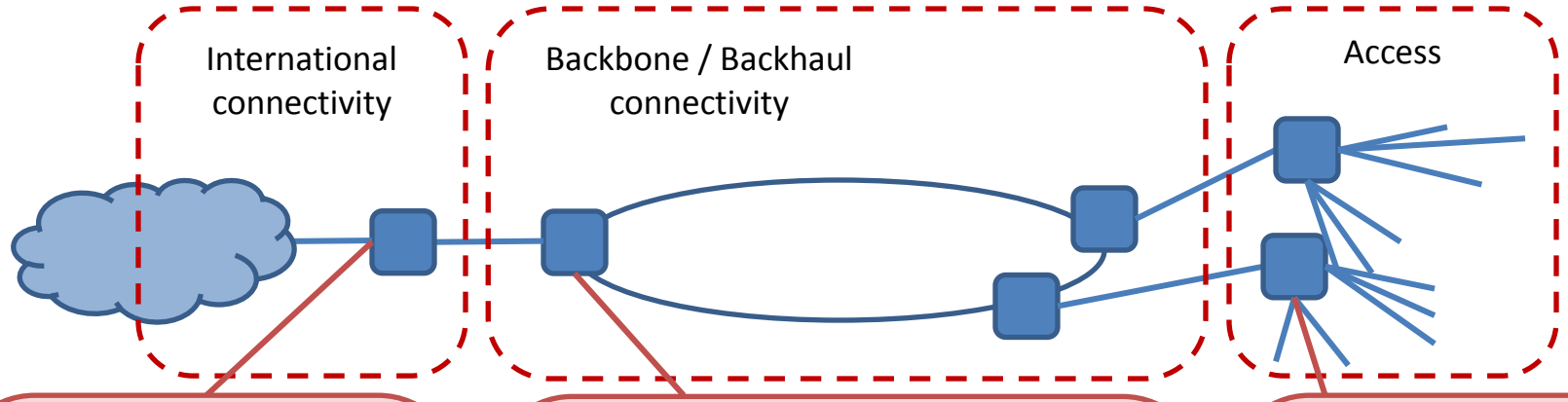
- Usage of public and EU funds to support Broadband infrastructure development is increasing*:
  - In terms of allocated financial resources: € 2 bn (2010); € 1.7 bn (2011), € 6.5 bn (2012);
  - In terms of number of projects: 118 State Aid requests from EU member states 2003 – Feb, 2013; 22 our of 27 EU member states.
- Projects may be split up in following subgroups:
  - (a) **International connectivity**; (b) **Backbone/Backhaul**; (c) **Access**.



Source: 'Living' list of the submitted requests and adopted decisions regarding the state aid in the EU could be found here: http://ec.europa.eu/competition/sectors/telecommunications/broadband_decisions.pdf

Objectives, Means and Form of State support differs depending on Network segment

4 Objectives and Means for State support per network segment



Objective: Decrease the costs of IIC where it is above country's average;

Means: Development of 'open' access IIC network segments connecting to International cable systems.

Objective: To lower entry barriers for local operators;

Means: Development of 'open backhaul hubs' in close proximity to households;
AND (OR)
Development of missing backbone infrastructure connecting remote and isolated areas.

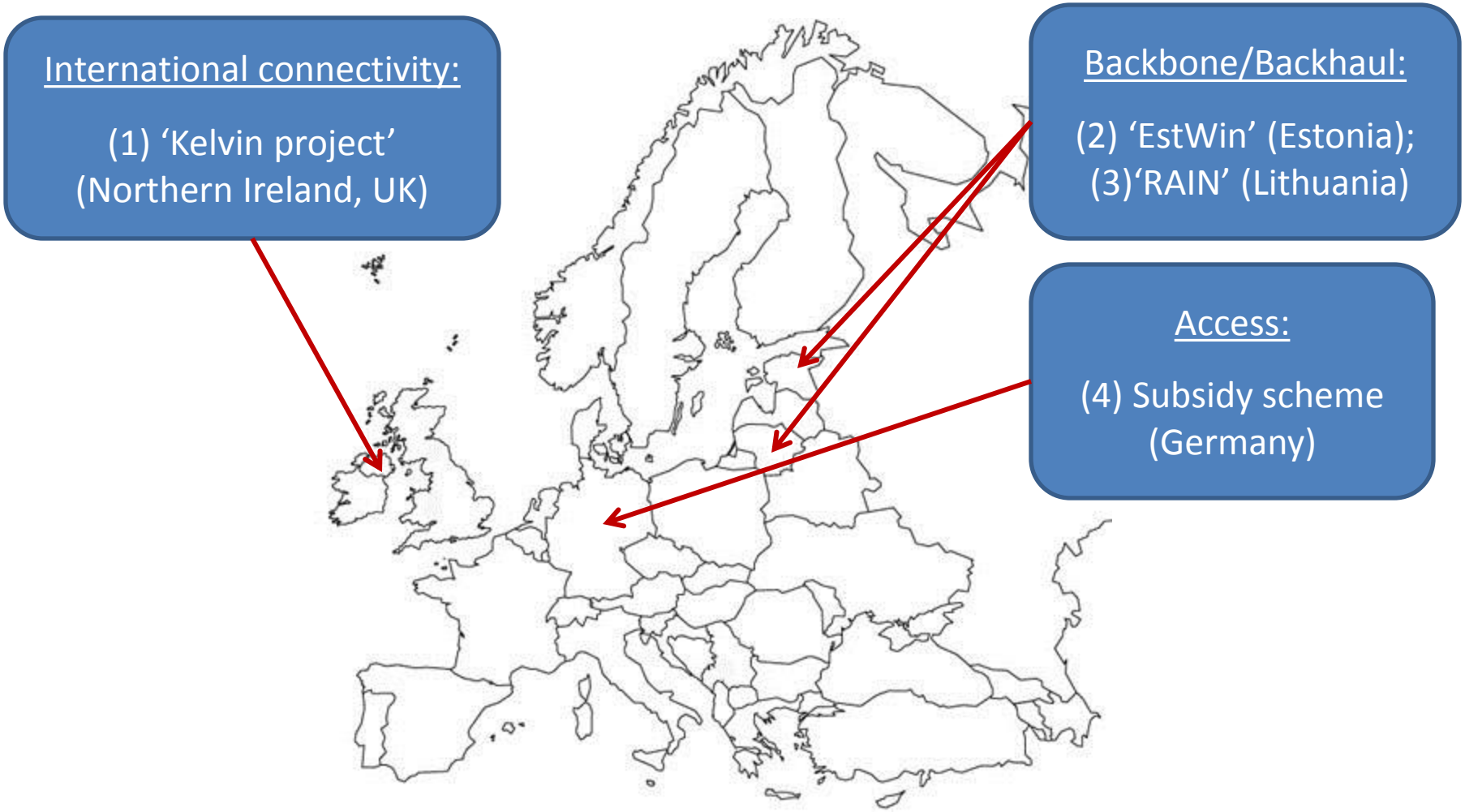
Objective: Support infrastructure deployment in not connected areas*;

Means: Support development of 'open' access networks connecting households
AND (OR)
passive infrastructure.

* - In case of EU it is so called 'final third', See also slide "Typical distribution of the Deployment costs per Penetration increment";
In some instances Objective may include upgrade of existing Access network infrastructure.

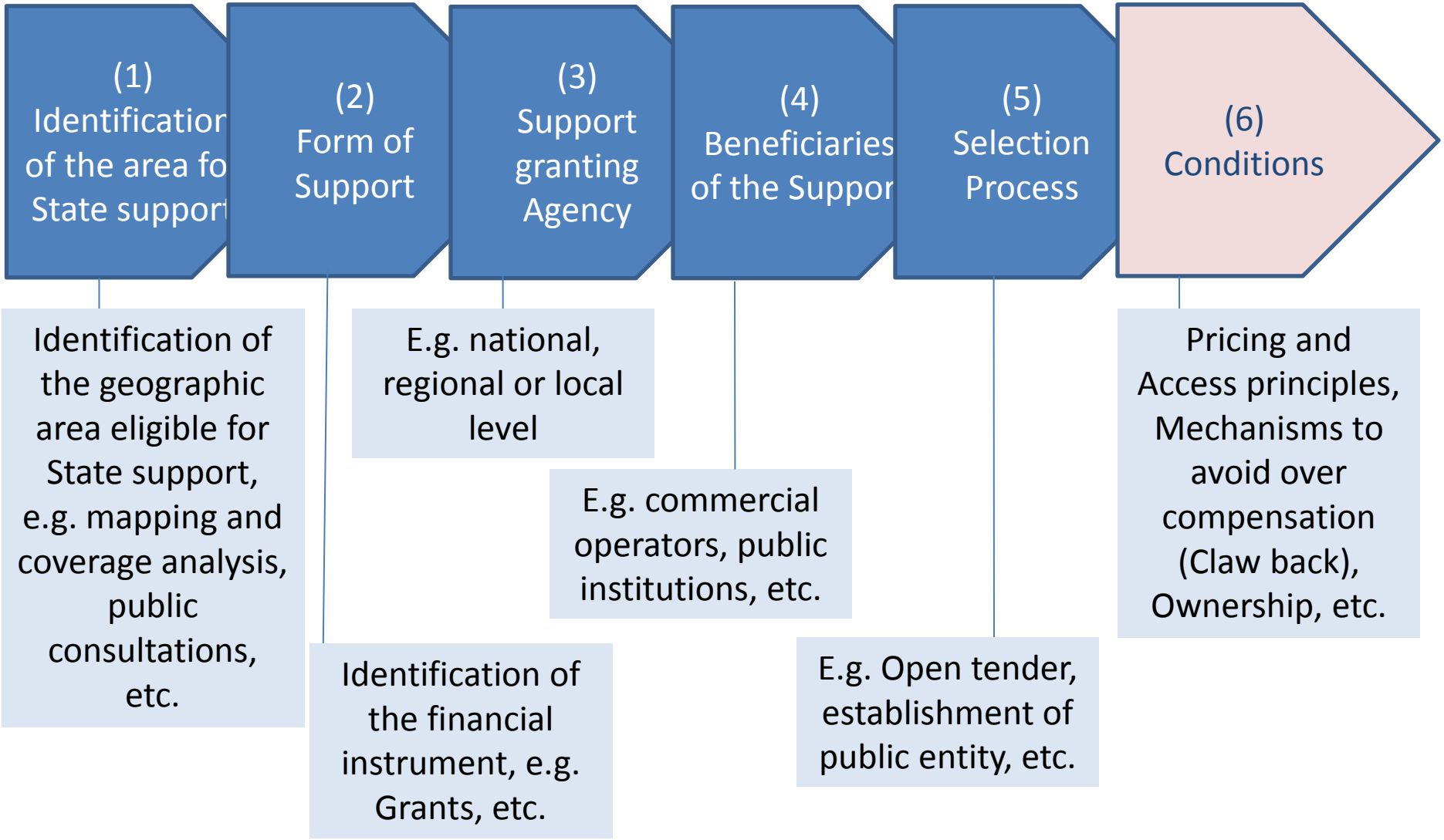
Next slides are dedicated to real projects in each area...

5 Overview of selected projects per network segment

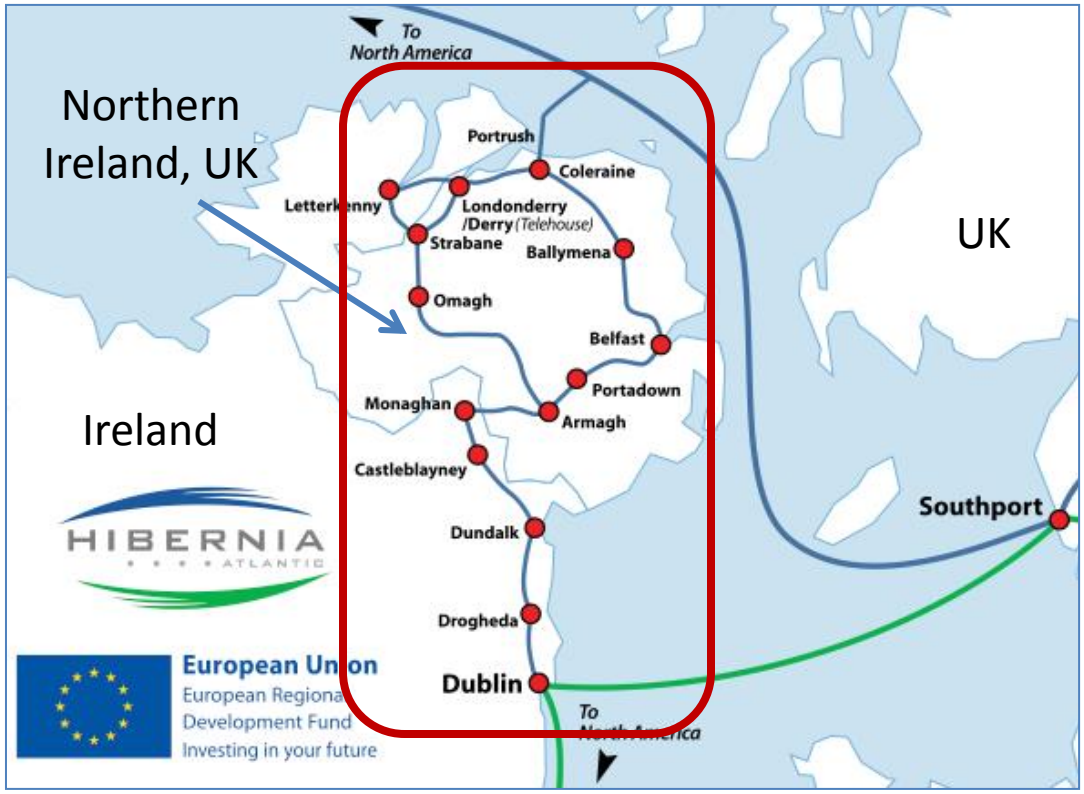


There are also examples of State aid applicable to two Network segments, except International connectivity. For instance, 'National broadband scheme for the UK' (2012), see at: http://ec.europa.eu/competition/state_aid/cases/243212/243212_1387832_172_1.pdf

6 Framework for State support: Comparison per Main components



7 International connectivity: Kelvin project (Northern Ireland, UK)



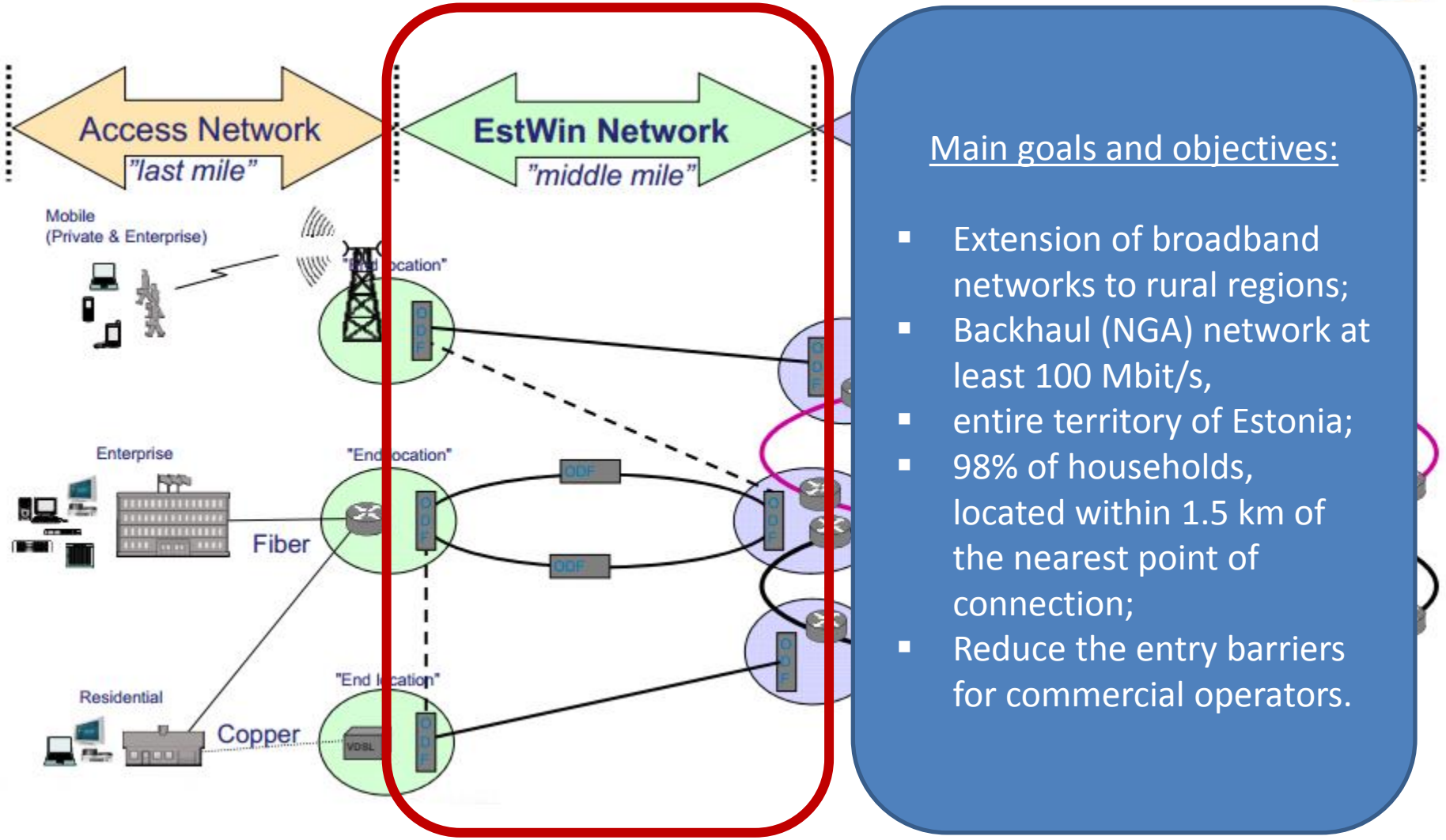
- Joint project between the UK and Ireland;
- Connects Northern Ireland to North America, UK and mainland Europe;
- The network also connects towns and cities within the North of Ireland.

Main goals and objectives [1]:

- Increase the interconnectivity of North West of Ireland;
- Minimum mandatory services from 2Mbps to 10 Gbps WDM Access;
- Open Access;
- Availability 99,999% requirements.

- Hibernia Atlantic was selected to deploy Project Kelvin [2] by the Department of Enterprise, Trade & Investment (DETI) for Northern Ireland and the Irish Department of Communications and Natural Resources (DCENR);
- Budget: EUR30M

8 Backhaul: EstWin project (Estonia) [3]

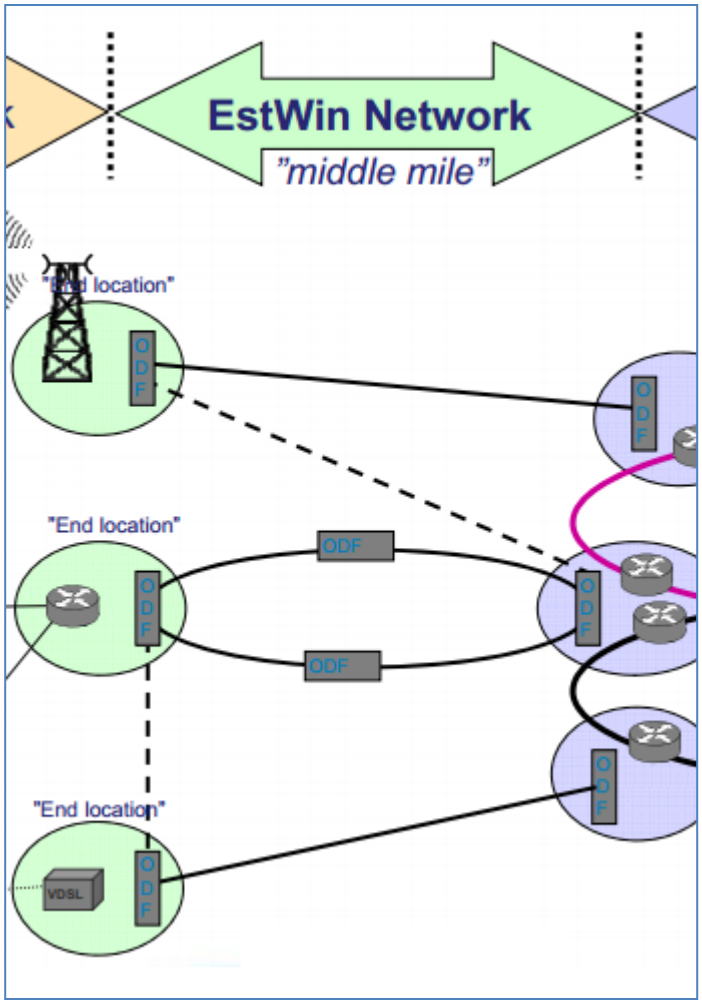


Main goals and objectives:

- Extension of broadband networks to rural regions;
- Backhaul (NGA) network at least 100 Mbit/s,
- entire territory of Estonia;
- 98% of households, located within 1.5 km of the nearest point of connection;
- Reduce the entry barriers for commercial operators.

Source: ELA, http://www.elasa.ee/public/files/EstWin%20Network.pdf

8.1 EstWin project (Estonia): Implementation



- **Passive network**: ducts and dark fibre, equipment installation spaces in street lockers, and electrical supply for the equipment;
- **No** data communication **equipment is intalled**;
- **Multiple fibre architecture**, allowing full independence between operators;
- Existing infrastructure is not duplicated;
- Sufficient capacity: even in **the most remote connection points** there are available **at least 5 physically separate pass through connections** to main backbone for different service providers;
- **at least 5 operators can provide their services** in parallel;
- The **cables have at least 24 fibres each**;
- Construction is carried out by smaller sub-projects of 60-70 km of network;
- Overall **budget EUR65M**; Dark **fiber** (two) **price**: ~19USD/km/month (incl. VAT) [4];

8.2 EstWin project (Estonia): Governance Model

- ELA non-profit foundation is owns, runs and provides EstWin services [5];
- Foundation was established by the network operators and vendors;
- Representative of Ministry of Economic Affairs and Communications is a member of the Supervisory Board of the Foundation;
- **Construction** of infrastructure is carried out **by private operators** selected;
- **Maintenance and support** (network monitoring, repairing breakdowns and other such works) is carried out **by a private company** also selected;
- Possibility that the owner and manager of the network could be the State was evaluated and discarded.

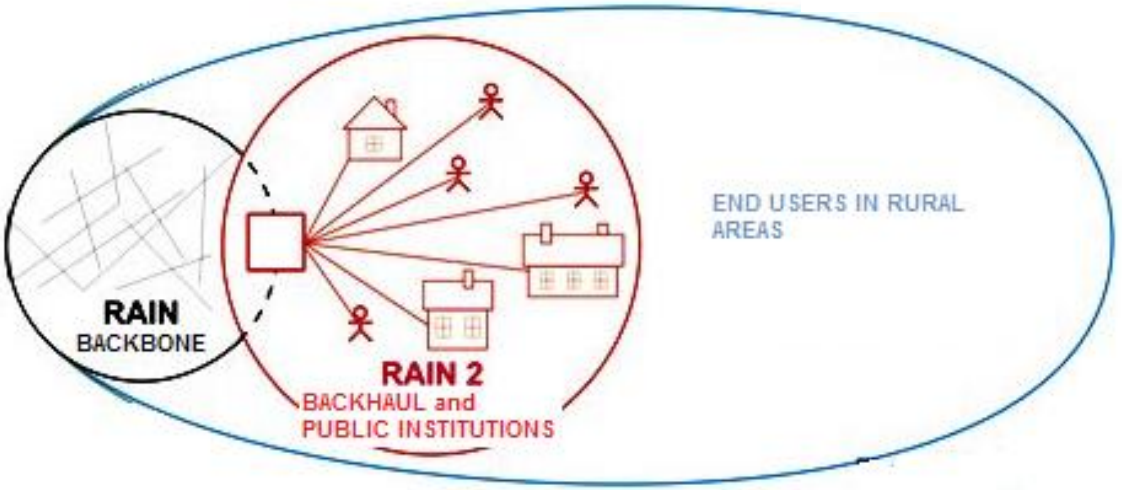
9 Backbone/Backhaul:
RAIN project (Lithuania): Overview [6], [7]

RAIN

RAIN-2

Main goals and objectives:

- Extension of broadband networks to rural regions;
- Backbone / Backhaul network;
- Reduce the entry barriers for commercial operators;
- Ensure competitive environment;
- Sustainable technological solution (for at least 10 years)



- Executed in two phases [9]:
  - RAIN: 2005-2008, budget: EUR21M;
  - RAIN-2: 2009-2013, budget: EUR51,1M.

- Scope of RAIN-2 project:

Optical fiber lines	4400 km
Residential areas	770
Operators' towers	~ 850
Fixed operators' POPs	~ 380
Education institutions	~ 570
Libraries	~ 580
Public internet centers	~ 360
Other objects	~ 220

9.1 Backbone/Backhaul:

RAIN project (Lithuania): Governance Model

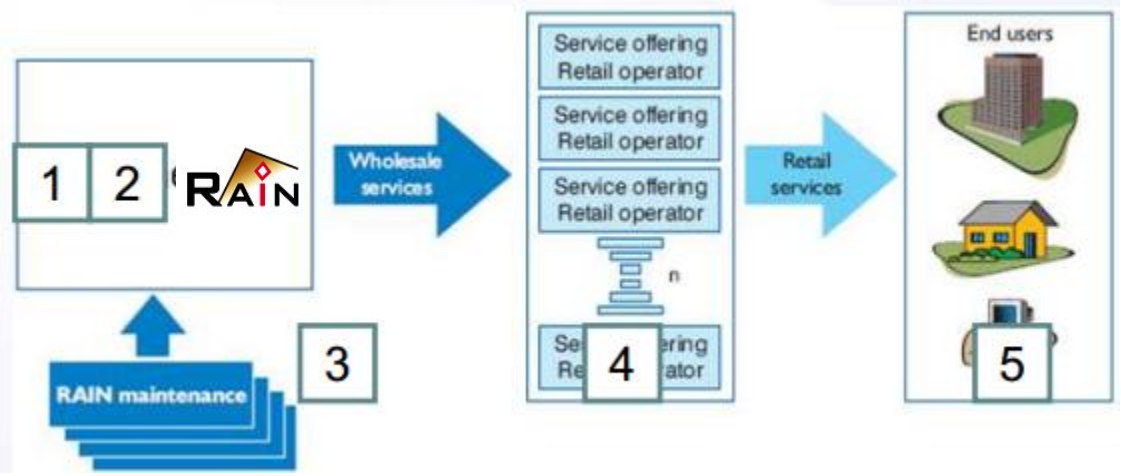
LIETUVOS RESPUBLIKOS
SUSISIEKIMO MINISTERIJA

Plačiajuostis internetas
viešoji įstaiga

Organisational Structure
(26 employees)

- Director
  - Financial unit
  - Legal unit
  - Unit of Technology and Development
  - Unit of Construction and Maintenance
  - Network Management Unit

1. **RAIN network is owned by the State. Ministry of Transport and Communications** owns it, sets services and tariffs [9];
2. **Public institution** "Placiajuostis internetas" [10], non-profit organization set by the Ministry of Transport and Communications, **is supervisor of RAIN network**;
3. **Maintenance of RAIN network is executed by private sector entities** selected via public tenders;
4. Potential **users of RAIN network are all operators** (on equal conditions, i.e. without any restrictions, or tenders);
5. End users can choose retail operator.



9.2 Backbone/Backhaul:

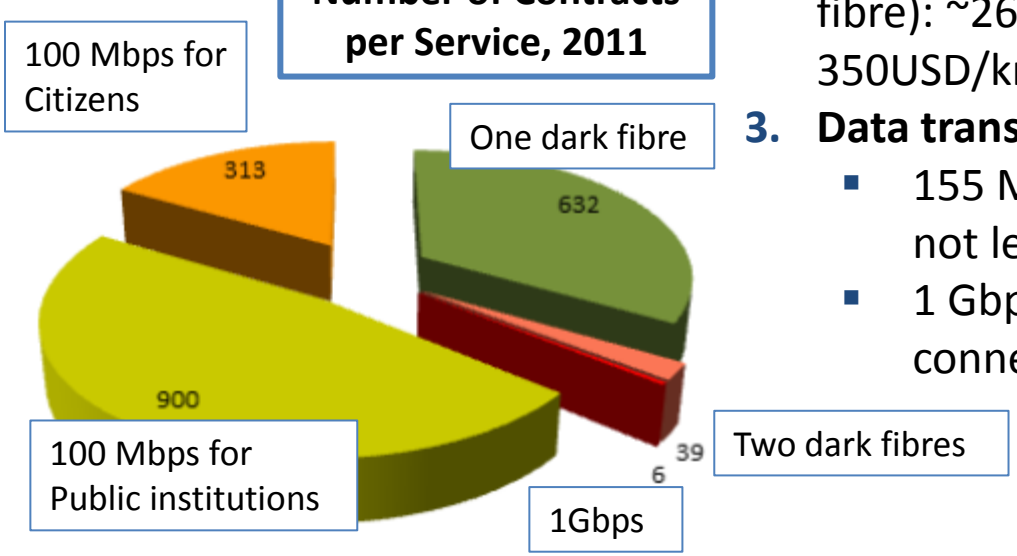
RAIN project (Lithuania): Services and prices

LIETUVOS RESPUBLIKOS SUSISIEKIMO MINISTERIJA

Plačiajuostis internetas viešoji įstaiga

- RAIN **network provides both active and passive** network **services** of high QoS (availability 99,5%, 2011);
- There are three generic groups of services [9]:
  1. **Dark fibre**:
     - Two fibres: ~ 38USD/km/month (incl. VAT);
     - One fibre: ~26USD/km/month (incl. VAT).
  2. **WDM** (Wavelenght-Division Multiplexing, Virtual fibre): ~26USD/km/month (incl. VAT), not less than 350USD/km/month (incl. VAT)
  3. **Data transmission**:
     - 155 Mbps (STM-1) – ~8USD/month (incl. VAT), not less that ~ 115USD/month (incl. VAT);
     - 1 Gbps - ~150USD/month (incl. VAT), second connection is half less.

Number of Contracts per Service, 2011



Source [10]

10 Access networks:

Subsidy scheme "Broadband in rural areas of Germany“ (Germany) [12]

- In 2008 Germany initiated first broadband subsidy schemes to foster the provision of broadband services in not- or not sufficiently covered areas (low population density areas*);
- **Analysis**** performed **concluded that** a **minimum bandwidth of 1 Mbps is required to meet the basic needs of citizens** living in rural areas (such as vocational training, eLearning, teleworking, home offices, etc.);
- The annual budget was estimated as €47M for 2008-2010. The total aid amount ~€141M.

** - In Germany the average population density in rural areas is 40 inhabitants /km2 compared to the average 231 inhabitants /km2 in urban areas;*

*** - by WIK Consult on behalf of the Ministry of Economics, Transport, Agriculture and Viniculture of Rhineland-Palatinate*

10.1 Access networks: **Subsidy scheme** (Germany): The model

- The aid took the **form of grants**. **Subsidy scheme was financing "profitability gap"*** (not the total cost of the project):
  - the difference in investment costs and profitability threshold for providing similar broadband services in rural areas compared to urban areas.
- **Aid is limited** to €500.000** per single project;
- The **amount of public support for each of the projects is be granted from federal, state** (*Länder*) **and municipal funds** and could be co-financed by EU funds;
- Before any aid is granted, the **municipalities have to prove a need for broadband services** as well as a missing or insufficient offer in the respective area;
- The **direct beneficiaries** of the aid **are commercial operators** offering broadband services. **Contracts** are awarding **for a up to 5 years**.

** - According to the German authorities the "profitability gap" that occurs due to the economic reasons of broadband networks prevents electronic communication operators to provide widely available broadband services at affordable prices in rural areas also. The value of the "profitability gap" for each project is calculated and submitted by the tenderers to the granting authority in the course of the tender procedure;*

*** - It was envisaged initially that aid would be limited to €200.000 per project, but afterwards this amount was increased due to the fact that infrastructure deployment costs were higher that initially foreseen.*

10.2 Access networks: **Subsidy scheme** (Germany): The model (2)

- Selection process performed by Municipality as follows:
  - **Publishing of the description** of the project which must be **technology and provider neutral** and correspond with the described needs;
  - on the basis of the technical specifications determined beforehand, the **operator requesting the lowest aid amount shall be selected**;
  - **As a minimum**, the selected service provider shall supply each residential and business subscriber a minimum **standard broadband connection of 1 Mbps (download)**;
- The **tender obliges the selected operator to provide wholesale access*** to the subsidized infrastructure to all operators on equal and non-discriminatory conditions that enable them to replicate their own retail offers;
- The **selected operators owns the network as well as other tangible and intangible assets acquired with State funds** (for instance equipment, customer relations)
- Pricing: **Retail broadband services in the targeted areas should be available at prices similar to not supported areas**;

** - In some rare cases, the German authorities consider possible that projects are funded when no wholesale access is provided due to technical restrictions or cost reasons (in case this would make total investment costs considerably more expensive, by at least 50%).*

11 Conclusions and Open questions for discussion

To achieve **universality of broadband…**

- State should support and compliment efforts of the Private sector;
- Does the current arrangement promote infrastructure deployment?
- Where is the problem? Pricing, Transparency, Availability of infrastructure, etc.
- What could be done to improve the impact of the State support?

References

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