Broadband Coverage in Europe in 2011:

Coverage for Switzerland

Contents

1. Introduction

In November 2012, the European Commission published the results of the Broadband Coverage in Europe in 2011 (BCE 2011) project.

The project was commissioned by the Directorate General for Information Society and Media, DG INFSO (now DG Connect). Neelie Kroes, the Vice President of the European Commission responsible for the Digital Agenda for Europe, has pointed out that "accurate data is critical for delivering policy and regulation that enables broadband internet for all Europeans."

The purpose of the BCE 2011 project is to support the objectives of the European Union's Digital Agenda. Two of the Agenda's key objectives are to provide all European Union citizens with basic broadband coverage by 2013 and broadband speeds of at least 30 megabits per second by 2020. BCE 2011 is designed to measure progress towards that objective and identify where action will be needed to achieve it.

The study addresses two key measures of broadband infrastructure:

- **Standard fixed broadband coverage** – whether homes can access fixed broadband service providing at least 144kps downstream speeds;
- **NGA broadband coverage** – whether homes can access next generation access broadband services capable of delivering 30Mbps downstream speeds.

"Glasfasernetz Schweiz" has provided separate funding to produce comparable data for Switzerland at year-end 2011. This report compares overall broadband coverage in Switzerland with the rest of the BCE 2011 study countries, and provides a detailed assessment of coverage within Switzerland. The report has been produced with the permission of the European Commission but with funding provided by "Glasfasernetz Schweiz".

"Glasfasernetz Schweiz" has also provided funding for Switzerland to be included in the upcoming study for Broadband Coverage in Europe in 2012, which will be published by the European Commission in May 2013.

This is the second version of the Switzerland coverage report, amended to include updated coverage data for cable and HSPA.

2. European overview

2.1 Country comparisons of standard broadband coverage

The "Standard Coverage" combination is meant to give an indication of the extent to which homes in each country or region can access fixed broadband service providing at least 144kbps downstream speed.

The four technologies which are taken into account to calculate the combination are DSL (which includes VDSL), Standard Cable (which includes Docsis 3 cable), FTTP and WiMAX. This section looks at the contribution of DSL, Standard Cable and WiMAX in particular. FTTP is generally classified as an NGA technology, so it is considered more fully in the next section, but it can add significant extra standard coverage, particularly in countries where DSL coverage is limited.

Total standard (fixed) coverage by country
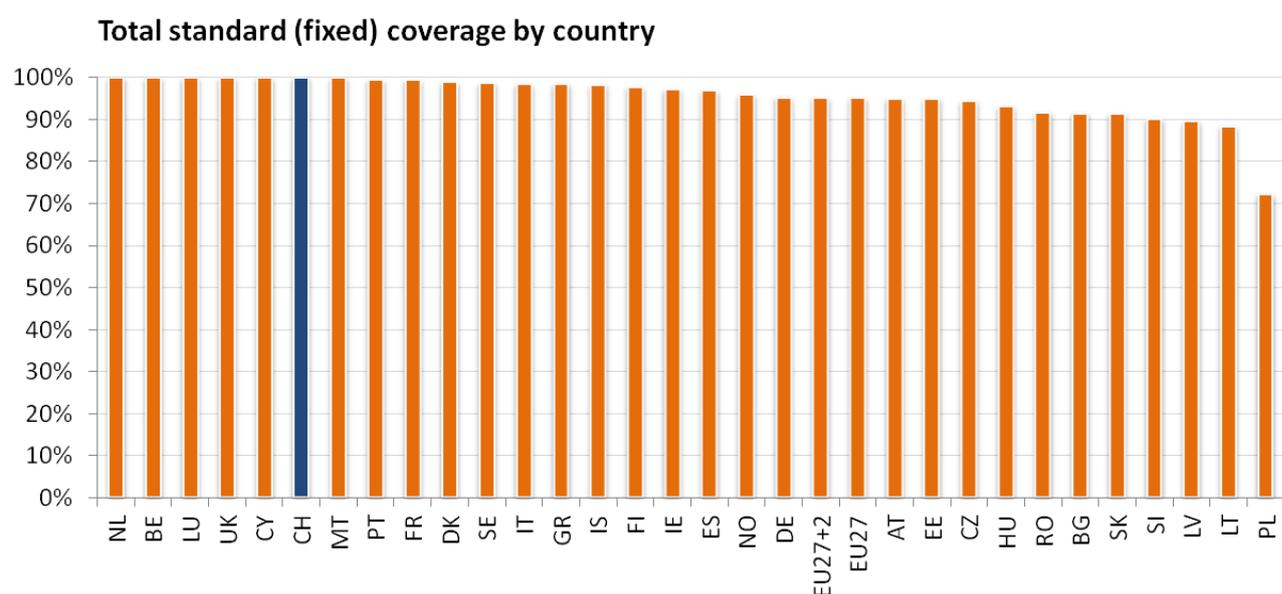
Total standard coverage within Switzerland is 99.7%. This places it higher than the European average of 95.7% and ranked sixth overall within the study countries.

Five of the study countries are reporting 100% standard broadband coverage. 14 countries, including Switzerland, are above 98%. All the former communist-bloc countries fall below the average.

Under the Universal Service Obligation, all homes in Switzerland can be guaranteed by law to be connected to services greater than 1Mbps. Homes that cannot be served by DSL are connected via mobile or satellite technology. Within the European Commission definition, which considers only standard broadband delivered through a fixed connection, we estimate that a small proportion of homes cannot receive standard services through fixed connections.

2.2 Country comparisons of NGA broadband coverage

The NGA Coverage combination is intended to show how far advanced Europe is towards achieving the Digital Agenda objective of access to 30Mbps broadband for all by 2020. It combines the

coverage of the three main fixed-line Next Generation Access technologies; VDSL, Docsis 3 Cable and FTTP. All three are capable of delivering the target of 30Mbps downstream, although VDSL will fall short of that capability where a premises is too far from the serving VDSL node.

Total NGA coverage by country
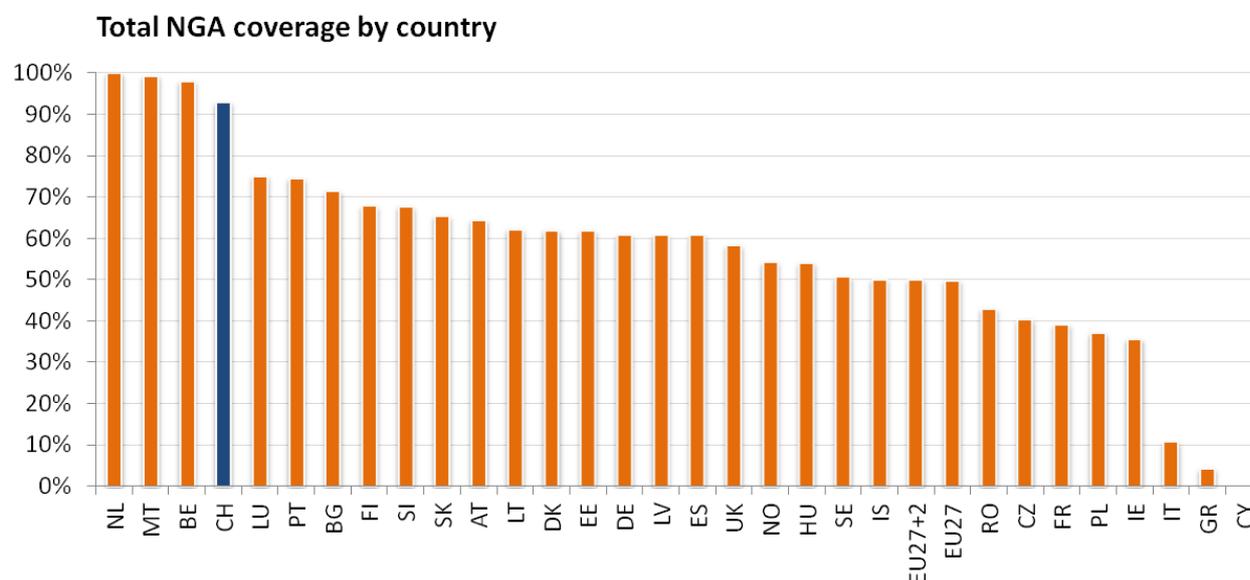
As the chart shows, Europe as a whole is just half-way towards the 30Mbps goal today. The BCE 2011 project found 50.2% net coverage by fixed-line NGA services, after taking account of the overlaps between different services. Again, it is the most urbanised countries which have the highest NGA coverage but otherwise the pattern of high or low coverage is quite mixed. Countries with above average NGA coverage are found in all quarters of Europe, reflecting the effects of different development policies, infrastructure needs and technology choices.

NGA coverage in Switzerland is 92.7%, placing it well ahead of the BCE 2011 average and ranking fourth overall within the study countries.

Note that after the publication of the BCE 2011 study, the European Commission received notification that NGA coverage in the Netherlands was slightly below 100%, as reported in the study. These figures are currently under investigation (no definitive answer was provided for actual NGA coverage) and will be updated in the BCE 2012 report.

2.3   NUTS 3 coverage of standard broadband

The maps in this section show how the two technology combinations, standard and NGA broadband coverage, are distributed across Europe. [1]

As far as standard coverage is concerned, the map shows a continent which has virtually complete coverage in its towns and cities, and their surroundings, but still has some way to go in the countryside.

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[1] The maps in this section do not show the NUTS 3 areas which are outside mainland Europe. The data for these areas is provided as a separate table in the published BCE 2011 report.

The countries with the densest populations (Malta, the Netherlands, Belgium and the UK) already show 100% coverage. So do many urban areas right across the continent. Many whole countries have reached the 95% coverage level. At the other end of the scale, only a few areas have below 75% coverage but over 200 are below 90%. Many more would be found to have more limited coverage than is shown here if more stringent criteria for broadband performance were applied. Simply quoting over 95% standard coverage understates the scale of the task still to be accomplished to meet the first of the Digital Agenda objectives.

**Map 2.01.01.Standard broadband coverage in the study countries**
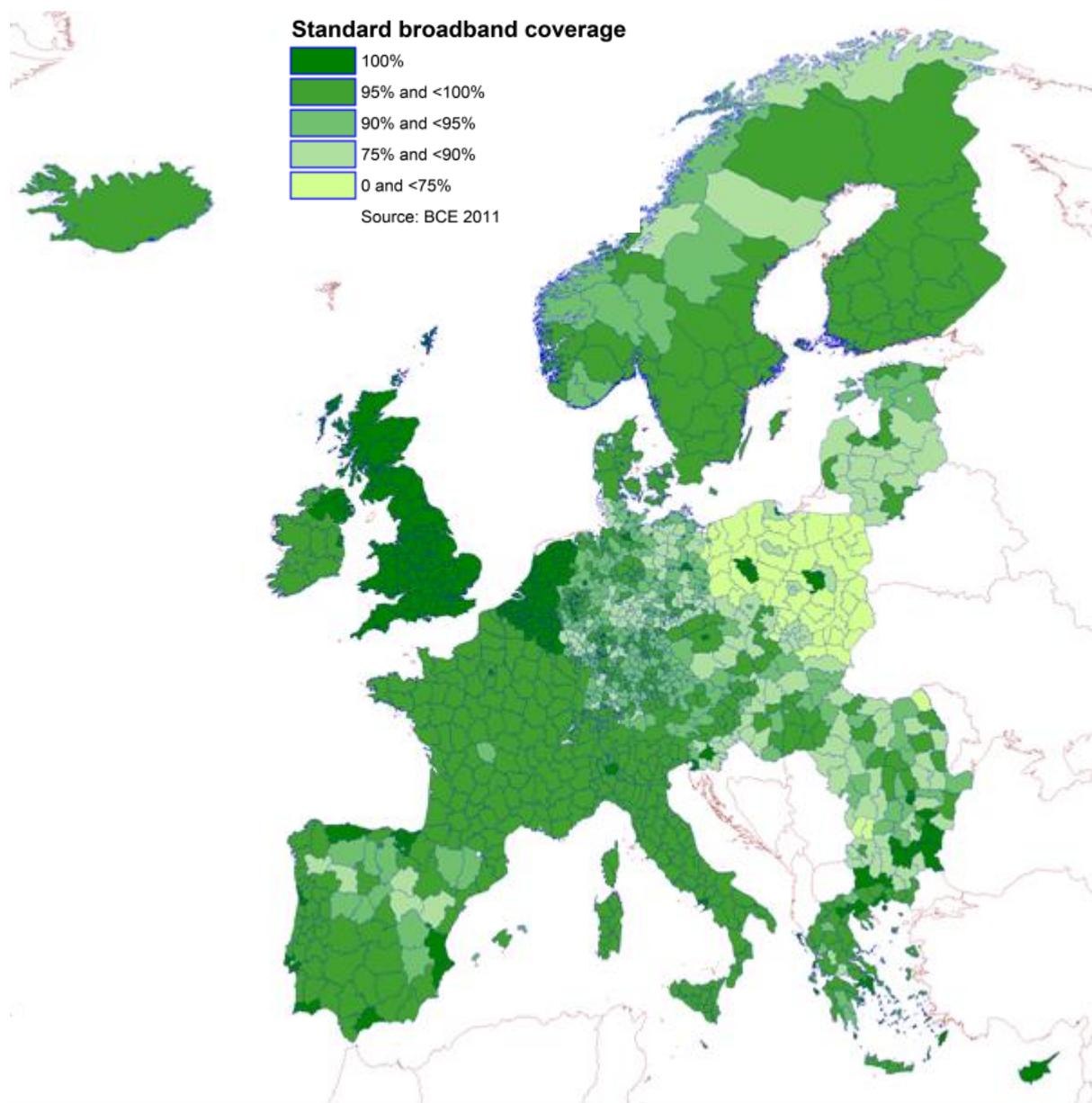
2.4 NUTS 3 coverage of NGA broadband

Looking at NGA coverage the picture is almost reversed in some ways. Here countries in the eastern half of the EU are ahead of many of those on the western side.

After the Netherlands[2], Malta and Belgium, at or near 100% coverage – largely due to the extent of their cable networks – many of the leaders – Lithuania, Bulgaria, Slovenia etc – are in the eastern half of the EU.

Map 2.01.02.NGA coverage areas in the study countries

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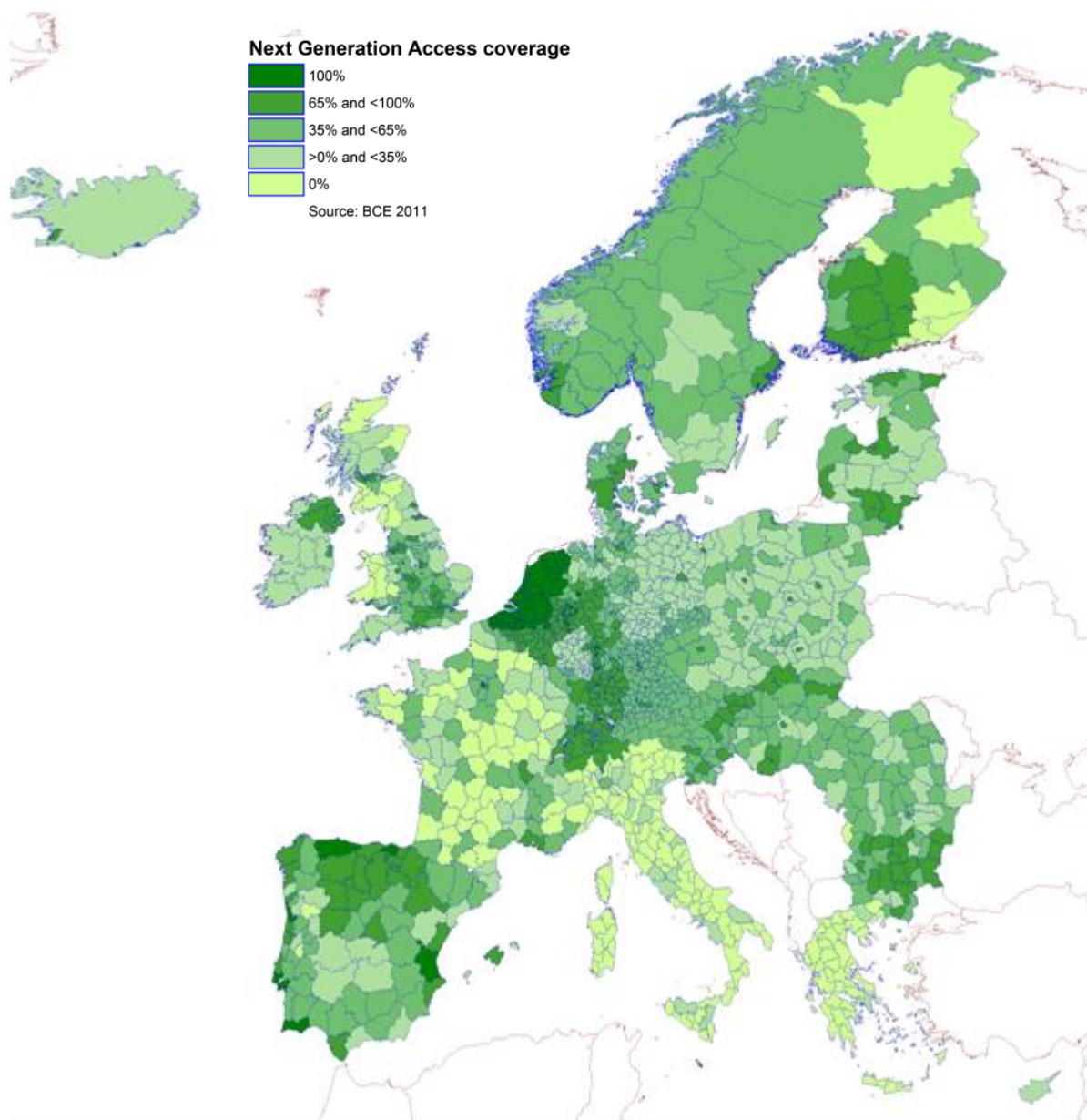
[2] See note on page 5 relating to the enquiry on NGA coverage in the Netherlands.

These Eastern countries have seized the opportunity to overcome the deficiencies of their legacy networks by rolling out fibre to serve large apartment blocks where the economics can be very attractive.

Many areas with above average NGA coverage are in the eastern EU while many in the West have no coverage at all. 208 NUTS 3 areas had 0% NGA availability at the end of 2011; 60% of all NUTS 3 areas had below the average 50% coverage. Here again there is a long way to go.
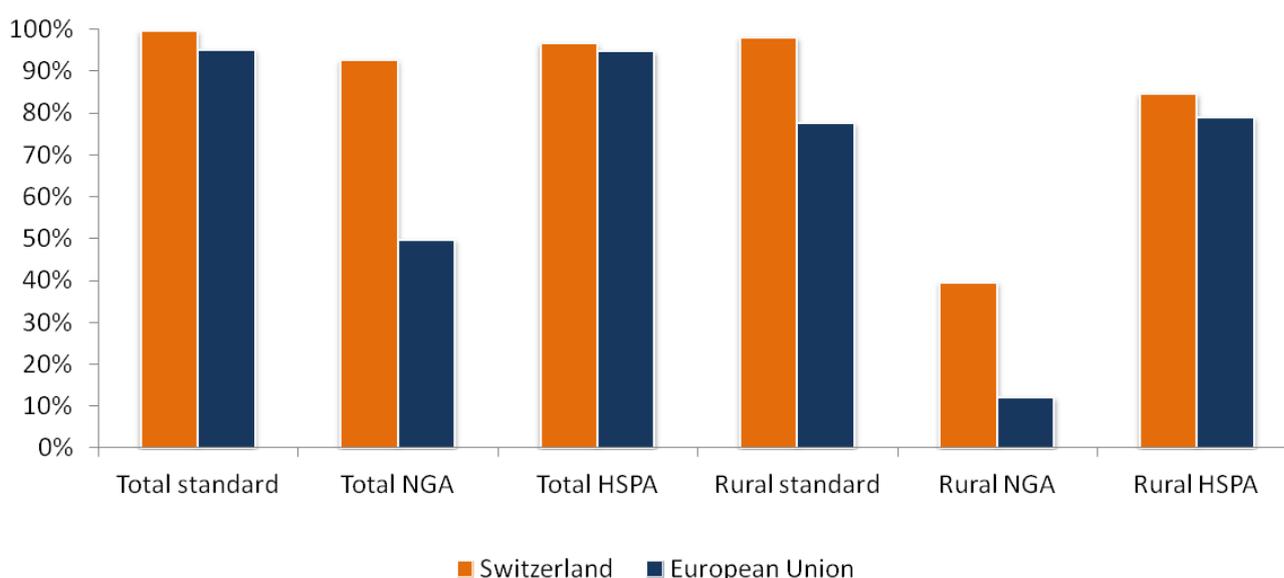
3. Switzerland

3.1   National coverage by broadband technology

NGA coverage in Switzerland is much more advanced than in the rest of the European Union – both in total and amongst rural households.

Its coverage of rural areas with standard broadband is also significantly ahead of the European Union average.

Switzerland: coverage by technology combinations

Looking at the technology profiles for Switzerland, we can see that Switzerland gains its NGA advantage by having more than double average VDSL and Docsis 3 coverage. FTTP deployment is currently comparable to the European average, although the Swiss incumbent has ambitious plans for the role out of this technology in the future. Most cable services within Switzerland have been upgraded to Docsis 3.

In terms of HSPA coverage, Switzerland is comparable to the European averages for both overall coverage and coverage of rural households. At the end of 2011, commercial LTE services had not been launched in Switzerland.

No evidence could be found for coverage of WiMAX services within Switzerland.

Switzerland: total coverage by technology
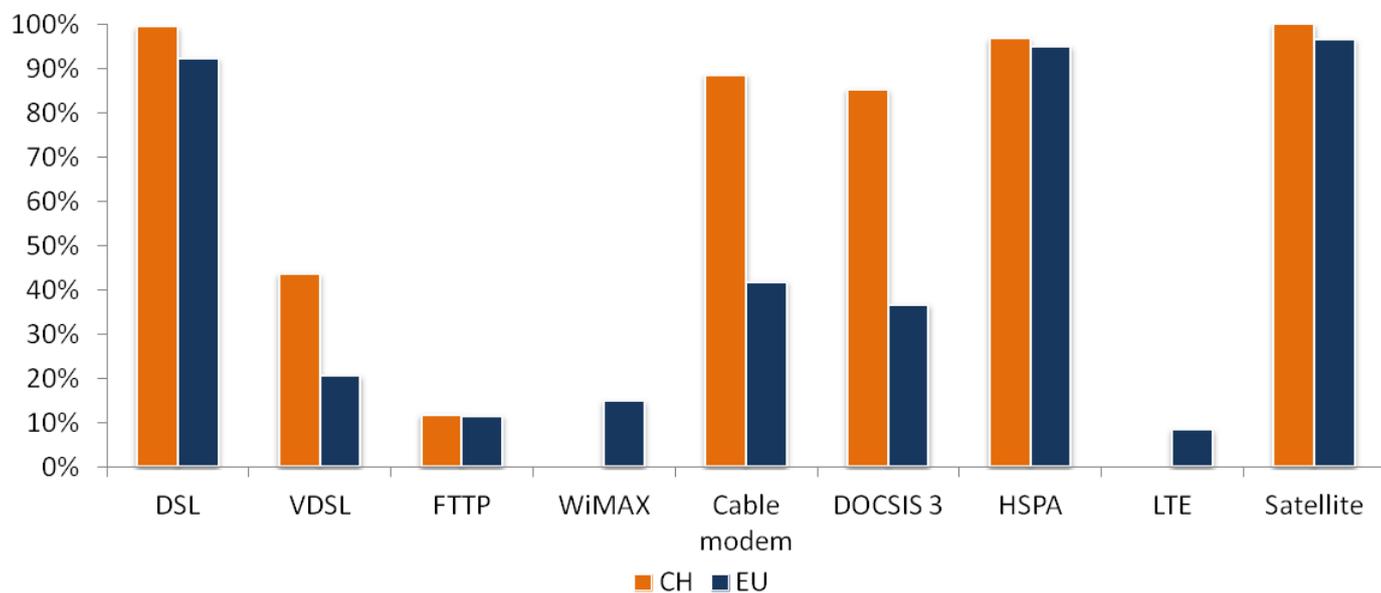
Switzerland: rural coverage by technology
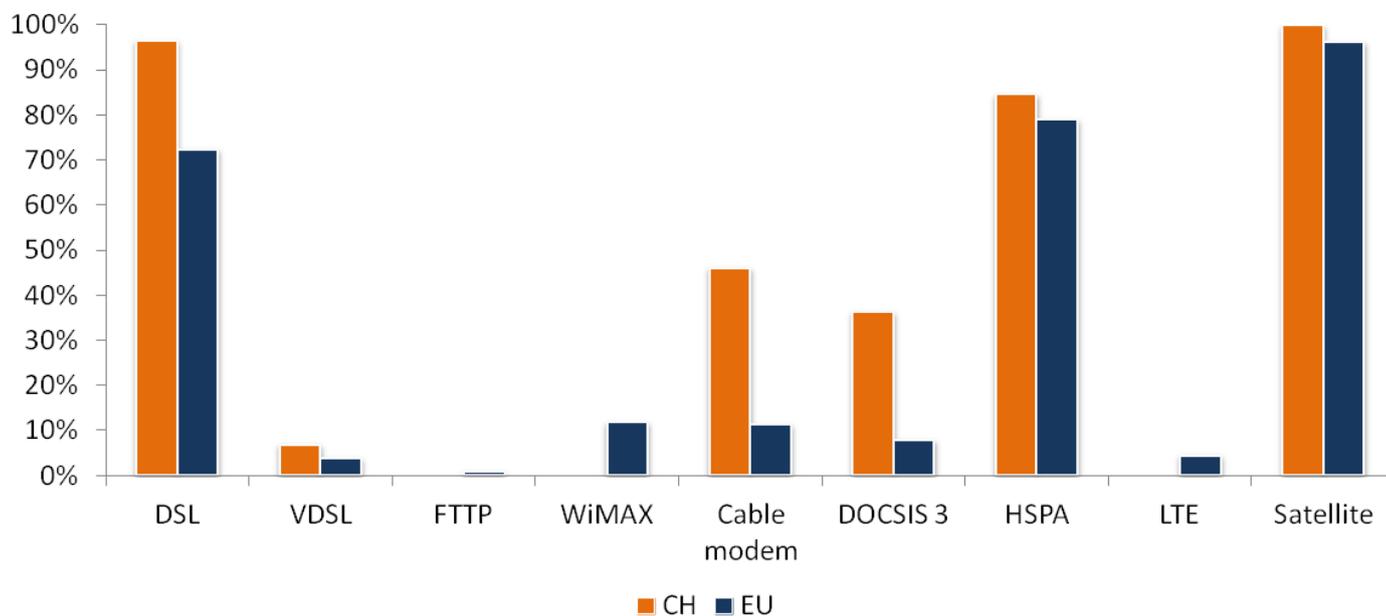
3.2 Regional coverage by technology combinations

Map 3.2.1 Switzerland standard broadband coverage

Standard broadband coverage
- 100%
- 95% and <100%
- 90% and <95%
- 75% and <90%
- 0 and <75%

Source: BCE 2011
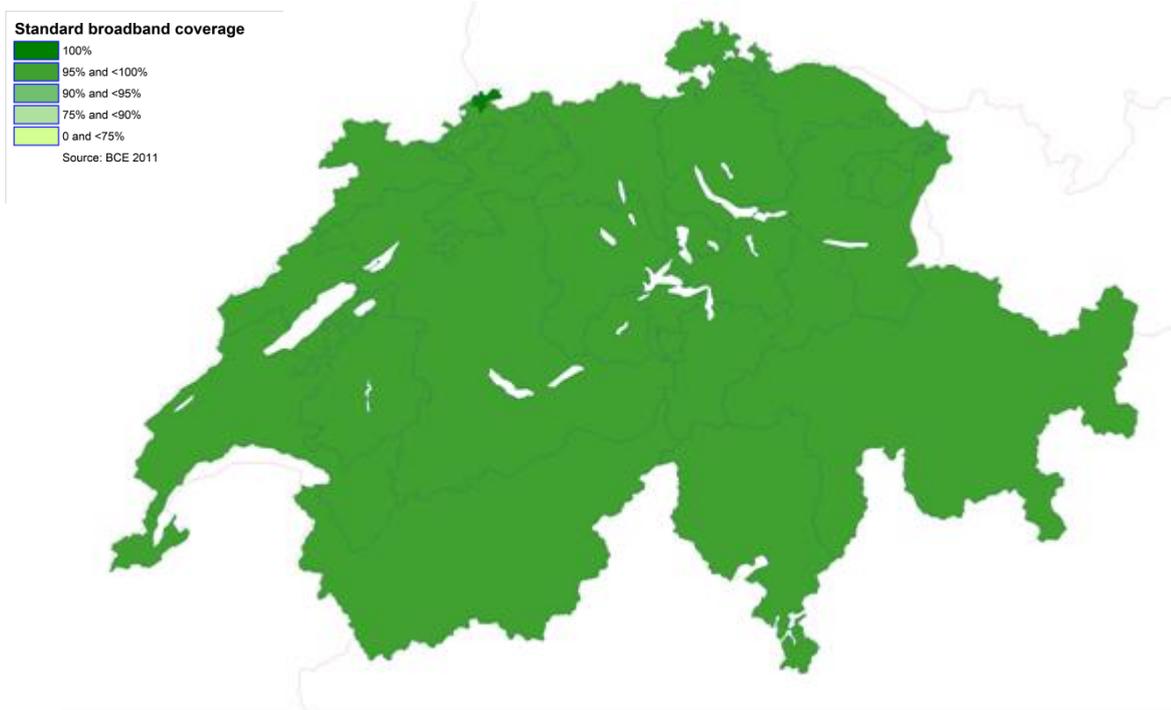
Map 3.2.2 Switzerland NGA broadband coverage

Next Generation Access coverage
- 100%
- 65% and <100%
- 35% and <65%
- >0% and <35%
- 0%

Source: BCE 2011

Coverage of both standard and NGA broadband is fairly consistent across the cantons of Switzerland.
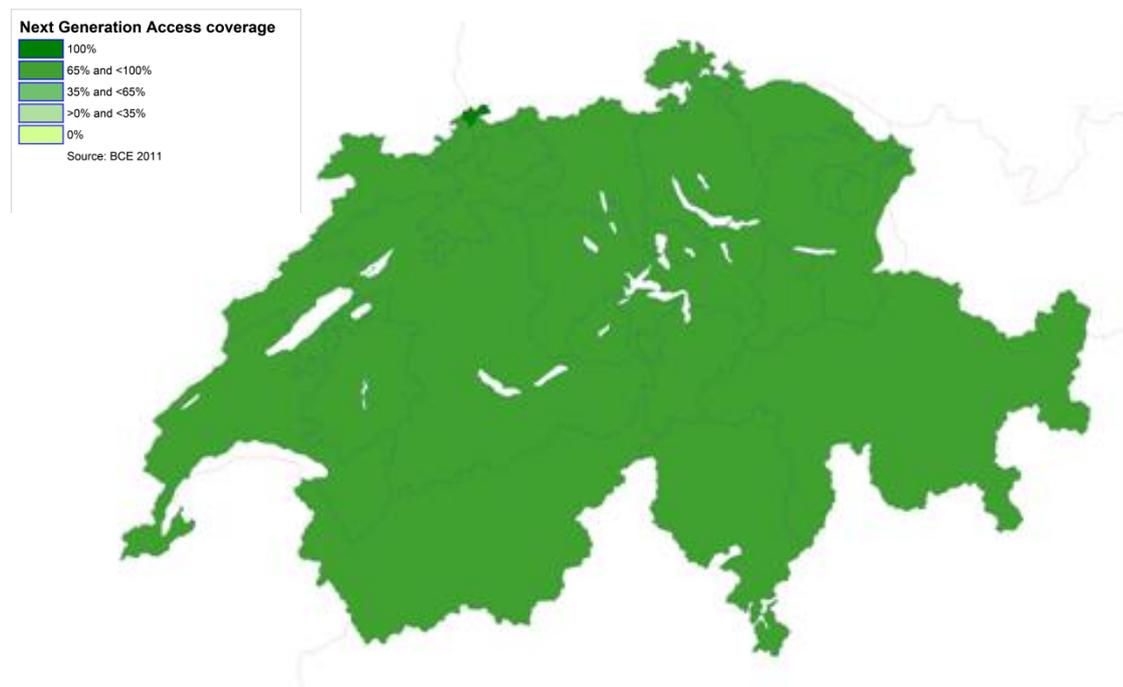
In terms of standard broadband coverage, every canton in Switzerland has over 98% standard broadband coverage. Only one canton – Basel-Stadt – has 100% coverage of both standard and cable services. Every canton in Switzerland has NGA coverage greater than 75%.

3.3   Data tables for Switzerland

Demographics

Population	7,954,662
Persons per household	2.16
Rural population	15.0%

Coverage by technology

Technology	Total	Rural
DSL	99.4%	96.6%
VDSL	43.6%	6.9%
FTTP	11.8%	0.0%
WiMAX	0.0%	0.0%
Cable modem	88.5%	46.1%
DOCSIS 3	85.3%	36.3%
HSPA	96.7%	84.6%
LTE	0.0%	0.0%
Satellite	100.0%	100.0%

4. Methodology

This study for broadband coverage in Switzerland adopted the same methodology that was used for the European Commission's study BCE 2011, to ensure that the results were comparable.

4.1 Structure

The structure of the BCE 2011 project was simple. DG INFSO's specification for the project required that data collection should be based on a survey of broadband network operators and national regulatory authorities (NRAs) in the study countries. The Inception phase of the project developed the Survey Questionnaire and the supporting definitions and categories required for the project. The Survey was launched once all these had been approved.

Point Topic also chose to complement the Survey with a parallel research programme to help in checking the validity of the survey results and fill any gaps left by them. The final phase of the project involved integrating, checking and testing the results to produce the required unified picture of broadband coverage in Europe.

4.2 Project Survey

The Survey Questionnaire needed to gather data on one basic question – how many homes have access to broadband? - applied across three dimensions:

Technology – for each of the broadband technologies surveyed

Geography – for each country as a whole and for each region within each country

Rurality – for the rural areas of each country and each region compared with the corresponding country or region as a whole.

The key definitions for technologies and their coverage are provided within the survey distributed to operators.

In addition, the Survey included supplementary questions to establish the context of the data supplied in circumstances where the respondents were working with a wide range of definitions, reference dates and confidentiality issues.

To provide background and explanation of the Survey objectives Point Topic prepared a series of spreadsheets featuring the main points of the Survey for each country.

4.3 Confidentiality

Confidentiality was an important issue for many respondents to the Survey. In many cases, the data provided, particularly at NUTS 3 level, was regarded as commercially sensitive.

To meet respondents' need for confidentiality the publication of the project's results is limited to country-level figures for single technologies and technology combinations plus HSPA for NUTS 3 areas. The technology combinations (Standard Coverage and NGA Coverage) combine the coverage of multiple technologies so the coverage of any one technology is usually obscured. In a similar way, HSPA Coverage, although referring to a single technology, combines the data for the multiple mobile operators which are offering service in all the study countries.

Data for the coverage by NUTS 3 area for each technology combination was provided to Swisscom but this data did not identify individual operators or technologies.

Point Topic asked all survey respondents to state the level of confidentiality which they wanted to apply to the data they provided. These ranged from allowing the data to be freely available to not permitting any distribution and requiring it to be deleted by Point Topic as soon as the project was completed.

Point Topic was pleased to be able to meet respondents' confidentiality concerns and is grateful for the confidence placed in the company.

4.4   Parallel research

The Parallel Research programme was organised mainly on a country by country basis, but with overview tasks to bring together and support the country-level work where needed.

The programme relied on conventional techniques and published sources, including publications by NRAs and operators included in the Survey. The members of the research team for BCE 2011 also produce Point Topic's Operator Source and Global Broadband Statistics services and are familiar with the type of data used for this project and the sources from which it is derived.

Besides NRA and operator data the research drew on existing published research for the Digital Agenda programme and Point Topic's own research services and projects, for example for the European Space Agency.

IDATE also generously provided the project with access to key results from its research on FTTx coverage on behalf of the FTTH Council for Europe, specifically its February 2012 table of country level FTTx coverage and subscription numbers. Although they were sometimes superseded by later data, for example Survey responses from the NRAs, the IDATE figures were an essential input to the project's coverage estimates. Point Topic thanks IDATE and the FTTH Council for their contribution to the project.

4.5   Data integration and modelling

The final major task of the study was to bring together the data from both the Operator Survey and the Parallel Research to produce the actual coverage estimate outputs from the project.

This work was done for each technology individually, in each country. In the best cases data from one of the respondents provided figures for total and rural coverage in each NUTS 3 area. At the other extreme the only data available was for total coverage by the technology in the country as a whole. (The Parallel Research programme was tasked to provide a best efforts estimate of total coverage as a minimum.) Even in these cases the coverage totals were often supported by "presence" data, showing in which NUTS 3 areas the technology was available.

Where necessary the total and rural coverage for each NUTS 3 area was estimated from national coverage and presence data using simple models. The models relied on simple assumptions, for example, that investment in technologies like VDSL, cable and FTTP would strongly favour urban over rural areas.

Most cases were in between these two extremes. For example, data on NUTS 3 rural coverage was often missing even though total coverage data was provided. Here modelling assumptions were used to estimate rural coverage. Another difficulty was around the lack of good statistics about urban-rural splits and the varying definitions of rurality used by different respondents.

Taking account of all the above, the project succeeded in providing a complete set of estimates for total and rural coverage of all nine technologies considered and for all 1324 NUTS 3 areas in the 29 study countries.

4.6   Estimating coverage for technology combinations

The individual technology estimates were in turn used to produce estimates of the total coverage provided in combination by technologies with similar performance characteristics. The particular examples chosen were fixed-line standard broadband coverage, combining DSL, FTTP, WiMAX and Standard Cable, and Next Generation Access Coverage, combining VDSL, FTTP and Docsis 3 Cable.

The project used a standardised approach to make these combination estimates. This was required to produce the technology combinations and also where we had data from multiple operators providing the same technology in the same area.

The default formula to estimate combination coverage was to take the average of:

The minimum possible coverage; equal to the coverage of the most widespread technology or operator in the area

The maximum possible coverage; equal to the sum of the coverage of all the technologies or operators being considered, or to 100%, whichever was the greater.

The default formula was applied in the great majority of cases but was varied in a few countries where some technologies were judged to be more complementary than overlapping in coverage. In these cases the minimum coverage was taken as equal to the sum of the complementary technologies, if this was greater than the most widely-available single technology.

Note that the estimates for combination coverage at the national level were made by summing the estimates for the NUTS 3 areas in the country and not by applying this formula only at the country

level. This provides a more accurate answer, at a higher confidence level, than simply taking the country-level average.

4.7 Finalisation

Once the NUTS 3 and country level datasets had been completed as outlined above the results were compiled into this report and the accompanying datasets.

Point Topic would like to share the results with the European Commission and survey respondents from Switzerland.

The finished datasets were used to generate graphic maps by using GIS software. The following maps were produced for each country and for the study countries as a whole.

Total standard broadband coverage by NUTS 3 area

Total NGA broadband coverage by NUTS 3 area.