

Annex I to the BEREC Report

Next Generation Access – Collection of factual information and new issues of NGA roll-out

Country Case Studies

February 2011

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Austria

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Regarding NGA roll-out in Austria, the incumbent operator A1 Telekom Austria (new name following a merger of the incumbent's fixed arm Telekom Austria TA AG and mobile arm mobilkom Austria AG) announced plans to deploy VDSL2 technology in MDF locations allowing to provide broadband with a data rate of up to 30 MBit/s for 750.000 people (i.e. 15% of households) until 2012. Furthermore A1 Telekom Austria has announced four test areas for deploying enhanced NGA services. In the southern Austrian province of Carinthia the cities of Villach and (just recently) Klagenfurt, FTTC scenarios already have been deployed with services actively offered, while in two districts of Vienna FTTH / FTTB scenarios are currently about to be deployed. In Lower Austria, the small village of Siegenfeld also has seen an FTTC roll-out recently. In general, A1 Telekom Austria aims for FTTH GPON deployment in Vienna, only in the case of in-house cabling restrictions FTTB will be used instead.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

See above.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Regarding the retail services currently available in Villach, Klagenfurt and Siegenfeld the so-called Giga Speed products allow data rates of up to 30 MBit/s. In Vienna, no product details have been announced so far, but data rates are expected to be up to 100 MBit/s for FTTH.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Besides the above mentioned roll-out plans for VDSL2 from the central office and FTTC/FTTB/FTTH deployments in Villach, Klagenfurt, Siegenfeld and parts of Vienna, no other roll-out plans have been announced by A1 Telekom Austria so far.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

UPC Austria is the largest cable operator in Austria, offering services based on their own CATV network infrastructure in selected cities. In addition, UPC has a large basis of unbundled lines since they acquired the former largest unbundling operator in Austria some years ago. UPC already migrated major parts of their CATV network to DOCSIS 3.0 technology allowing them to offer data rates of up to 100 MBit/s. The so-called Fibre Power services based on DOCSIS 3.0 are currently available in the cities of Vienna, Wiener Neustadt, Graz and Klagenfurt. Regarding deployment of VDSL2 technology in LLU served areas or deployment of FTTx scenarios there has been no official announcement from UPC Austria so far. However, UPC actively participates in the regulator-led industry working group mainly dealing with VDSL2 issues in the incumbent's access network.

Tele2 is the largest operator offering broadband services based on LLU. Currently, Tele2 Austria offers services based on ADSL2+, but is currently involved in a VDSL2 field trial. There has been no official announcement from Tele2 Austria regarding migration to NGA or deployment of FTTx scenarios. Tele2 Austria also participates actively in the industry working group dealing with NGA issues.

Silver Server is the third-largest operator offering broadband services based on LLU. Silver Server has just recently announced the deployment of VDSL2 services from the central office.

In several areas local utility operators have already rolled out FTTH on a small scale basis. Examples are Wien Energie in Vienna, Liwest in Linz, IKB in Innsbruck, 24entertainment in Graz. Typically, the products offered are only available in certain small areas of a town or even only to residents of some buildings.

Further deployment is driven by local initiatives starting early with the local deployment of fibre and extending their existing networks into business and residential premises. One such example is the town of Ried im Innkreis, where operator Infotech now has FTTH offers in its portfolio.

Other examples are municipalities which deployed FTTH networks serviced by local ISPs (see <http://www.arge-glasfaser.at/>).

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

No further roll-out plans have been announced so far by alternative operators.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**
- Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);

- **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Duct Access Reference Offer to be available from December 2010 on a mandated basis due to market analysis measure from September 2010. This is only mandatory for the SMP operator A1 Telekom Austria.*
- b) *Product definition*
- *duct access only as an ancillary service to classical unbundling,*
 - *duct access to be available in whole access network (not restricted to NGA areas),*
 - *access points at major concentration points, i.e. MDF, street cabinet, remote access unit and in-house distribution frame).*
- c) *Not included in Market 4 (Physical Access to Network Infrastructure) but used as ancillary remedy for ULL.*

2.2 Dark fibre

- a) *Dark Fibre Reference Offer to be available from December 2010 on a mandated basis due to market analysis measure from September 2010. This is only mandatory for the SMP operator A1 Telekom Austria.*
- b) *Product definition*
- *dark fibre access to be available subsidiary to duct access in whole access network (not restricted to NGA areas), i.e. dark fibre has to be made available in the case of duct access not to be available or not to be usable from a commercial point of view,*
 - *access points at major concentration points, i.e. MDF, street cabinet, remote access unit).*

- c) *Not included in Market 4 (Physical Access to Network Infrastructure) but used as ancillary remedy for ULL.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since.., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Available on a mandated basis – sub-loop unbundling included in the RUO since 2000.*
- b) *Product definition*
 - *access to unbundled copper line at basement and floor distribution frames.*
- c) *Included in Market 4 (Physical Access to Network Infrastructure).*

3.2 Concentration point/ manhole unbundling

Not available as fibre is not included in market 4 in Austria.

3.3 Cabinet unbundling

- a) *Available on a mandated basis – sub-loop unbundling included in the RUO since 2000.*
- b) *Product definition*
 - *access to unbundled copper line at street cabinets and in-house distribution frames.*
- c) *Included in Market 4 (Physical Access to Network Infrastructure).*

3.4 ODF unbundling

Not available as fibre is not included in market 4 in Austria.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable

investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

Possible scenarios for migration from Unbundling to Virtual Unbundling are envisaged in the latest decision from September 2010. The accompanying measures include cost-free migration in the case of NGA deployment and compensation payments for frustrated investment, if full unbundling is no longer possible or feasible in a certain region. Regarding Modem and DSLAM 75% of the residual book (based on a useful life of 3 years) value of the AO in the respective area have to be borne by the IO. Investments by AO in collocation have to be borne by IO proportionately to the respective area to the hole

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

service area. The compensation is based on the residual book value which is reduced by 12% per year (dynamic compound interest calculation) of the residual life time.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²
- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”*.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**)⁵?

The before mentioned decision from September 2010 foresees compensation payments for stranded assets with regard to DSLAM and end customer modem, as well as stranded assets with regard to co-location at the MDF.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

Migration costs have to be born by the operator making a migration to Virtual Unbundling necessary, i.e. the one rolling out the NGA network. In addition, compensation schemes taking into account stranded assets are being introduced (see above).

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

Concerning the above mentioned database for civil engineering infrastructure no final decision has been taken so far regarding the authority being responsible for these matters in Austria in the future. However, the according provisions are expected to be included in the revised Austrian Telecommunications Act to be issued in May 2011.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? *(Note: this information may be helpful for other NRAs when setting up similar databases)*

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Symmetrical (i.e. non SMP-dependent) access to passive infrastructure (e.g. ducts, dark fibre, and masts) is regulated in Par. 8 of the Austrian Telecommunications Act. Due to the most recent amendment as of Summer 2009 access to passive infrastructures is granted no matter whether the owner is a provider of electronic communication networks or services or not.⁷

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁸ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

The current Austrian government program foresees a target of providing every Austrian citizen with a broadband connection of at least 25 Mbit/s until 2013. Furthermore, a high-level competence centre for information and communication technologies (KIG; Kompetenzzentrum Internet Gesellschaft) for promoting the development, roll-out and usage of broadband technologies was established in 2010. Currently, projects concerning broadband and NGN implementation in rural areas have been fostered according to the so-called AT:NET program. This program, however, is focused on local initiatives started mainly by small enterprises or municipalities. The funding is limited by means and by time.

- Scope and envisaged **target** of the measure;

⁷ Par. 8 of the Austrian Telecommunications Act mandates that the owner of any passive infrastructure installed on the basis of rights of way has to grant joint use of this infrastructure, or of parts thereof, if the infrastructure is usable for communications lines and if the intended joint use is economically reasonable and technically feasible for the infrastructure-owner.

⁸ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

- Current **achievements**, milestones reached.

Belgium

1 Market developments

1.1 Incumbent

1.1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Belgacom has launched a VDSL2 retail offer in April 2008 after halting deployment of VDSL in 2006 due to spectral interference with ADSL technologies.

The driver of the deployment is the competition with television services of cable companies, because VDSL2 makes it possible to offer at least one HD and one SD channel at the same time.

Field trial of FTTH is ongoing, however vectoring and bonding on VDSL2 should be an alternative to FTTH deployment.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

Present coverage VDSL + VDSL2 is 74% of home passed.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

A lot of different products in terms of bandwidth and in terms of bundles exist (including bundles with mobiles). The standard bandwidth is 12-25 Mbps. The triple play bundles (Internet – Telephone – Digital television/VOD) are distinguished based on the internet usage:

- *comfort bundle: 51,40€/month (12Mbps, 50Gb volume)*
- *favourite bundle: 61,80€/month (25Mbps, 100Gb volume)*
- *intense bundle: 69,60€/month (30Mbps, unlimited volume)*

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The objective is 80% in 2011 including replacement of VDSL by VDSL2.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Telenet: Cable Television Company covering Flanders (north of the country) and a part of Brussels.

A lot of different products in terms of bandwidth and in terms of bundles exist. The standard bandwidth is from 15 to 30 Mbps with high-end offers at 50 or 100 Mbps.

Triple play bundles (Internet – Telephone unlimited in Europe – Analogue & Digital television/VOD – HD decoder) are distinguished based on internet offer:

- *Silvershake: 10 Mbps (volume 15 GB) – 58.50€/month*
- *Goldshake: 20 Mbps (volume 50 GB) – 68.50€/month*
- *Diamondshake: 30 Mbps (volume 80 GB) – 72.50€/month*
- *Fibernet50 Shake: 50 Mbps (unlimited volume) – 102.50€/month*
- *Fibernet100 Shake: 100 Mbps (unlimited volume) – 133.50€/month*

Deployment of Eurodocsis 3 since 2009.

Numericable Belgium (previously Coditel), Cable Television Company covering a part of Brussels.

A lot of different products in terms of bandwidth and in terms of bundles (no mobile services) exist. The standard bandwidth is 100 Mbps (30Mbps where improved EuroDocsis 2 is not available) and 4Mbps for light offer.

Triple play bundles (Internet 100 Mbps – Telephone unlimited in Belgium – Analogue & Digital television/VOD – HD decoder) are distinguished based on television & voice offer:

- *Triple Play: 44,90€/month*
- *Triple play Power: 60 extra channels – unlimited international calls – 64.90€/month*

Deployment of improved EuroDocsis 2 (bonding) since December 2008.

Voo, Cable Television Company covering South of Belgium and a part of Brussels.

The standard broadband bandwidth is 10-15 Mbps and 2-4Mbps for light offer.

Triple play bundles (internet – telephone – digital TV including analogue television – HD decoder) are distinguished based on internet and telephone offer:

- *Un Peu: Internet 2 Mbps (30Gb) - 43€/month*
- *Beaucoup: Internet 10 Mbps (100Gb) + telephone unlimited during weekend and evenings - 57€/month*
- *Passionément: Internet 15 Mbps (200Gb) + telephone unlimited national – 64.50€/month*

Some small operators (e.g. Dommel and EDPnet) use VDSL2 resale offer. WBA VDSL2 offer available since August 2010, but no OLO is ready to start using the offer. Offering of triple play services needs a change of the market analysis decision to enrich bitstream reference offer with multicast functionality.

On base of unbundling, thus on limited areas, one operator (Billi) offers triple play with ADSL2+ and another one (Destiny) offers business connection at 100 Mbps by bonded ADSL2+.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

N.a.

2 Wholesale products to reach an access point

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- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
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- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Mandated through market analysis decision of November 12th 2008. Not used.*
- b) *Backhauling between MDF and street cabinet has to be offered on non-discriminatory base.*
- c) *Included in Market number 4 as ancillary service for backhauling to street cabinet to allow subloop unbundling.*

- d) *Available since end of 2008. No reference offer imposed as long as there is no real demand, only technical description.*
- e) *Cost oriented.*

2.2 Dark fibre

- a) *Mandated through market analysis decision of November 12th 2008. Not used.*
- b) *Backhauling between MDF and street cabinet has to be offered on non-discriminatory base.*
- c) *Included in Market number 4 as ancillary service for backhauling to street cabinet to allow sub-loop unbundling.*
- d) *Available since end of 2008. No reference offer imposed as long as there is no real demand, only technical description.*
- e) *Cost oriented.*

3 Access products available

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- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);

- **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

3.2 Concentration point/ manhole unbundling

3.3 Cabinet unbundling

- a) *Mandated through market analysis decision. Available in all MDF and street cabinets. 100.000 lines.*
- b) *Access to the copper cable at MDF and street cabinet level.*
- c) *Included in Market number 4. Maintaining existing obligation.*
- d) *Both available since 2000, but LLU only in use in MDFs covering 60% of home passed.*
- *Reference offer, changes to be approved by NRA (transparency),*
 - *Requirements to give info on network evolution 5 years beforehand, annual update (transparency),*
 - *Spectrum rules for new technologies need to be approved by BIPT before they can be launched in retail and wholesale (non-discrimination),*
 - *Conditions for closing the central offices: notice period of 5 years where COLO present & only 1 year where no COLO is present. (access obligation),*

- *Access products available for local loop and subloop, with distinction between raw copper and shared pair (with Belgacom telephony).*
- e) *Cost oriented, LRIC bottom up model.*
- f) *Stable tariffs during transition period (while closing MDF's).*

3.4 ODF unbundling

Not available.

3.5 Enhanced Bitstream¹

- a) *Mandated through market analysis decision, 160.000 lines.*
- b) *Access to bitstream*
 - *Available for all DSLAM ADSL, ADSL2 and SDSL at parent and distant nodes with ATM transport VP switching and choice of QoS and PCR/SCR ratio.*
 - *Available for all DSLAM ADSL, ADSL2 and SDSL and ISAM VDSL2 at 5 regional points of interconnection and at MDF level. Difference between Dedicated and Shared VLANs and different p-bits for quality of service differentiation.*
 - *The Belgian WBA VDSL2 bitstream offer includes:*
 - *The possibility to give premium clients their own private network with dedicated VLANs and symmetric profiles, while for mass market purposes, shared VLANs and asymmetric profiles with different download speeds are available.*
 - *Different QoS levels: P=0 (best effort), P=1 (low priority), P=3 (medium priority), P=5 (highest priority) and P=6&7 (control functions). Two VLAN per QoS level can be ordered per OLO.*
 - *The size increments of VLANs are chosen small enough so that the costs don't decrease disproportionately when a bigger VLAN is needed.*
 - *Flexible interconnection at regional (5 areas) & local level (MDF). 5 points of interconnection needed to obtain national coverage.*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- *SLA on provisioning & repair.*
- c) *Included in Market number 5. Maintaining existing obligation.*
- d) *Available since 2000.*
- *Reference offer, changes to be approved by NRA (transparency).*
 - *Requirements to give info on network evolution 5 years beforehand, annual update (transparency).*
 - *Reference offer needs to be available the day a new retail product is launched (non-discrimination).*
 - *Conditions for closing the central offices: notice period of 5 years where COLO present & only 1 year where no COLO is present. (access obligation).*
 - *Access products available*
 - *Bitstream ADSL, ADSL2, ReADSL and SDSL operational with ATM & Ethernet transport and several QoS,*
 - *WBA VDSL2 available with dedicated and shared VLANs and several QoS.*
- e) *Cost oriented, LRIC bottom up model*
- *for WBA VDSL2 additional mark-up to obtain reasonable pricing (take investment risk into account).*
- f) *Stable tariffs during transition period (while closing MDF's).*
- g) *Due to closing of MDF create bitstream offer that is worthy alternative.*
- *Comparable quality diversifications as current bitstream offer,*
 - *Comparable functionality options as with BRUO to create product competition. Freedom to use every functionality available in the DSLAM even when BGC doesn't use them for their retail services,*
 - *Different levels to connect with the Ethernet network*
 → possibility for OLO to use their existing fibre network for collection and transport of backhaul traffic.

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

For ATM: 54 Pol, need to contact to at least one in each of the 7 regions.

For Ethernet: 10 Pol, need to contact to at least one in each of the 5 regions & also interconnection at MDF level.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

For ATM: UBR, CBR, VBR-rt, VBR-nrt. Some have guaranteed bandwidth.

For Ethernet: through the differentiation of the p-bit: 0,1,3,5,6,7. No guarantee.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

No. Under study.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

No.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

Yes. An alternative for each existing product has been defined except for BROBA SDSL (under discussion). These product proposals are based on discussions between Belgacom and the sector and need to be approved by the BIPT.

<i>Current Offer</i>	<i>Alternative regulated offer</i>
<i>LLU</i>	<i>VDSL2 WBA or SLU</i>

<i>ADSL(2+) VP-switching</i>	<i>VDSL2 WBA shared VLAN</i>
<i>ADSL(2+) VC-switching</i>	<i>VDSL2 WBA dedicated VLAN</i>
<i>SDSL</i>	<i>Under study</i>

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

Notice period of 5 years where COLO present & only 1 year where no COLO is present (access obligation).

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product.**³

Due to closing of MDFs and limited business case for sub loop-unbundling incumbent needs to create bitstream offer that is worthy alternative.

- *Comparable quality diversifications as current bitstream offer.*
- *Comparable functionality options as with BRUO to create product competition. Freedom to use every functionality available in the DSLAM even when BGC doesn't use them for their retail services.*
- *Different levels to connect with the Ethernet network
→ possibility for OLO to use their existing fibre network for collection and transport of backhaul traffic.*
- In its report "NGA – Implementation Issues and Best Practice"⁴ BEREC suggested that "in addition to the reference offer – wholesale customers should be able to obtain relevant

² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.

Due to the NGA decision of November 12th 2008, Belgacom will provide BIPT and alternative operators with its plans to develop networks (increase of the number of distribution frames, sub-distribution frames, cable distribution frames, technology used, network structure...), per region over a 5-year period. The information communicated includes among others:

- *all adaptations planned to the existing wholesale access points,*
- *all closing downs planned of points where wholesale access is provided,*
- *the time schedule of the network transformations expected/planned (globally and individually per access point).*

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

No problems with implementation.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

If notification period of 5 years is respected, no stranded costs. Each operator pays its share.

If Belgacom wants to close down more quickly a site where operators are already interconnected (before a five year period) Belgacom can negotiate with the operators concerned an acceptable alternative solution (like the provision of appropriate services from another site), the migration schedule and the financial consequences of a migration to such a solution. If Belgacom can reach an agreement with these operators it may close down the site at the end of the agreed migrations. BIPT can intervene.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

⁵ See BoR (10) 08, Ch. E.2.

For the migration from bitstream ATM products to bitstream Ethernet products, the following actions are not billed:

- *Disconnecting ATM access,*
- *Configuration of shared LAN of same quality as existing VP,*
- *Configuration of dedicated LAN of same quality as existing VC,*
- *Reconfiguration of end-users to VLAN with same quality,*
- *Commencement of new configuration.*

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

No database..

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

NA.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs’ strategies aiming at the promotion of next generation broadband.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

Main focus of 30 measures in the plan “Belgium – Digital heart of Europe 2010 -2105: 30 action points”:

- *NGA network: each new building FTTH access, installing waiting ducts during road works, simplify rules regarding façade wiring & trenching etc..*
 - *Decrease digital divide through ICT courses, cheap pc’s, tax refunds.*
 - *More competition: tariff simulator, average broadband price indicators, market analysis measures, easier procedures for switching, new mobile licenses.*
 - *More security through specialised crime units & laws (e.g. e-commerce rules).*
 - *More e-services: eID, intelligent energy grid, e-health, homeworking, e-government, e-bills etc..*
- Scope and envisaged **target** of the measure;

The 30 measures have as target:

- *90% of households connected to broadband (now 64%),*
 - *50% of students has a PC as teaching instrument from the age of 6,*
 - *50% of populations uses mobile internet,*
 - *50% of bills are electronic,*
 - *33% of employees homeworking.*
- Current **achievements**, milestones reached.

No milestones reached yet.

Czech Republic

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Telefónica Czech Republic, a.s., mainly FTTB, pilot of VDSL.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

several areas (about 10.000 Homes passed) – FTTB, about 1000 Homes connected.

VDSL – pilot in one part of city Olomouc.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Triple play – but currently launch pilot project (on NGA) with specific prices.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

VDSL – currently pilot in Olomouc, in next year incumbent doesn't expect to launch other project.

FTTx: 2011: 40.000 Homes passed, 9.700 Homes connected.

FTTx 2012: 60.000 Homes passed, 16.000 Homes connected.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

The most important competitors:

UPC Česká republika, a.s. – via DOCSIS 3.0 – data (on NGA) are not available (together with DOCSIS 2.0 (not NGA) about 1,2 billion Homes passed, 362 000 Homes Connected).

Smart Comp, a.s. – FTTB GPON – 100.000 Homes passed, 25.000 Homes Connected.

FTTH/B other competitors – ca. 200.000 Homes passed, 80.000 Homes Connected, but more than 90 % of them are based on FTTB (GPON).

Together about 90 competitors which offer FTTx.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.
N.a.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**

- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

No wholesale products.

2.2 Dark fibre

No wholesale products.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)

- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

No wholesale products.

3.2 Concentration point/ manhole unbundling

No wholesale products.

3.3 Cabinet unbundling

No wholesale products for NGA.

3.4 ODF unbundling

No wholesale products for NGA.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

We don't impose any obligations regarding fibre unbundling for SMP, because SMP doesn't have much fibre on market 4.

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

No enhanced bitstream products.

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

No.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

Yes – remedy on market 4: to inform alternative operators at least 1 year before decommissioning current LLU (MDF) – when migrating to fibre.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

N.a.

- In its report "NGA – Implementation Issues and Best Practice"⁴ BEREC suggested that "*in addition to the reference offer – wholesale customers should be able to obtain relevant*

² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

N.a.

- Explain if such provisions are applied and what they look like.
- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

No.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

No.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

Not yet – but such a database is being planned nowadays.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

No such regulation.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

The National Broadband Strategy ("Digitalni Cesko") envisages the following targets:

Until 2013

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

- *10 Mbps for 100 % of households (urban areas)*
 - *2 Mbps for 100 % of households (rural areas) until 2015*
 - *30 Mbps for 30 % of households (urban areas)*
 - *In 2015 the minimum broadband speed in rural areas should be at least 50% of the average speed in urban areas.*
- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
 - Scope and envisaged **target** of the measure;
 - Current **achievements**, milestones reached.

Denmark

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

The incumbent in Denmark is TDC. TDC owns VDSL, cable and fibre based NGA networks.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

The Danish National IT and Telecom Agency (NITA) has only just started collecting data on the coverage of NGA networks in Denmark as of medio 2010. This data collection exercise is expected to be completed by the end of October 2010, and therefore we are at this point not able to supply you with detailed information on this subject. Furthermore much of the information we have on the subject is confidential and may not be published. We can therefore not give information on the incumbent's coverage and number of NGA lines as this information is confidential.

In mid 2010 around 31 % percent of all households and companies in Denmark were able to obtain access to fibre networks (homes passed). This figure includes both the incumbents' and the alternative operators' networks. Due to national agreements NITA is not able to publish separate coverage figures for the incumbent and the alternative operators. However, NITA is able to provide an overall view of the penetration of NGA networks in Denmark. The following figures illustrate the current coverage of NGA networks:

About 74 percent of all households and businesses in mid-2010 have access to a broadband connection with an intended downstream speed of 30 Mbit/s or more. 30 Mbit/s connections are delivered both over xDSL, cable television networks and fibre.

Approximately 68 percent of all households and businesses in mid-2010 had access to a broadband connection with an intended downstream speed of 50 Mbit/s or more.

In mid-2010 to about 25 percent of all Danish households and businesses have access to a broadband connection with a designed speed of 100 Mbit/s.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

In Denmark, the incumbent offers a 50 Mbit/s downstream DSL connection for 518 dkr and it is possible to combine this connection with VoIP for 594 dkr or even triple-play for 649 dkr. All prices are monthly subscriptions with unlimited broadband access but the cost of the phone is usage based.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

VDSL2: TDC plans to establish 2-3000 street cabinets in the period 2010-2015 enabling 30% of households (750000) to have capacity of 50-70 Mbit/s.

Cable TV: TDC had in 2009 360000 broadband end users on their own cable network. Numbers of homes passed in the range of 1.3 million, which is expected to be increased to 1.4 million in the period until 2020. Bandwidth with DOCSIS3 50-100 Mbit/s (expected to be increased significantly in the coming years).

Fibre: TDC has a small market share of fibre broadband connections (20000). Numbers of homes passed is in the range of 400000. We have no specific information regarding roll-out plans.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

As stated in 1.1.1 the amount of information that is available on this matter at the present time is limited. In Denmark only the incumbent owns a VDSL network. There are however alternative operators that own and operate cable networks that can be considered NGA networks. Furthermore a large part of the fibre networks in Denmark are owned and operated by alternative operators. Because of confidentiality issues we can not supply information on the individual operators' network coverage and number of NGA lines.

There are alternative operators that offer a 50 Mbit/s downstream DSL connection using the incumbent's network. An example is Perspektiv Bredbånd that offers such a connection at 499 dkr. There are also three companies that offer 50 Mbit/s downstream connections on cable network; Stofa for 399 dkr, YouSee for 399 dkr (owned by the incumbent) and Dansk Kabel TV (also owned by incumbent) for 499 dkr.

There are numerous service providers that offer 50-60 Mbit/s downstream connections as well as 100 Mbit/s downstream connections on fibre, best illustrated by the table below. Those companies where the price changes when they offer their services on different companies' fibre network have the network owners in parentheses after their name.

Companies	50-60 Mbit/s	100 Mbit/s
<u>Altibox</u>	549 dkr	-
<u>Bredbånd Nord</u>	499 dkr	999 dkr
<u>ComX</u>	349 dkr	599 dkr
<u>Dansk Bredbånd (Energj fibre net)</u>	299 dkr	999 dkr
<u>Dansk Bredbånd (TDC fibre net)</u>	329 dkr	999 dkr
<u>Jay.net</u>	229 dkr	299 dkr
<u>Smile Content</u>	529 dkr	-
<u>Smile Content (NEF)</u>	445 dkr	999 dkr
<u>Smile Content (TDC Fibre)</u>	499 dkr	-
<u>Energj Midt</u>	999 dkr	-
<u>Galten Elværk</u>	999 dkr	-
<u>HEF bredbånd</u>	539 dkr	-
<u>ProFiber</u>	498 dkr	-
<u>Sydenergi</u>	369 dkr	-
<u>Verdo Tele</u>	374 dkr	-

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

NITA has no up-to-date information on the competitors announced roll-out plans for NGA networks.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Duct access is available on mandated basis.*

According to NITAs knowledge there has not been any use of duct access yet. However NITA does not require data for that wholesale product.

- b) *Product definition (main features, e.g. location of access point along the value chain).*

Cable ducts are in the market decision on market four defined as the pipes or ducts located in the ground through which the fibre runs.

The incumbent is responsible for optimizing the infrastructure, when access to backhaul is required, so that other operators can access either the ducts or dark fibre.

Duct access is only mandated as a backhaul service when incumbent establish a cabinet in order to upgrade the network.

- c) *Duct access is included in market 4 (as a backhaul service).*

- d) *Duct access was mandated in NITAs decision on Market 4 published on May 1. 2009. The obligations mentioned below was available two month after publication (July 1. 2009).*

- *There is an obligation of transparency in connection with ducts. The obligation requires that the incumbent must disclose information on its passive and active infrastructure. This means that the incumbent at the request of an operator must provide access to an overview of the incumbent's network. Therefore the incumbent is when requested upon required to provide information regarding cable ducts and all maps and information related to existing ducts, newly built and planned cable ducts.*
- *The incumbent was required to establish and publish a reference offer two months after the market decision was published.*
- *There is an obligation of non-discrimination. It is not specifically mentioned in the market decision or in the telecommunications law that the incumbent can be restricted from launching retail products until wholesale products are available. However, it is a remedy that NITA can impose due to the non-discrimination obligation, if barriers etc. of competition are met. In the current revision and implementation of the framework directive, the national act will explicitly give authority to restrict the launch of retail products until the wholesale product is available.*
- *On market 4, there is an obligation to give access to backhaul. The obligation also grants the alternative operators access to use the incumbents ducts to the backhaul portions on the net. Regarding access to ducts, parties which are entitled to interconnection can ask providers (third parties) which are not players on the market, to arrange a backhaul-connection using the incumbent's ducts. The invitation to let third parties create a backhaul-connection in the incumbent's ducts requires that the connection established supports the asking parties' activities on the market.*

- e) *In market 4, the LRAIC pricing methodology applies to ducts.*
- f) *Same pricing on Market 4 and 5 to ensure consistency. The pricing is regulated on the basis of the LRAIC price model.*
- g) *See above (third party access, incumbent responsibility for securing space for other operators).*

2.2 Dark fibre

- a) *Access to dark fibre is available on mandated basis. Figures are not available.*
- b) *Dark fibre is defined as fibres that are (currently) not in use. As with Duct access dark fibre is mandated as a backhaul service when the incumbent establishes a cabinet in order to upgrade the network.*
- c) *Dark fibre is included in market 4 (backhaul service).*
- d) *Same obligations as mentioned in Q2.1*
- e) *In market 4, the LRAIC pricing methodology applies to dark fibre.*
- f) *Same pricing on Market 4 and 5 to ensure consistency. The pricing is regulated on the basis of the LRAIC price model.*
- g) *N.A.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):

- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

3.1 Access to in-house wiring or equivalent

- a) *Access to in-house wiring equivalent is not mandated. NITA has not seen any examples on voluntary access and has not collected information from TDC on this issue.*
- b) *There is no explicit definition of in-house wiring or equivalent since it is not mandated in NITAs regulation.*
- c) – g) *Therefore can not be answered due to the answer to a.*

3.2 Concentration point/ manhole unbundling

- a) *Concentration point/manhole unbundling is not available on a mandated basis. NITA has not seen any examples on voluntary access and has not collect information from TDC on this issue.*
- b) *There is no explicit definition of concentrations point/manhole unbundling or equivalent since it is not mandated in NITAs regulation.*
- c) – g) *can not be answered due to the answer to a).*

3.3 Cabinet unbundling

- a) *Cabinet unbundling (sub loop unbundling) is available on mandated basis.*

According to NITAs knowledge there has been a very limited use of sub loops [as % of total DSL lines this amounts to [0-5]%. However NITA does not require data for that wholesale product.

- b) *A sub loop is defined as copper line which terminates closer to the end user than the highest point in the network where the incumbent itself uses copper on a given stretch (specific part of the network).*

- c) *Market 4 – part of access obligation.*

- d) *Access to sub loops has been mandated since 2001.*

- *YES. The obligation requires that the incumbent must disclose information on its passive and active infrastructure. This means that the incumbent at the request of an operator must provide access to an overview of the incumbent's network. Therefore the incumbent is when requested upon required to provide information regarding available copper and co-location possibilities. Also the incumbent is mandated to give announcement when new cabinets are established. The announcement shall be given six month in advance as a minimum. The announcement shall also contain information as e.g. geographic coverage, number of end-users connected to a cabinet, which customers (the alternative operators current customers) are affected, average length of copper lines, available backhaul possibilities (ducts, dark fibre, transmission capacity).*
- *YES, to be established two month after publication of decision. However incumbent can gain additional time if it chooses to involve alternative operators. The additional time is decided by NITA (three month on M4) NITA has received very positive feedback from both sides on this process. Also the following work to validate reference offer has been reduced/eased.*
- *Same as in Q2.1.*
- *Shared and full copper line (sub loop).*

- e) *LRAIC is in use (since January 2006).*

Same pricing on Market 4 and 5 to ensure consistency. The pricing is regulated.

- f) *On the basis of the LRAIC price model.*

See description above (announce procedures, backhaul facilities).

- g) *NITA has put a measure on the incumbent not to take actions which have a negative effect (downgrade of capacity) on copper lines used by alternative operators. Exceptions exists (e.g. general filling of the network). This is probably more relevant for LLU but does also apply to sub loops.*

3.4 ODF unbundling

- a) *ODF unbundling is not available on a mandated basis. NITA has not seen any examples on voluntary access and has not collect information from TDC on this issue.*
- b) *There is no explicit definition of concentrations point/manhole unbundling or equivalent since it is not mandated in NITAs regulation.*
- c) – g) *Can not be answered due to the answer to a).*

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

All remedies are in place with regard to FTTN.

With regard to FTTH no remedies are in place as this is not regulated on Market 4. The reason for this is that the fibre roll-out is primarily carried out by alternative operators (power utility companies) with a totally different network. Therefore unbundled fibres in the access-part will is not demanded (switching cost are to high, coverage to low etc.). However since the decision on Market 4 was published the incumbent has acquired a fibre network from one power utility company and has started supply in that geographic area of Denmark. This will lead NITA to investigate whether unbundled fibre should be included in next market 4 examination.

- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

See above.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

See above.

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

See above.

3.5 Enhanced Bitstream¹

- a) Available on a mandated basis. See description of access products in the answer to question b).
- b) The wholesale market of broadband access includes wholesale bitstream access, which enables transmission of broadband data in both directions. Furthermore the wholesale market on broadband access includes other wholesale access services provided over copper and cable TV networks.

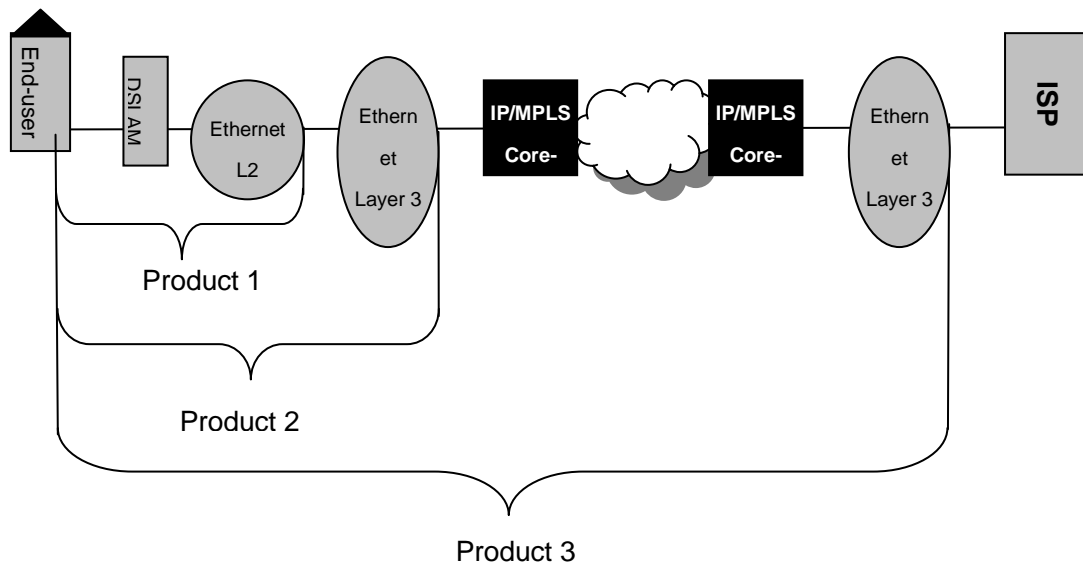
TDC shall give access to all functionalities that support a supply of broadband products via copper and cable TV network respectively, which are sold to end-users, and which TDC itself uses. Examples of such functionalities are multi channel, multicast and unicast. It shall be noted that the examples mentioned do not constitute an exhaustive list.

BSA access via the copper network grants access to broadband from the end user to the:

- *Nearest Ethernet layer 2 switch or an equivalent point (product 1),*
- *Nearest Ethernet layer 3 router/switch or an equivalent point (product 2,)*
- *Ethernet layer 3 router/switch or an equivalent point on a more central location than the above mentioned solutions, including if necessary transportation in the IP/MPLS network (product 3),*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

Figure 1: Illustration of the extent of the 3 broadband access products based on copper

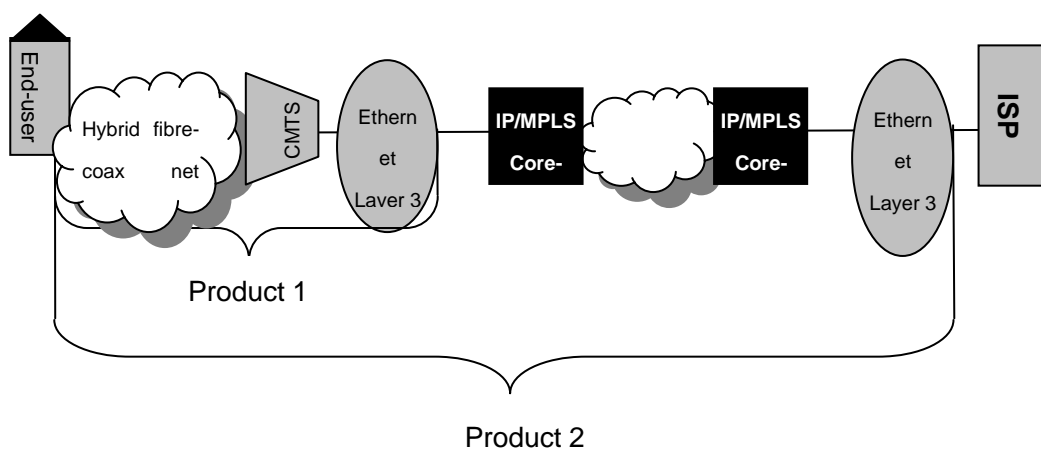


This access is similar to the access obligation imposed in the former market decision on the wholesale market for broadband access (market 12).

BSA access via the cable TV network grants access to broadband from the end user to the:

- Nearest Ethernet layer 3 router/switch or an equivalent point (product 1),
- Ethernet layer 3 router/switch or an equivalent point on a more central location than the above mentioned solutions, including if necessary transportation in the IP/MPLS network (product 2).

Figure 2: Illustration of the extent of the 2 broadband access products based on cable TV network



Moreover TDC shall respectively via the copper network and the cable TV network provide access to all functionalities that can support a supply of broadband products, devoted to end-users. It is a requirement that it is used by TDC itself. Regarding the copper network the examples of such functionalities are multi-channel offerings, multicast and unicast. However for the cable TV network, there are at this stage capacity problems in relation to such services. Therefore TDC is not obliged to grant access to multicast on the cable TV network. This is due to the fact that the cable TV network is a shared capacity.

Which obligations to be imposed in relation to the fibre network has been postponed to a separate decision since TDC has acquired a fibre network shortly before the final decision on market 5 was to be published. In July 2010 NITA held a national consultation on a draft decision in which mandated access to TDC's fibre network it suggested. A final decision has been issued 3 November 2010.

- c) *Included in market 5.*
- d) *NITA's latest decision on the wholesale bitstream access market (market 5) was issued 22 December 2009. As mentioned under question b) NITA's latest decision on mandated access to TDC's fibre network was issued 3 November 2010.*

TDC is imposed an obligation for transparency in connection with:

- *All necessary information regarding the conclusion of the interconnection agreements.*
- *The interconnection agreements entered into with internal or external agreement parties, which contain deviant terms, conditions, commercial condition, including conditions for delivery and use, and also prices and technical conditions etc., with regard to TDC's relevant standard offer.*
- *Changes in the existing offer of interconnection products and coming new interconnection products in the market.*
- *TDC's passive and active infrastructure.*
- *TDC is obliged to prepare a reference offer, for the interconnection products that are covered by the access obligation. In addition, the obligation includes laying down SLA and KPI. The proportionality condition mentioned below could be made the subject of further discussions with the industry's actors before preparing the reference offer:*
 - *Laying down of SLA's and KPI's, including quality requirements for the broadband connection products,*
 - *Collocation in advanced connection points.*
- *Overall the obligation of non-discrimination implies that TDC shall specially ensure:*

- *That TDC under similar conditions offers the other companies, which provide similar services, similar conditions and prices, and*
- *That TDC provides services and gives information to others on same conditions, at same prices and of the same quality which applies for services which are provided to TDC itself, its sister concerns or partners.*

The obligation of non-discrimination further implies that arrival of new sub-products or new accessory part likewise be covered by the obligation. This happens irrespective of whether the new products are sold internally or externally.

In the upcoming revision of the national act which is an implementation of the framework directive, the national act will explicitly give authority to restrict the launch of new or amended wholesale products in a given period. See answer to question b).

- e) *On market 5, the LRAIC pricing methodology applies to bitstream access products.*

However there are existing services, that due to their nature, are not suited to be modelled in accordance with the LRAIC-method. Apart from others, this will e.g. apply to services with limited sales and services that do not have a close relation with the actual access products. Moreover, there could be new services which are not a part of NITAs annual maximum price rulings. With regard to the existing or new services which are not covered by NITAs annual ruling regarding fixing of maximum LRAIC-prices, the previous costing method will be applicable.

- f) *Same pricing models on Market 4 and 5 to ensure consistency. The pricing is regulated on the basis of the LRAIC price model.*

- g) *N.A.*

Below, some additional questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

See answer to question b)

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

Quality differentiation is not possible. It should be noted that KPI and SLA are described in the reference offer.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Yes. Multi-cast is available for alternative operators as a part of the regulated product.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

No.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

There is a migration path from local loop unbundling to sub loop unbundling. The price for migration shall according to the decision be cost oriented (cost-savings compared to new set-up should be reflected in price). Also NITA has mandated the incumbent to give quite wide-scale (but necessary) information and a announcement procedure has been set up (see answer to question 3.3 d, transparency). NITA can however add that the migration possibility has not been used so far. Primarily as a matter of economies of scale, the alternative operators are not able to obtain a acceptable business case.

As with regard to migration to 'full' NGA (FTTH) no migration path exists as FTTH is not a part of market 4 and the incumbent not until recently has had access fibre at its own disposal (except from an insignificant number to business customers).

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period

required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

YES, an announcement four years before decommissioning a given MDF should be given by the incumbent. The incumbent is mandated to compensate alternative operators if announced decommission is not accomplished. This is to avoid a situation where the incumbent announces more MDF's to be decommissioned than what is the reality, causing the alt. operators not to make planned investments on a given MDF.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

Decommission is not contingent on any conditions (except it should comply with the announcement rules). NITA finds that alternatives such as BSA or establishment in the cabinet (sub loop unbundling) exists in any case (however not last mentioned will not necessarily have a business case).

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.
 - Explain if such provisions are applied and what they look like.

(Same answer as in 3.3.d). The incumbent is mandated to give announcement when new cabinets are established. The announcement shall be given six months in advance as a minimum. The announcement shall also contain information as e.g. geographic coverage, number of end-users connected to a cabinet, which customers (the alternative operators current customers) are affected, average length of copper lines, available backhaul possibilities (ducts, dark fibre, transmission capacity).

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

The alternative operators have expressed satisfaction with the decision regarding this obligation. As mentioned before the set up has not been used so far. According to the operators it is primarily according to economies of scale difficult to obtain an acceptable business case.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

To NITAs conviction alternative operators should not have stranded assets to a significant extend as the announcement period is set with regard to the lifetime of the investments in equipment.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

All migrations should be cost oriented. The alternative operator pays his own part. If cost savings occur due to e.g. group migration, this should be reflected in the price.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

There exists no database with complete information on geographical location, available capacity of all ducts or civil engineering broadband infrastructure in Denmark.

The Telecom Industries Association in Denmark maintains a database from which interested telecom companies automatically will receive an e-mail with offers of joint digging efforts from other telecom companies digging in a certain area. However this database does not contain actual information on the placement of telecom infrastructure.

The Danish Register of Underground Cable managed by the Danish Enterprise and Construction Authority contains information on all companies and associations who own underground cables in Denmark. The register is established in order to prevent accidental damages to underground utility cables. All owners of cables have registered their areas of

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

interest in the register. An area of interest is the geographical area in which an owner of cables own cables. The exact location of cables is thus not registered.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

N.A.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

Today the broadband penetration in Denmark is above 99 percent and by the end of 2009 77 percent of the households can get 10 Mbit/s. This means that only smaller areas are underserved.

In June 2010 the Danish government has announced that by 2020 all Danish households should have access to 100 Mbit/s.

In the current regulation of the wholesale broadband markets (market 4 and 5) it has been a key issue that the alternative operators should have access to all relevant information when the incumbent upgrades its network. Further more the legal certainty for the years to come has been an important issue. These issues are described in the answers to questions in section 2, 3 and 4.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Estonia

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Elion Ettevõtte AS – FTTH and FTTB

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

FTTH [Confidential data] lines connected

FTTB [Confidential data] lines connected

We do not have exact data on nr of lines passed, but Elion publicly claims that around 100 000 homes are currently passed.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

A lot of different retail services in terms of bandwidth and in terms of bundles exist.

Main triple play services download speed are between 1-12 Mbit/s and price 16-29 €/month. For additional 6,4 €/month it is possible to get a 100 Mbit/s connection.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The incumbent has a project called “fibre to the home” covering a period between 2007-2015 with the aim to pass 1000 apartment buildings every year.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

STV AS (cable operator) – FTTB: [Confidential] lines connected.

Starman AS (cable operator) – Cable DOCSIS 3.0: [Confidential] lines connected.

We do not have exact data on nr of lines passed.

A lot of different retail services in terms of bandwidth and in terms of bundles exist.

Main triple play services download speed are between 1-15 Mbit/s and price 10-21 €/month. Some advanced triple play services are capable to reach to 100 or 150 Mbits/s download speed (price circa 25 €/month).

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Starman AS has announced that they prepare for 400 Mbit/s download speed, but not noticed any date. STV's network is already based mostly on optical cables (FTTB).

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**

- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Available on mandatory basis. Incumbent is obliged to provide its competitors access to its cable ducts. We have no data concerning number of duct access.*
- b) *Service is based on wire site rent. One site contains one wire with max diameter 30 mm. One duct diameter is 100 mm and is divided to 6 wire sites (every site has 1/6 duct). Every duct has two sites for technical reserve (2/6).*
- c) *Included in market 4 (wholesale physical network infrastructure access).*
- d) *Access, non-discrimination, transparency (including a reference offer) and cost accounting obligations.*
- e) *HC FDC TD.*
- f) *Cost orientation.*

2.2 Dark fibre

- a) Available on voluntary basis. Number of dark fibre is 568.
- b) Service enables to use fibre to establish a connection between end-points.
- c) Not included.
- d) No obligations.
- e) No cost accounting.
- f) No price obligation.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)

- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

Not provided.

3.2 Concentration point/ manhole unbundling

- a) *Available on mandatory basis. Incumbent is obliged to provide its competitors access to its manholes for duct access.*
- b) *Incumbent enables to use manholes for duct access.*
- c) *Included in market 4 (wholesale physical network infrastructure access).*
- d) *Access, non-discrimination, transparency (including a reference offer) and cost accounting obligations.*
- e) *HC FDC TD.*
- f) *Cost orientation.*

3.3 Cabinet unbundling

- a) *Available on voluntary basis. No information concerning number of cabinet unbundling.*
- b) *Service enables to use incumbent's cabinets by ANO equipment.*
- c) *Not included.*
- d) *No obligations.*
- e) *No cost accounting.*
- f) *No price obligation.*

3.4 ODF unbundling

Not provided.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

- a) *Available on mandatory basis. Incumbent provides [Confidential] connections (as of June 30 2010).*
- b) *Access to bistream connections from access point to end-points.*
- c) *Included in market 5 (bitstream access).*
- d) *Access, non-discrimination, transparency (including a reference offer) and cost accounting obligations (retail minus).*
- e) *Price cap.*

Below, some *additional* questions on bitstream:

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

There are three access levels: DSLAM level, local level and national level.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

There are guaranteed connections download speed from 1 Mbit/s to 8 Mbit/s according to order.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

No, there are no multi-cast technologies available for alternative operators.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

There is exception in DSLAM level. If ordered DLSAM level connection use fibre loop, then incumbent doesn't have obligation to provide it with regulated tariffs. Other bitstream access levels don't have such exception.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access** products? What does it look like? To what extent is the NRA involved in setting up the migration path?

No, there is no migration path envisaged from current to next generation access products.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period

required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

If incumbent replaces its copper access network with fibre access network, then it has to announce it 6 months in advance.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

Such preannounce period improves ANOs ability to compete with incumbent.

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.

No, such provisions are not applied.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

We don't have any practical experiences.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

No, there are not any measures to solve the problem of stranded assets.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

No, there are not any provisions relating to the costs of migration.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

In Estonia Elion (incumbent) owns almost 100 % of cable ducts. Access to cable ducts as a support service is included on market 4 and also obligations of access, non-discrimination, transparency and cost accounting are established. Ducts database belongs to Elion and is accessible to all operators. Set-up and running costs of the database are shared between Elion and operators who use Elion ducts. Costs sharing have to follow HC TDC TD methodology, which proceed from cost accounting obligations on market 4.

According to the Estonian Construction Law, the common data concerning civil engineering infrastructure is available in the register of the construction, which belongs to Ministry of Economy Affairs and Communications. At present of a modification to this database is taking place and we can't answer more specifically to question cited above.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Our market 3 SMP decisions enact that all SMPs have the same call termination price cap and market 7 SMP decisions enact that all SMPs have the same call termination price cap.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

We have the EstWIN (Estonian Wideband Internet Network) project. In 2009 a non-profit organization was created by major operators and the government in order to make 100 Mbit/s wideband internet accessible to every citizen of Estonia by 2015. The EstWIN operator shall provide only wholesale services (access to dark fibre presumably) and on an open network principle. The total cost of the EstWIN project is estimated to be 384 million Euros, a quarter of which is expected to come from the structural funds of European Union. In the first stage of EstWIN, 6,640 kilometers (4,130 mi) of fibre-optic cables of core network will be installed and more than 1,400 connection points will be constructed by 2012. The aim is to have 98% of the residential houses, businesses and authorities located closer than 1.5 km (0.93 mi) from the nearest connection point. This stage of the project

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

will give work to 400 people and will cost an estimated 96 million Euros, most of which will come from European structure funds. The network connection will reach the end user from the network access point either by fibre-optic or existing copper cable; in difficult cases a wireless connection will be used and the last mile will be built by operators themselves

In years 2012–2015 the data transfer speeds will be increased, so that the end users connected through the fibre-optic cabling will get speeds up to 2.5 gigabits, those with copper a speed of up to 100 megabits and those connecting through wireless at either 42 or 100 megabits per second depending on the technology.

Estonia expects that the EstWIN Project will help to eliminate the digital division between urban and rural regions, increase social cohesion and contribute to economic growth. The availability of the necessary broadband infrastructure will be a key factor for the local communities in attracting businesses, distance working, providing health care services and improving education and public services.

The European Commission has authorised under the EU State aid rules Estonia's plans to support the establishment of a country wide high speed broadband infrastructure, the EstWIN project. In August 2010 the construction of EstWIN started. When the network becomes operational, the network operator shall have an obligation to prove to the ECA that the price charged for wholesale access is reasonable and non-discriminatory.

- Scope **and** envisaged **target** of the measure;
- **Current achievements**, milestones reached.

Finland

1 Market developments

1.1 Incumbent

1.2 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);
 - current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
 - available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

1.2.1 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

1.3 Competitors (other telcos, cable)

1.3.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

1.3.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

2.2 Dark fibre

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)

- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

3.2 Concentration point/ manhole unbundling

3.3 Cabinet unbundling

3.4 ODF unbundling

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?
- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”*.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:
 - **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
 - **Which data** are collected in this database?
 - Does the information collected cover just telcos or also non-telcos?

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

The Finnish Government made a resolution in December 2008 on the new national broadband strategy. The strategy constitutes two objectives to safeguard broadband for all. The first objective concerns amendment to the legislation so that the universal service includes basic broadband subscription in 2010. The level of basic broadband is at the moment 1 Mbps and it is defined in Government Degree.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

The second objective is to increase supply of high-speed broadband connections in most remote areas. For this purpose Government reserved 66 M€ of state budget. The state aid is targeted to most remote rural areas where the most remote 5 % of population lives. The state aid is mainly directed to boost trunk network investments for providing high-speed broadband connections by the end of 2015. The target is to have high-speed (100 Mbit/s) broadband network available for all. By the end of 2015 high-speed (trunk) networks should be within the reach of virtually everyone in a 2 km distance, according to demand. Some state aid is directed also to the access network. If the subscriber connection is less than two kilometer length it is not eligible for state aid. The subscriber connections over two kilometer length are eligible for state aid.

The total amount of public funding consists of state aid 66 M€ and EU Agricultural Fund 25 M€. At least 34 percent of the costs have to be born by the operator building the network and maximum 66 percent by state and municipalities. The municipality's share of the costs differs between 33, 22, and 8 percent of the costs. The municipalities share is defined in advance. It is lower for example in municipalities that suffer financial difficulties and have high estimated investment costs to the high-speed networks.

The broadband state aid legislation entered into force in the beginning of 2010 and the amendment 1.7.2010. EC approved the state aid (7 May, 2010). The state aid (66 M€) is granted by FICORA (Finnish Communications Regulatory Authority). Aid for rural broadband deployment available from the EU agricultural fund (25 M€) is granted by regional EDTE centers. This aid for rural broadband deployment is directed to the municipalities that belong to the group of 22 percent cost share. The criteria for the rural aid are very similar to those of the state aid.

At the moment, the first state aid applications are being processed in FICORA and EDTE centers. The first round of public consultation and market analyses has been finalized and most of the first round of regional councils' application processes are also finalized and regional councils are selecting the operators that will build each network. The second round of public consultation and market analyses has begun. The network building has started in the first seven pilot projects that were started in the end of 2009.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

France

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

For over two years now, the country's leading carriers have been involved in optical fibre rollouts in the horizontal portion of the network, i.e. the portion located on public land. Some 40 towns and metropolitan areas are now concerned by these rollouts.

A distinction needs to be made between FTTH (Fibre-to-the-home) technology, which is being deployed by France Telecom, SFR and Free in particular, and which consists of bringing fibre to the customer premises, and FTTLA (Fibre-to-the-last-amplifier) technology, which is being deployed by Numericable and which consists of replacing a portion of the coaxial cable located on public property with optical fibre up to the last amplifier – with coaxial cable being used to complete the connection to customer premises.

The map below illustrates the status of the rollouts of both of these technologies that are currently underway across the country:

- *light blue = FttH rolls-out (incumbent + alternative operators),*
- *dark blue = FttLA rolls-out (= cable-operator).*

In summary:

- *Cable-operators = about 40 cities (including part of suburbs),*
- *Orange (incumbent) = about 10 cities (including part of suburbs).*
- *Alternative operators = mainly Paris/Lyon/Marseille/Grenoble/Montpellier.*



Alternative carriers make increasing use of the wholesale offer for accessing France Telecom civil engineering infrastructure. The optical fibre rollouts that alternative carriers have performed to date thanks to this wholesale offer involve some 20 municipalities, chiefly Paris and its inner suburbs and the cities of Lyon, Villeurbanne, Marseille and Grenoble.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

As of 30 June 2010, there were over 38,700 buildings equipped for fibre-to-the-home and connected to at least one operator's network, which marks an 14.5 % increase compared to 31 March 2010. Around 910,000 households are located in these buildings and are now eligible to receive an FTTH service. The number of eligible households has increased by roughly 9% since 31 March 2010, and by 40% since 30 June 2009.

Progress is made with infrastructure sharing but it is still little used compared to the total number of eligible subscribers and households. As of 30 June 2010, there were 850 FttH subscriptions that were being delivered thanks to a network sharing agreement between the customer's service provider and a competing operator – from among 83,000 eligible households located in more than 600 buildings equipped with optical fibre-to-the-home and connected to at least two operators' network.

The sizeable increase in the number of households eligible to receive a fibre-to-the-home solution from at least two operators, which began in the fourth quarter of 2009, has continued thanks to the implementation of network sharing schemes in accordance with the ARCEP decision that was published in the Journal Officiel of 17 January 2010, concerning the terms for accessing optical fibre ultra-fast broadband electronic communications lines.

	30 September 2009	31 December 2009	31 March 2010	30 June 2010	Quarterly growth
Homes passed for FTTH	740 000	800 000	840 000 *	910 000	+ 9 %
Buildings equipped with FTTH	27 800 *	29 300 *	33 800 *	38 700	+ 14,5 %
Subscriptions based on a network sharing agreement	250	350	450	850	+ 89 %
Homes passed thanks to network sharing	5 000	10 000	40 000	83 000	+ 107,5 %

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

No difference, at this stage, with retail offers on copper loop.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

France Telecom guided for EUR100-150 million fibre CAPEX in 2010, and is expected to allocate EUR2 billion to fibre in France by 2015 to cover 40% of homes (homes passed).

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Same as answer 1.1.1.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.
 - *Illiad has guided for EUR200 million fibre CAPEX in 2010 as it rolls out its horizontal network outside Paris meanwhile rolling out fibre in the buildings.*
 - *SFR is also expected to invest an annual EUR150 million in fibre in 2010.*
 - *Numericable is expected to carry on the reconditioning oh his network in the cities where he is implanted.*

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)

- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

a) *Since market 4 analysis decision n° 2008-0835 adopted in July 2008, France Télécom has to give access to its “local loop” ducts to alternative operators for the roll-out of optical Fttx networks. The same obligation is planned to be renewed in the next market 4 analysis which could be applied during 2011.*

b) *Access to ducts includes*

- *access to all ducts which are part of the copper local loop (from the MDF to the street cabinet and from the street cabinet to the homes),*
- *access to chambers/man holes.*

Access is limited to the purpose of optical rolls out for Fttx networks to the end user.

Rules have to be specified so as to permit several operators to roll-out their own fibre optical networks in parallel.

Arcep is planning in market 4 analysis review to mandate France Télécom to provide access to its poles for FttH rolls out.

c) *Duct access is directly included in the relevant market, along with access to the copper / fibre local loop.*

d)

- *Access to ducts and manholes, alternative operators are allowed to do all the studies and works on the field. France Télécom has to propose desaturation processes when there is no space available.*
- *France Telecom has to provide all the information (maps etc.) it has on its ducts.*
- *France Telecom has to use the same operational processes for its own fibre roll-out. France Telecom has to edict engineer rules so as to precise how to deal with the limited availability in its ducts.*

- *First offer was published on 15th September 2008.*
- e) *The costing methodology is the same as the one adopted at the end of 2005 for the copper local loop, which is current cost accounting: civil engineering is indeed part of the copper local loop.*
- f) *Cost orientation obligation has been imposed to France Télécom.*

ARCEP has adopted a decision setting the economic terms governing access to France Telecom ducts on the November 9th 2010.

- *an initial sharing of the civil engineering costs between copper and FttH based on the number of access per technology,*
 - *a pricing of the ducts so as to enable France Télécom to recover the part of the civil engineering costs dedicated to FttH,*
 - *a pricing which differentiates the position of the ducts (between the MDF and the mutualisation point or between the mutualisation point and the homes) and whether the optical networks rolled out is mutualised or not, so as to take better account of the needs that are specific to the most sparsely populated areas of the country.*
- g) *This decision, which France Telecom will be implementing at the start of 2011, will result in a significant decrease in the price that alternative operators are charged to access France Telecom ducts, which will enable them to deploy optical fibre networks under favourable conditions - as much in high density areas as rural ones.*

In high density areas, volume-based pricing will allow operators to roll-out parallel networks and so compete with one another, while also encouraging a reasonable use of the available space.

In more sparsely populated parts of the country, the flat-rate pricing scheme applied to access encourages operators to share resources and offers a predictable system despite the disparities in available civil engineering resources. This system could be extended to include overhead infrastructure, as the Commission invited the Authority to do in its remarks, and in accordance with the draft market 4 analysis decision.

Poles and masts: extension of duct access obligation.

This summer, ARCEP has submitted to public consultation a draft decision for the next market 4 analysis, which will be adopted at the beginning of 2011.

In its draft decision, ARCEP proposes to extend the perimeter of the relevant market to access to poles and masts, so as to mandate France Télécom to give access to its poles and masts for fibre roll- out.

2.2 Dark fibre

No offer available.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)

- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

In-house wiring access products are available on a mandatory basis. However, the roll-out is still in early stages and access products are getting increasingly available. As of 30th June 2010, 83 000 households (out of 910 000 FttH household) were eligible for in-house wiring access products.

- a) *In-house wiring access products are passive access products and may either be :*

- *paid one-shot in the form of an IRU for a long period (often exceeding 60 years) given by the operator of the building. This product is available on a commune per commune basis and may include a risk premium,;*
- *building per building access offers (available from France Télécom, SFR and Free) as a long-term lease, either paid as a one-off fee or paid monthly.*

The access point can be situated within the limits of private property in the case of existing buildings in very high-density areas that have at least 12 residential or office units, or which are connected to a visitable public sewage network through a supply tunnel which is also visitable. In all the other cases, the access point will be located outside the limits of private property.

- b) *Access to in-house wiring is mandated through symmetrical regulation (based on French national law).*
- c) *Included in relevant Market 4 definition (no obligation associated yet).*
- d) *Current regulatory obligations are based on the decision n°09-1106. The decision already provides obligations applicable throughout the territory:*
- *Access at the concentration point has to be provided via a passive offer : according to the decision, the building operator has to offer access to a passive concentration point; notwithstanding when at least four fibre per dwelling unit have been installed and have been bought by operators, access may only be offered at a point further up in the network, via a passive or an active offer.*
 - *The building operator has to publish an access offer, specifying the conditions of access to lines with either a dedicated optical fibre or a shared fibre line and access to specific resources.*
 - *The building operator has to transmit prior information on buildings it has equipped with fibre optic lines and on concentration points.*

- *Tariff obligations: access tariffs must be reasonable and comply with the principles of non-discriminations, relevance and effectiveness. They take into account a rate of return on capital that reflects the risk and gives a bonus to the initial investors.*

Specific obligations only apply to very high-density areas: in those areas, the building operator has to grant reasonable requests to roll-out dedicated fibre lines and installing specific equipments. In this case, the building operator is entitled to require the third operator to contribute and help finance the installation in the building, up to the sum of the costs specifically incurred by its requests and a fair share of costs to be shared between operators.

- e) *The terms and conditions governing the price of access must be reasonable and comply with the principles of non-discrimination, objectivity, relevance and efficiency. The rate of return on investment used to determine these pricing terms and conditions will take account of the risk incurred and will extend a risk premium to the building operator (resulting in a WACC of 10.4% and a risk premium of 4.6%).*

In accordance with these principles, when the operator benefitting from this access contributes at the outset to financing the installation of the lines in the building, its contribution will be composed of financing the costs that are attributable to installations made on its behalf, along with an equal portion of the costs that are to be shared by all of the operators.

- f) *Not applicable.*

3.2 Concentration point/ manhole unbundling

Included in relevant market definition but no remedies Market 4 (no obligation).

3.3 Cabinet unbundling

France plans to regulate sub-loop copper line unbundling.

- a) *Obligations for SMP to provide regulated offers for access and sub-loop copper line unbundling.*
- b) *Copper line sub loop unbundling based on two different technical solutions:*
- *"mono-injection": all the lines are activated near the cabinet impacted,*
 - *"bi-injection": the lines of the cabinet impacted could be activated near the cabinet or in the MDF.*
- c) *The sub-loop copper line unbundling access products are included in the M4.*

- d) *The obligations for the SMP are transparency, reference offer, non-discrimination, access to shared and full copper line (sub loop) with specific obligations in case of "mono-injection" solution: collocation and backhaul regulated offers and financial compensation for unbundlers.*
- e) *The offers provided by the SMP have to be cost oriented with a constraint on the price: non-squeezing tariff comparatively to bitstream.*

3.4 ODF unbundling

ODF unbundling is not available.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

- a) *Enhanced bitstream is not available.*
- b) *Not applicable.*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- c) *Market 5.*
- d) *Not applicable.*
- e) *Not applicable.*
- f) *Not applicable.*
- g) *Not applicable.*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

No migration path from current to next generation access product has been assessed so far.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period

required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”*.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

There is no centralised data base in France. In the current market 4 analysis, France Télécom has not been mandated to establish a geographical database which would be directly available to alternative operators. Actually, France Télécom has developed such a geographical system, based on Arcview, but database collection is far from being completed.

When asked by an alternative operator, France Télécom provides the best information it has (raster map, vectorial map...) on the area needed. Then, once the alternative operator has done all the studies needed for its future roll-out in France Télécom's ducts, France Télécom gathers all the data and saves it in its geographical system. This data is then available for any other operator. France Télécom takes also part in this process for its own roll-out. In August 2008, a law has been adopted by the Parliament, which mandates any operator to give geographical data on its network to local authorities on their demand, free of charge. Works are still under doing so as to specify the aspects of such demands. ARCEP has just published a guide to local authorities to help them to formulate their demands.

Mid 2011, all operators will be supposed to be able to give vectorial data on their networks. France Télécom does not seem to be able to respect this planning.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
 - Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in "white" areas? Did any practical problems occur when establishing/running the database? *(Note: this information may be helpful for other NRAs when setting up similar databases)*

- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

National law has allowed ARCEP to develop symmetric measures and to mandate passive access for all operators rolling out in-building wiring. Thus, the Law on modernising the economy (LME dated 4th August 2008) introduces a system of rights and obligations for operators deploying ultra-fast broadband solutions. First, the process of installing fibre in buildings is facilitated for operators and imposed on property developers in greenfield housing. Second, the party that installs the fibre in the building (i.e. the building operator) is responsible to the property owner for all operations performed on the network on the private property, and must satisfy an obligation to share its infrastructure, allowing other operators to provide ultra-fast broadband services to the residents of the building under non-discriminatory conditions. Furthermore, article L. 34-8-3, created by the LME stipulates that the concentration point must be located outside of private property, “except in instances defined by the Electronic Communications and Postal Regulatory Authority”.

The current regulatory framework implemented in very-high density is based on the December 2009 decision, that requires an operator installing the in-building wiring to grant a passive access to other operators at the concentration point, unless all four fibres installed are already in use. In this case, access may be granted higher in the network on a passive or activated basis.

Outside very-high density areas, the regulatory framework is based on a decision, adopted on December 14th 2010. It stipulates that the concentration point will gather on average 1000 lines, resulting in a fibre passive access solution technically similar to unbundling.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

The national coverage of high-speed networks is a major challenge for the future of the territories. The President of the Republic has decided to assign to this project 2 billion in future investments financed by domestic borrowing.

- Scope and **envisaged target** of the measure;

The "national ultrafast broadband program", which will allow the implementation of this project, was released June 14, 2010. It includes, from July 2010 to January 2011, a start-up phase that is a preliminary step to the opening of financial support for deployment of ultrafast broadband networks.

Under this first phase, the Government is launching a call for expressions of investment intentions in order to collect investment intentions of operators to deploy ultrafast local loop networks, in the next 5 years outside very high-density areas.

Network operators can consult the regional consultative bodies established under the Prime Minister's circular of 31 July 2009 on the development of digital territory, to be aware of expectations and priorities of the territories over which they have the intention to deploy ultrafast broadband infrastructure.

These expressions of investment intentions have a commitment value for network operators and providers of Internet access and serve as a reference in the subsequent phase of financial support for deployments (parts A and B of the national program).

They will also be a primary source of information to identify areas where effort, including shared hosting, operators of electronic communications, is not sufficient to deploy a broadband network.

A new call for expressions of investment intentions will be held every two years to take account of the update deployment projects actors.

- Current **achievements, milestones** reached.

Germany

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Incumbent: Telekom Deutschland GmbH AG is also SMP-provider (as decided in Market Analysis for Markets 4 and 5). Telekom Deutschland GmbH uses FTTC (VDSL), very seldom FTTB-infrastructure and FTTH (GPON). Telekom Deutschland GmbH just announced the roll-out of FTTH-lines in spring 2010 as only isolated projects

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

no actual figures available

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Different retail services available; offer depends on used technique and bandwidth (table underneath gives a few examples for Triple Play)

product	max.download /max.upload	Access	Telephone	PSTN/IP	mobile	TVs	Price Net
Entertain Comfort	16Mbit/1024 kbit/s ADSL 2+	Internet Flat	Telephone Flat	PSTN		ca. 70 TV-stations	36,41 €
Entertain Comfort	25/5Mbit/s VDSL	Internet Flat	Telephone Flat	PSTN		ca. 70 TV-stations	44,51 €
Entertain Comfort	50/10Mbit/s VDSL	Internet Flat	Telephone Flat	PSTN		ca. 70 TV-stations	48,55 €

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Telekom Deutschland GmbH has announced in spring 2010 the roll-out of FTTH-lines. It plans to build FTTH-infrastructure (GPON) in order to connect 10% of the households (operating with fixed lines) in Germany until 2012 (homes passed), mass market-business will start in 2011.

The first isolated project was in Dresden, others are currently following (e.g. in Braunschweig). After having finished pilot projects further regions for roll-out will be announced (criteria: investment sum per access, possible customers, density of competition)

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.
 - *Around 20 operators (e.g. NetCologne, Wilhelm.tel or M.net) are building their own infrastructure based on FTTH or FTTB, the focus lies on building FTTB-lines.*
 - *Also utilities (e.g. Stadtwerke Schwerte, Essen.net) are starting to roll out infrastructure*
 - *FTTH amounts to approximately 22.000 customers passed and around 13.000e customers connected, for FTTB there are about 120.000 customers connected*
 - *High speed TV-cable internet (e.g. Kabel Deutschland) covers approximately 750.000 customers connected*
 - *A few competitors are using Telekom Deutschland GmbH's VDSL-infrastructure by renting VDSL-Bitstream (about 6.000 customers connected)*
 - *Different technologies used by competitors: GPON, P2P (VDSL, Ethernet), cable (DOCSIS 3.0)*
 - *Competitor's offers depend on their infrastructure (technologies); different kinds of access lines products are available, which can be bundled, with different kinds of bandwidths: telephony, internet, IP-TV, mobile service (e.g. double play: Vodafone, triple play: Unity Media, quad play: Verivox); (table underneath gives a few examples for Triple Play)*

Operator	product	max.download/max.upload	Access	Telephone	PSTN/IP	mobile	TV/Radio	Price Net
1und1	1&1 Entertainment-Flat	16Mbit/1024kbit/s ADSL 2+	Internet Flat	Telephony Flat	T-Net (of Telekom Deutschland GmbH)	1&1 mobile flat	Maxdome Premium 25.000. Videos, 4.500 Radio-stations	ca. 37 €
HanseNet	Alice Comfort + TV Flat	16Mbit/1024 kbit/s ADSL 2+	Internet Flat	Telephony Flat	ISDN or analogue	mobile flat	100 TV stations + Pay TV	32,32 €
Kabel Deutschland	Paket Comfort + Digital TV	32/2Mbit/s BB-connection	Internet Flat	Telephony Flat	cablephone		100 digit.TV-stations + 3 analogue stations + 70 Radio-stations.	33,05 €
NetCologne	Double Flat + Digital TV	25Mbit/s/2,5 Mbit/s VDSL	Internet Flat	Telephony Flat	analogue		53 analog. + 29 Radio-stations, 175 digital TV-stations	34,79 €

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.
 - *More competitors are planning to build out their infrastructure (e.g. HTP, Eifel-Net)*
 - *The focus lies on FTTB-lines.*

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since .., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;

- availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Mandated, Figures not available.*
- b) *Based on its decision of June 27, 2007 requiring Telekom Deutschland GmbH to provide duct access, BNetzA specified in its decision of December 4 2009 the conditions to provide duct access between the MDF and the street cabinet. The provision of duct access constitutes an annex service to unbundling at the street cabinet (see above A.3.1 Cabinet Unbundling).*
- c) *Duct access is not seen as a product of market 4, it is considered to be an ancillary service as part of the Remedies Decision of market 4 (annex service to unbundling at the street cabinet).*
- d) *Current regulatory obligations*
- *Transparency obligation: The Provision of information about available capacities is already part of the access obligation in the notified draft of a new regulatory order. It was explicitly mandated in the preceding regulatory order.*
 - *The duty to add new access products to the reference offer is subject to the condition of a general demand for this product.*
 - *Non-discrimination obligation is imposed but no provision restricting launch of retail product until wholesale product is available.*

- *The competitor is allowed to install fibre-lines (under supervision by Telekom Deutschland GmbH representatives).*

Access is provided only to a quarter section of a duct (even greater granularity was not justified considering that the number of customers accessible do not allow an efficient utilization by more operators).

In case there is not enough space to provide a complete duct or a quarter duct between MDF and cabinet, Telekom Deutschland GmbH shall provide the vacant space, if it is possible to either install a duct divider subsequently or to lay optical fibres.

Duct access shall be provided within 6 months after the competitor's ordering (Telekom Deutschland GmbH can terminate this provision within 18 months notice if the cable ducts are closed or relocated - Telekom Deutschland GmbH must assure the availability of duct capacity between MDF and street cabinet (without a one-off fee).

Telekom Deutschland GmbH is entitled to dispose of one complete duct as a reserve to guarantee quick fault clearance in case of damage to cables.

- e) *CCA Cost base, LRAIC based cost allocation, bottom-up cost model for calculating the invest.*
- f) *Rates for access consist of fees for planning and providing access and monthly payments per quarter segment per metre.*

2.2 Dark fibre

Dark fibre access was mandated in the regulatory order dated 27.06.2007. BNetzA specified in its decision as of December 4 2009 the conditions to provide access to dark fibre. Telekom Deutschland GmbH was obliged to provide duct access if duct access is not possible due to limitations of free space. Similar to duct access, access to dark fibre was an ancillary service to unbundling at the street cabinet. BNetzA's decision (Dec. 4 2009) to oblige Telekom Deutschland GmbH to provide access to dark fibre (unless duct access is available) was overruled by the Federal Administrative Court in January 2010.

The remedies decision just notified again contains an obligation to provide access to dark fibre when duct access is not possible:

- a) *To be re-mandated, not yet available.*
- b) *The provision of access to dark fibre constitutes an annex service to unbundling at the street cabinet.*

- c) *Dark fibre access in case of unavailability of duct access is not seen as a product of market 4, it is considered to be an ancillary service as part of the Remedies Decision of market 4 (annex service to unbundling at the street cabinet).*
- d)
- e) *Notified regulatory obligations*
- *Transparency obligation: The Provision of information about available capacities is already part of the access obligation in the notified draft of a new regulatory order. It was explicitly mandated in the preceding regulatory order.*
 - *The duty to add new access products to the reference offer is subject to the condition of a general demand for this product which is currently lacking.*
 - *Non-discrimination obligation is imposed but no provision restricting launch of retail product until wholesale product is available.*
 - *The competitor is allowed to install fibre-lines (under supervision by Telekom Deutschland GmbH representatives)*
- f) *CCA Cost base, LRAIC based cost allocation, bottom-up cost model for calculating the invest.*
- g) *Rates for access consist of fees for planning and providing access and monthly payments per quarter segment per metre.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):

- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Available on a mandated basis so far as Telekom Deutschland GmbH owns the in-house-wiring. No figures available.*
- b) *Wiring between demarcation point and telecommunications connection unit in the customer's premises.*
- c) *Included in Market 4.*
- d)
- *transparency obligation: part of transparency obligation regarding ULL.*
 - *availability of reference offer. yes;*
 - *non-discrimination obligations: only general non-discrimination obligation;*
 - *access obligations: yes, but no differentiation between products.*
- e) *LRIC.*

- f) *According to actual expenditure, no fixed tariffs because this product has up until now been scarcely requested.*

3.2 Concentration point/ manhole unbundling

Access has to be provided at the point where the relevant product can be accessed in unbundled form, independent from the surrounding infrastructure, whether street cabinet or manhole.

3.3 Cabinet unbundling

- a) *mandated, figures not available.*
- b) *Product definition (main features, e.g. location of access point along the value chain).*

On December 4 2009 BNetzA specified in a ruling chamber decision the conditions for access to Telekom Deutschland GmbH's access infrastructure. The decision requires Telekom Deutschland GmbH to provide a) access to the street cabinets and b) duct access. Originally, there was also an obligation to provide access to dark fibre (unless duct access is available). However, this decision was overruled by the Federal Administrative Court in January 2010.

The general obligation to provide these services was already set out in the regulatory order of BNetzA's decision (June 27 2007) concerning access to the local loop, street cabinet access and access to ducts and dark fibre without however specifying the specific access conditions for the services to be provided.

In the context of the ladder of investment, access to the street cabinet reflects the left side of the ladder showing the access products whereas duct access is an element of the ladder's right side (wholesale products to reach the access point).

Since summer 2008 Telekom Deutschland GmbH and competitors had tried to reach a voluntary agreement on these issues. In August 2009, Vodafone's fixed network division requested BNetzA to settle the dispute. This Vodafone case was settled by BNetzA. Several similar other cases were decided afterwards based on the principles of the "pilot" decision.

Telekom Deutschland GmbH is required to provide access to its street cabinets thereby enabling competitors to install their own DSLAMs.

The cabinets have sufficient space for up to four further DSLAMs. Due to waste heat and depending on the power supply, co-location may be limited to two further DSLAMs in practice.

- *Telekom Deutschland GmbH is also required to provide virtual co-location by establishing a separate cabinet (connected via a patch cable) in those cases where access to the existing street cabinet is not possible.*
- *Co-location shall be provided for within 6 months.*
- *Provision shall take place on a first come first serve basis. This “rule of priority” satisfies the principles of equal opportunities, reasonableness and timeliness. It is considered superior – in particular for practical reasons – compared to other means of allocating opportunities for co-location, such as assignment by lottery or in separate tranches.*
- *However, BNetzA reasoned that scarcity of duct access at a given location is rather unlikely. Given the economies of scale, a profitable exploitation of a specific street cabinet is considered only possible for a limited number of operators (in practice one may assume that for most cabinets there will be not more than two competitors requesting access). Also, an amount of co-location requests surpassing the space available will probably be a rare occurrence due to the fact that most operators will not provide services on a nation-wide but rather on a regional scale. For these reasons BNetzA assumed that in most instances Telekom Deutschland GmbH will be able to meet the demand for co-location at a specific location.*
- *In order to better understand the rationale of this it may be helpful to briefly illustrate the properties of other conceivable mechanisms to assign co-location options:*
 - *Assignment by lottery: Applying a lottery presupposes to determine in advance the degree of scarcity. One may either apply a short or a long time frame for such a lottery. A short time frame would require all interested parties to identify their demand within that short period. In practice this would not allow a serious identification of demand. Also, operators who express their demand after this time frame would de facto be excluded from access to the cabinet. On the other hand, a long time frame would unduly delay the practical implementation of the access obligation.*
 - *Assignment in separate tranches: Such a timely graduated procedure would require BNetzA to have an appropriate and feasible measure for: a) the question how to form such order allotments and b) how to determine the sequence for processing them. In particular, a) would additionally require BNetzA to reliably assess Telekom Deutschland GmbH’s resources to process the requests. All these requirements are not met in practice.*
- *In order to prevent hoarding of co-location space, an operator’s order will forfeit unless it installs its infrastructure within six months after the provision of co-location.*

- *Telekom Deutschland GmbH may exercise its right of repossession if virtual co-location is assured. Costs incurred by both contract partners resulting from this shift are borne by Telekom Deutschland GmbH.*
 - *In order to provide sufficient space for competitors Telekom Deutschland GmbH may have to “rear-range” space assignments in its cabinets. Otherwise, inefficient usage of space within cabinets would make co-location impossible.*
 - *If necessary, Telekom Deutschland GmbH has to renew technical systems (for waste heat or power supply).*
 - *Telekom Deutschland GmbH is not entitled to an explicit reserve. This would be inappropriate considering that Telekom Deutschland GmbH has not yet submitted a technical migration concept or a binding time-table.*
 - *Fault clearance (in case of cable disruptions) has to be provided within 6 hours.*
- c) *Co-location at the cabinet constitutes an annex service for unbundling at a street cabinet.*
- d)
- *Originally, the regulatory order on ULL had contained an obligation to inform competitors about (geographical) roll-out plans. However, this was rejected by the administrative court as disproportionate.*
 - *A reference offer is not yet available. However, the obligations imposed in individual cases serve as a reference offer in practice because interested parties can apply for similar rulings which can be granted within ten weeks.*
 - *Non-discrimination obligation is imposed but no provision restricting launch of retail product until wholesale product is in force. Note: The Federal Administrative court had ruled in another decision that an SMP operator under certain conditions may be entitled to offer wholesale products only at later date.*
 - *See b) above.*
- e) *Cost statements based on CCA, LRAIC based Cost-Allocation.*
- f) *Rates for access consist of fees for planning and providing access and monthly payments.*

3.4 ODF unbundling

ODF unbundling was not in force on 30.06.2010, but will be part of the new regulatory order which will come in force in spring 2011:

- a) *ODF unbundling is mandated depending on the roll-out of respective FTTH infrastructure. As FTTH infrastructure hardly exists (incumbent has just started the roll out), currently there is no demand for ODF unbundling.*
- b) *In the remedies decision of actual market 4 review ODF unbundling is defined as follows:*
- *1. P2P-infrastructure: the unbundled access to FTTH-infrastructure is regulated at the ODF.*
 - *2. P2MP-infrastructure on basis of TDM (especially GPON): the unbundled access to FTTH-infrastructure is regulated at last optical splitter. For the WDM-PON infrastructure the incumbent has to give unbundled access either at the last splitter/multiplexer or at the ODF (wave length).*
- c) *Before June 30 2010 ODF unbundling wasn't included in Market 4; the new market analysis of Market 4/ Remedies decision, however, includes ODF unbundling, as far as it is available. The Remedies Decision is currently notified to the EU Commission.*
- d) *The new Remedies Decision for Market 4 is not in force yet. The following obligations will be in place in the future:*
- *transparency obligation: (fairness, reasonableness and timeliness), amend the reference offers submitted.*
 - *availability of reference offer: service offer on a non-discriminatory and a transparent basis depending on sufficient demand,*
 - *non-discrimination obligations: There is an explicit obligation to ensure that services provided to SMP-provider own business are identical to those provided to access seekers;*
 - *access obligations:*
 - *For copper the incumbent has to give unbundled access at the MDF or a point closer to the end-user's termination point and shared access*
 - *For the Point-to-Point FTTH infrastructure the incumbent has to give unbundled access at the ODF*
 - *For the GPON infrastructure the incumbent has to give unbundled access to the fibre used by the customer at the last splitter (in front of the customer)*
 - *For the WDM-PON infrastructure the incumbent has to give unbundled access either at the last splitter/multiplexer or at the ODF (wave length). The access obligation depends on the technology used by the FTTH-operator.*

- *obligation of collocation*

e) *Fibre lines: ex post rate regulation (e.g. margin-squeeze-test)*

f) *See above.*

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

FttN access to mass market (sub-loop unbundling): it is a remedy of the existing remedies decision completed by ancillary service: access to ducts

- *obligation of collocation;*
- *access to ducts between MDF and street cabinet (ancillary services to the local loop unbundling);*
- *non-discrimination, transparency, ex post rate-regulation for access to fibre ULL, accounting separation;*

Access to FttH is not a remedy of the existing remedies decision. It will be included in the remedies decision just notified.

- *For Point-to-Point infrastructure the SMP-provider has to give unbundled access at the ODF)*
- *For Point-to Multipoint-infrastructure (GPON) the SMP-provider has to give unbundled access to the fibre used by the customer at the last splitter*
- *For WDM-PON the incumbent has to give unbundled access either at the last splitter/multiplexer or at the ODF (wave length)*
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

None

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in **particular** those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

In the remedies decision of 2007 the access to fibre loop was not regulated. The current reference offer does not include this infrastructure. A reference offer will only be provided in case of general demand for unbundled FTTH access.

- What is the **basis** of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

In the new remedies decision pricing for fibre loops is based on a ex-post rate regulation. Due to the exchangeability with copper-line based products which will continue to be ex-ante regulated, margin-squeeze tests are deemed sufficient to ensure cost-efficient prices.

3.5 Enhanced Bitstream¹

- a) *Telekom Deutschland GmbH offers VDSL on a voluntary basis since 2009. Since 2010 a new remedies decision for bitstream is mandated including VDSL and FTTH/B infrastructure. Bitstream basing on FTTH/B-infrastructure is not yet available in the market, since the incumbents roll-out is in an early stage.*
- b) *On the basis of the Review of the Remedies Decision for Market 5, which came into force on September 17 2010, there are now the following product definitions:*
 - *Layer-2-Bitstream-access (available at different access points of network hierarchy):*
 - *ATM-Bitstream-access: includes all x- DSL-access-infrastructure, the transport of the data traffic (from the DSL-access to the ATM-concentrator network);*
 - *Ethernet-Bitstream-access: includes all xDSL-access-infrastructure and fibre-access infrastructure, the transport of the data traffic (from access-lines (xDSL or fibre) to the Ethernet-concentrator network).*
 - *Layer-3-Bitstream-access (available at national or regional delivery points):*
 - *IP-Bitstream-Access: data traffic (from the xDSL-access, fibre-lines, TV-cable-lines) at different access points of network hierarchy (concentration-network and/or IP-backbone).*
- c) *In Market 12 (now Market 5).*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

In Market 12: unbundled Bitstream access, including ADSL/SDSL-Infrastructure, minimum bandwidth.

Yes, in Market 5 new remedies decision (in force since September 17 2010), obligation to provide reference offer is in force, but due to current lack of general demand, a reference offer for layer-2-bitstream access is not yet requested. (see 3.5 a.).

d)

- *transparency obligation: (fairness, reasonableness and timeliness), amendment the reference offer submitted;*
- *availability of reference offer: mandated for Layer-2 and Layer-3-Bitstream, already provided for layer 3 bitstream access and in review;*
- *non-discrimination obligations: There is an explicit obligation to ensure that services provided to SMP-provider own business are identical to those provided to access seekers;*
- *access obligations:*
 - *the SMP-provider has to give access to its broadband infrastructure (bundled or unbundled broadband access)*
 - *collocation.*

e) *Based on Remedies Decision of 09/2006 and 03/2007 prices are set by BNetzA on an ex-ante basis for IP-Bitstream (LRAIC) and ATM-Bitstream is subject to ex-post-regulation. New market 5 remedies decision (in force since September 17 2010): ex-post regulation for both.*

f) *In the new Remedies Decision of Market 5 the ex-ante-pricing obligation is replaced by the ex-post pricing obligation for layer-2 and layer-3 bitstream access.*

Below, some additional questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

The new Remedies Decision for Market 5 is in force since September 17 2010. It defines two different product markets:

- *Layer-2-Bitstream-access (available at national or regional delivery points; handover at the Layer-2 level including all xDSL and fibre based access infrastructures):*
 - *ATM-Bitstream-access: access at broadband PoP or at access points nearer to the end customer-premises;*

- *Ethernet-Bitstream-access: access at broadband PoP or at access points nearer to the end customer-premises.*
- *Layer-3-Bitstream-access (available at national or regional delivery points; handover at the layer-3 broadband PoP or an other access point of network hierarchy)*
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

The new reference offer based on the Review of the Remedies Decision of September 17 2010 is not yet in force. At the moment a draft of the reference offer was written by the incumbent. The public consultation is still pending.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

The new Remedies Decision for Market 5 is in force since September 17 2010. The provision of a multicast product has not been mandated explicitly because it is part of the obligation to grant bitstream access in general. Its actual provision depends on the availability of suitable technology:

- *ATM-Bitstream: no*
- *Ethernet-Bitstream: mandated but not yet available*
- *IP-Bitstream if Ethernet-based: mandated but not yet available*

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

none

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

A migration path as such has as yet neither been defined by the incumbent, because its planning on this issue has not reached a suitably specific state, nor by the Bundesnetzagentur, because the interests of the competitors are protected by the current reference offer, and premature interference could detrimentally affect negotiations on the migration process between the incumbent and its competitors. Necessary building blocks of any migration process, such as level 2 and 3 bitstream access, have either already been imposed or are under consideration.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

Under the current reference offer, the decommissioning of MDFs is not allowed. MDFs can only be relocated to other places. However, this means that the local loop remains accessible through an MDF. Thus the incumbent cannot decommission its MDFs without changing the reference offer first, including the definition of the migration process, which has to be approved by the Bundesnetzagentur.

BNetzA addressed the migration issue in its “Key elements for progressing modern telecommunications networks and creating powerful broadband infrastructures” published in March 2010:

“In connection with fibre rollout, the aspect of main distribution frame reduction needs to be taken into account. Whether providers take their own FTTx networks closer to the customer or realise their services in full or in part by means of bitstream access will also depend on the shape of the relevant wholesale products. The wholesale products will need to be put together in such a way that, even with NGA migration, the current level of infrastructure-based competition, at least, remains possible. To make sure that competitors can still compete with the SMP undertaking in the NGA environment and to prevent any re-monopolisation, it will be necessary to define adequate transition periods. For instance, access to the local loop at the MDF should not be given up before suitable wholesale alternatives are actually available.”

Duct access: In its decision of December 4 2009 in which BNetzA (inter alia) fixed the conditions for duct access between MDF and the street cabinet, it was determined that Telekom Deutschland GmbH may terminate provision of duct access with 18 months notice if the cable ducts are closed or relocated. In the latter case Telekom Deutschland

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

GmbH must assure the availability of duct capacity between MDF and street cabinet (without a one-off fee).

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

See above

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “*in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market*”.

- Explain if such provisions are applied and what they look like.

An obligation to announce the planned dates of the modification of street cabinets for taking up DSLAMs of VDSL-infrastructures was revoked by a court ruling. Other obligations of this kind have not been imposed.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

See above

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

A request by some competitors for higher termination rates to compensate for the cost of building their own FFTB networks was rejected in 2008 because these costs could at this point not be attributed to the prospect of the migration to NGA-networks by the incumbent. The Bundesnetzagentur however has not ruled out that compensation schemes may be part of a migration process in the future.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9

⁵ See BoR (10) 08, Ch. E.2

To date, there are no such provisions for the migration of existing infrastructure as the process has yet to be defined.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

General remark: In its national broadband strategy the German federal government announced the establishment of an infrastructure atlas. Generally, the approach of this atlas is broader than the database mentioned in the NGA Recommendation and, in particular, it is not related with particular wholesale products or market segments. Furthermore, there are currently no data regarding the availability⁷ or the physical characteristics of the infrastructure. The infrastructure atlas can only be used by operators for specific projects.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?

NRA

- **Which data** are collected in this database?

- *Fixed telecommunications infrastructure*
 - *Routes of fibre networks down to the level of street cabinets / the last network node before the level of the MDF*
 - *Nodes: MDF, street cabinets*
 - *Duct routes*
- *Wireless telecommunications infrastructure)*
 - *Locations of radio transmitters*
 - *Point-to-point radio systems*

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

⁷ For example, the infrastructure atlas does not show whether there are free resources, which might be used by other operators.

- *Backbones connecting the radio transmitters*
- *Further infrastructure*
 - *Routes of networks of energy supply (electricity, gas, water, heat, sewage)*
 - *Power poles (incl. possible locations for antennas)*
 - *Empty capacities available of ducts*
 - *Potential locations for antennas on high buildings*
 - *Wind turbines*
 - *Steeple*
- *Infrastructure next to traffic routes*
 - *Empty ducts and cables next to highways, roads, water ways, railway lines*

- Does the information collected cover just telcos or also non-telcos?

Also non-telcos

- How is the information **being** provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.

Voluntary

- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?

For each city or telecommunications operator one person may be entitled to use data from this database. Data may only be used in the context of a call for tender or a project for broadband deployment. However, cities and telecommunications operators are not themselves entitled to make database requests. For each administrative unit of the different levels (Länder, administrative districts, urban districts) one representative of the public authorities are authorized to make database requests. The administrative units will inform BNetzA about these authorized persons. The right to make database requests is generally limited to the respective territory and it may only extend to adjacent areas where the relevance for a certain project is proven.

- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?

To take account of data protection, infrastructure operators can classify data as sensitive. In this case, BNetzA will submit requests to the infrastructure operators who will then decide whether/to what extent BNetzA may pass on these data.

- How are **business secrets** dealt with?

BNetzA ensures that unauthorised parties cannot access the data.

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical **problems** occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)

At present, it is too early to make such an assessment.

- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

Not yet possible to answer this question.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

No symmetrical regulation based on national legislation in Germany.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁸ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

⁸ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

In February 2009 the German federal government has published its national broadband strategy⁹. And in November 2010 it has published its strategy for information and communication technologies “Deutschland Digital 2015”.¹⁰

- Scope and envisaged **target** of the measure;

The first target of the German national broadband strategy is to ensure that all German households will have access to broadband Internet at the end of 2010 at latest. The second target is to bring broadband access of or above 50 Mbps to 75% of the households by 2014. The strategy is based on four pillars.

The first pillar aims at exploiting synergies in infrastructure deployments, this includes optimised shared use of existing infrastructures and facilities (e.g. partial pooling of existing infrastructure as present in business areas of e.g. the transport ministry, on condition that fibre optic cables or transmission facilities are not involved). Furthermore, the Federal Network Agency will start work soon on an infrastructure atlas identifying only those infrastructure components that are actually suitable for pooling. Also, a database providing information on construction sites shall be compiled enabling telecommunication companies to include their new infrastructure projects as part of road construction works already planned. In future, tax concessions will be applicable to any installations connecting broadband to building and distributing the broadband connections within the house or apartment units.

Second, in order to ensure that mobile technologies improve broadband services in rural areas in the short to medium term, parts of the frequency spectrum currently used for analogue radio and the military forces will be available in future (“digital dividend”). Furthermore, it will be possible in future to apply the frequency bands of 900 MHz used to date for the GSM networks for all types of wireless network access.

Third, the government wants to secure growth- and innovation-gearred regulation aiming at providing the right incentives and greater predictability for operators. It is considered whether it is feasible in the short term to extend the existing validity period for market analyses from two to three years.

Fourth, to promote access to high-speed broadband by 2010, especially in areas neglected by the market the government will provide incentives in these areas through support programmes amounting to a total of over 150 million Euros. This includes programmes providing maximum subsidies of 200,000 Euros per project where the operator selected must guarantee equal, non-discriminatory access on its network. To further incentivise

⁹ <http://www.bmwi.de/English/Navigation/Service/publications,did=294718.html>

¹⁰ <http://www.bmwi.de/BMWi/Navigation/Service/publikationen,did=367524.html>

business to invest in broadband development other programmes provide loans to the value of half the project size for broadband projects.

*Furthermore, the government's broadband strategy assigned the Bundesnetzagentur the task of defining the main features of growth and innovation-driven regulation by drawing up “**Key elements** for progressing modern telecommunications networks and creating powerful broadband infrastructures”. On **May 13 2009** the Bundesnetzagentur published these Key elements for **consultation**. They were based on four core elements: reducing risks, securing the investment and innovation power, providing planning certainty and transparency.*

*Together with the key elements, the Agency also published as a consultation document “Notes on **consistent regulation** of rates as required under section 27 (2) of the Telecommunications Act”. The notes focus on the relation between different regulated wholesale rates which should ensure not only adequate incentives for network rollout but also sustainable and fair competition.*

Based on the comments received to the consultation the Bundesnetzagentur published on March 17 2010 a revised version of the “Key elements”¹¹. The major results are:

- *The Bundesnetzagentur welcomes projects for the creation of high-speed telecommunications infrastructures that offer third parties open access. Voluntary open access offers from undertakings that do not have significant market power are not subject to regulation, as a general rule. In configuring open access networks undertakings should take care that the access conditions and charges are market-based and that the offers are clear and transparent. Yet it may be necessary to take account of antitrust or state aid considerations in individual cases.*
- *The Bundesnetzagentur supports suitable forms of infrastructure sharing that comply with the competition rules.*
- *The Bundesnetzagentur is in favour of extending the statutory regulatory periods for market analysis and regulatory orders from two to three years.*
- *The Bundesnetzagentur values legal and planning certainty highly.*
- *Good access regulation can be a supporting factor in further promoting wide area coverage. It enables both Telekom Deutschland GmbH and alternative providers of broadband services to take the broadband networks into rural areas.*

¹¹ These “Key elements” are available in German only:
http://www.bundesnetzagentur.de/cln_1931/DE/Sachgebiete/Telekommunikation/RegulierungTelekommunikation/NGANextGenerationAccess/NextGenerationAccess_node.html

- *As the network topologies become more heterogeneous, regulation must reflect the postulate of technology neutrality.*
- *In connection with fibre rollout, the aspect of main distribution frame reduction needs to be taken into account. Whether providers take their own FTTx networks closer to the customer or realise their services in full or in part by means of bitstream access will also depend on the shape of the relevant wholesale products. The wholesale products will need to be put together in such a way that, even with NGA migration, the current level of infrastructure-based competition, at least, remains possible. To make sure that competitors can still compete with the SMP undertaking in the NGA environment and to prevent any remonopolisation, it will be necessary to define adequate transition periods. For instance, access to the local loop at the MDF should not be given up before suitable wholesale alternatives are actually available.*
- *In weighing up ex ante and ex post regulation the Bundesnetzagentur will take particular account of the aim of encouraging efficient investment and promoting innovation, as well as that of securing fair and sustainable competition. Mindful not least of new infrastructures, it will take account of the requirement for a high level of pricing flexibility.*
- *Efficient investment in infrastructure and innovation can be encouraged by new tariff structures. This is generally compatible with the concept of the costs of efficient service provision on the basis of LRIC. Any such new tariff structures must not lead to a price-cost squeeze, cost-cost squeeze or discrimination, however.*

The strategy "Deutschland Digital 2015" sets out the government's overall approach for information and communication technologies including implementation and update of the 2009 "National Broadband Strategy". It comprises a variety of targets and measures:

Targets

- *Fostering growth and creating new job through digitalisation (addressing e.g.: open standards and interoperability, communication technologies and energy/traffic)*
- *Future digital networks (e.g. high-speed broadband networks, legal telecommunications framework and net neutrality)*
- *Trust and security in the digital world (e.g. security in the Internet)*
- *Research and development for a digital future (e.g. 3-D technologies)*
- *Education, media competence and Integration*
- *Digital solutions for societal challenges (e.g. e-Government)*

Measures (below some illustrative examples concerning target “Future digital networks”)

- *High-speed broadband networks: Implementation and follow-up of the broadband strategy*
- *Legal telecommunications framework and net neutrality: Measures to assure planning security and legal certainty (e.g. implementing powers regarding transparency obligations and standards for minimum quality)*
- *Frequency policy (e.g. creating incentives for efficient usage of frequencies)*
- *Internet Governance*
- *Federal networks (measures aiming at providing integrative solutions e.g. for the administration).*

*Furthermore, BNetzA established on May 5 2010 a high-level **NGA Forum**¹² thereby promoting the dialogue between the regulator, network operators, manufacturers, the federal states and local authorities. The establishment of such a NGA Forum was announced by BNetzA in its Key Elements. This NGA Forum, which is chaired by BNetzA, is an advisory body.*

The NGA Forum shall address at an early stage relevant issues in the context of broadband access and shall contribute to solve practical migration problems. In particular, the NGA Forum will:

- *develop a common understanding of the term “open access”;*
 - *address technical and operational aspects of access to fibre networks and other NGA networks. The NGA Forum follows a technology neutral approach;*
 - *address practical aspects of infrastructure sharing;*
 - *assess different models of co-investment.*
 - *A new call for expressions of investment intentions will be held every two years to take account of the update deployment projects actors.*
- Current **achievements**, milestones reached.

¹² Available in German only:
http://www.bundesnetzagentur.de/cln_1931/sid_E477DA336D50453925079D5F9A4607B8/DE/Sachgebiete/Telekommunikation/RegulierungTelekommunikation/NGAForum/NGAForum_node.html#doc153470bodyText3

Issues that are of immediate relevance for the market shall be addressed in an interim report. The results of the NGA Forum will be published in a final report.

Greece

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);
 - current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
 - available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Hellenic Telecommunications Organization S.A. (OTE) uses VDSL (FTTC)

Roll-out plans for NGA in Q1 or Q2-2011

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010

Small (4-5 Local Exchanges, No further details available by this time but expected soon)

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Internet access <30Mbps, Internet access <50Mbps

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**
- Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)

- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Mandated basis: as result of obligations of Market 4, stands for ducts of older copper networks.*
- b) *Outdoor cabinet up to MDF.*
- c) *Included in Market 4.*
- d) *Current regulatory obligations (available since 15/09/2010):*
 - *Transparency: Yes in RUO,*
 - *availability of reference offer; Yes,*
 - *non-discrimination obligation: Yes,*
 - *access obligations: N/A.*
- e) *LRIC, CCA.*
- f) *No limitations..*
- g) *No.*

2.2 Dark fibre

N/A.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

N/A.

3.2 Concentration point/ manhole unbundling

N/A.

3.3 Cabinet unbundling

N/A.

3.4 ODF unbundling

N/A.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹³

N/A.

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3):

BRAS level, Local Exchange level expected in a next step.

¹³ See ERG (09) 17, Ch. D.1, in particular p. 12.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision.

The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

N/A.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ¹⁴
- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.¹⁵
- In its report "NGA – Implementation Issues and Best Practice"¹⁶ BEREC suggested that "*in addition to the reference offer – wholesale customers should be able to obtain relevant*

¹⁴ BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

¹⁵ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

¹⁶ BoR (10) 08; Chapter E.2, p. 9.

information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.
- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**¹⁷)?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts¹⁸. In case such a database exists already in your country, explain:

N/A.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?

¹⁷ See BoR (10) 08, Ch. E.2.

¹⁸ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

N/A.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.¹⁹ Consider the following aspects:

N/A.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements, milestones** reached.

¹⁹ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs’ strategies aiming at the promotion of next generation broadband.

Hungary

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Magyar Telekom: VDSL and marginal FTTH; and its cable company (T-Kabel) mainly with DOCSIS 2.0; and also its mobile branch (T-Mobile) with 3G – HSDPA. Magyar Telekom: VDSL: 5745; FTTH 15 047; DOCSIS 2.0: 132 766; DOCSIS 3.0: 4 837.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

5 Mbit/s guaranteed download speed internet access with triple play availability, with differentiated IPTV 32,3 EUR (HUF 8890), 24,2 EUR (6640).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

FTTH-GPON: 780.000 homes passed by 2013.

DOCSIS 3.0: 380.000 homes passed by 2013.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

UPC Magyarország Kft., mainly DOCIS 2.0, own infrastructure DOCSIS 2.0: 282 574; DOCSIS 3.0: 35 691

Digi Kft., FTTB, own infrastructure. 160 307.

And several other smaller cable network operators DOCIS 3.0, own infrastructure by way of example ViDaNet Zrt. 1300; ParisatKft. 125.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Invitel and other smaller fix network operators have not announced roll-out plans. Mobile 3-G country-wide coverage has reached 35-39 % by the end of 2009. This geographic coverage means mainly the urban areas. The coverage of population was 63-65 % at the end of 2009.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**

- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

At present duct access is available on a commercial basis. According to the draft decisions on Markets 4. and 5. (after national consultation, before notification) it will be

- a) *Available on a mandated basis (SMP obligation).*
- b) *Duct access has to be provided:*
- *instead of unbundling services if the requested unbundling service is not available,*
 - *as an ancillary (backhaul) service to unbundling and bitstream-access at the access aggregation points (see 3.5.).*
- c) *Duct access is not part of Markets 4. or 5, but is imposed as a remedy for both markets (for Market 5. only as an ancillary service).*
- d) *Access obligation (Besides of ducts, access to poles and to the related infrastructure elements is also part of the remedy.).*

Transparency: Information on duct infrastructure has to be provided upon request, on a case-by-case basis. Access to ducts will constitute a part of the reference offer. The SMP operator has to establish the reference offer in 60 days after it receives the decision.

Non discrimination.

- e) *Cost orientation – LRIC.*
- f) *Accounting separation.*

2.2 Dark fibre

Currently there are no obligations in place.

According to the draft decisions on Markets 4. and 5 (after national consultation, before notification):

- a) *Available on a mandated basis (SMP obligation).*
- b) *Access to dark fibre has to be provided*
 - *instead of unbundling services if the requested unbundling service and duct access is not available,*
 - *as an ancillary (backhaul) service to unbundling and bitstream-access at the access aggregation points.*
- c) *Access to dark fibre is not included in Markets 4. or 5, but is imposed as a remedy for both markets (for Market 5. only as an ancillary service).*
- d) *Access obligation.*
 - *Transparency. Access to dark fibre will constitute a part of the reference offer. The SMP operator has to establish the reference offer in 60 days after it receives the decision.*
 - *Non discrimination.*
- e) *Cost orientation - LRIC.*
- f) *Accounting separation.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

Currently there are no obligations in place.

According to the draft decision on Market 4 (after national consultation, before notification):

- a) *Available on a mandated basis: unbundling of the "subscriber segment" of the NGA network is imposed as an SMP obligation (except for networks terminated in coaxial cable).*

Note: "Subscriber segment" is defined in the Market 4. draft decision as the segment of the NGA network which serves only one subscriber. The unbundling of the subscriber segment thus includes access to in-house wiring, concentration point/ manhole unbundling and cabinet unbundling (FTTCab) based on the topology of the access network.

- b) *See a)*
- c) *Included in Market 4.*
- d) *Access obligation*

Transparency. Unbundling of the subscriber segment will constitute a part of the reference offer. The SMP operator has to establish the reference offer in 60 days after it receives the decision,

Non discrimination.

- e) *Cost orientation - LRIC.*
- f) *Accounting separation.*

3.2 Concentration point/ manhole unbundling

See 3.1.

3.3 Cabinet unbundling

For NGA networks: see 3.2.

For twisted copper loops (former Market 11.):

- a) *Available on a mandated basis.*
- b) *Fully unbundled and shared sub-loops.*
- c) *Market 4.*
- d) *Access obligation.*

Transparency. Unbundling of the copper sub-loop constitutes a part of the reference offer.

Non discrimination.

- e) *Cost orientation - LRIC.*
- f) *Accounting separation.*

3.4 ODF unbundling

Currently there are no obligations in place.

According to the draft decision on Market 4 (after national consultation, before notification):

- a) *Available on a mandated basis: imposed as an obligation for the SMP operators for FTTH networks, if the unbundling is technically feasible.*
- b) *Unbundling obligation covers both FTTH-PON and FTTH point-to-point networks.*
- c) *Included in Market 4.*
- d) *Access obligation.*

Transparency. ODF unbundling will constitute a part of the reference offer, unless it is proven by the SMP operator that the unbundling is not technically feasible. The SMP operator has to establish the reference offer in 60 days after it receives the decision.

Non discrimination.

- e) *Cost orientation - LRIC.*
- f) *Accounting separation.*

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

Currently there are no obligations in place.

According to the draft decision on Market 4.

For both FttH/B and FttN:

- *access obligation,*

- *transparency (reference offer),*
 - *non discrimination,*
 - *cost orientation,*
 - *accounting separation.*
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

According to the draft decision on Market 4 there is one exception to the unbundling obligation: when the unbundling is technically not feasible (which has to be proven by the SMP operator). This exception is included in the draft decision because of the well known technological difficulties of unbundling the loops of FTTH PON networks.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

-

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

Basis of the prices charged for access to the unbundled fibre loop: cost-orientation. As the Commission recommends (NGA Rec. C(2010) 6223) the premium included in the cost of capital (WACC) for the relevant investment.

3.5 Enhanced Bitstream¹

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

According to the draft decision on Market 5 (after national consultation, before notification):

- *Layer-2 and layer-3 bitstream-access (available at different access points of network hierarchy):*
 - *Bitstream-access at the access aggregation points: in case of traditional networks at DSLAMs in MDFs, in case of NGA networks at CMTS or OLT.*
 - *Bitstream-access at national delivery points.*
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

Quality differentiation is possible as long as it does not make significant additional burden to SMP operator. Relevant quality parameters are: packet loss, latency, jitter, fault clearance and availability rate, and the time of the creation of a new subscriber access point.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Multi-cast technology is not available for alternative operators.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

NMIA does not apply exceptions from imposing wholesale bitstream access on SMP providers in geographic terms.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

Currently there are no obligations in place.

According to the draft decisions on Markets 4. and 5 (after national consultation, before notification):

The SMP operator has to inform its wholesale customers about the availability of new wholesale access products 6 months before the SMP operator starts to use the new products.

The SMP operator has to ensure the continuous provision and the proper quality of access services during the migration process.

Provisions for decommissioning current network elements and for information providing on new network elements: see below.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

Decommissioning of MDFs with collocation (already provided wholesale access) is subject to the permission of the NRA. The NRA has to be informed about the decommissioning of MDFs 5 years before the planned date of decommissioning. The SMP operator and its wholesale customers may agree upon a shorter period. The decommissioning is authorized if further access provision would not be reasonable and a migration path is available. Decommissioning of MDFs without collocation (without already provided wholesale access) has to be announced to the NRA 12 months before the planned date of decommissioning. The actual plan of decommissioning of MDFs and street cabinets has to be published and kept updated on the SMP operator's website.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product.**³

Approval for a phase-out is contingent upon the availability of a migration path (see above).

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “in addition to the reference offer – wholesale customers should be able to obtain relevant

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.

The actual plan of new ODFs and street cabinets has to be published and kept updated on the SMP operator's website.

NGA network development plans have to be published on the SMP operator's website 6 months before starting deployment (to ensure time for the alternative operators to require multiple fibre deployment).

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

We don't have practical experiences with such provisions yet.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

The SMP operators are obliged to announce 5 years in advance the decommissioning of MDFs so as to protect the investments of the alternative operators.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

There are no specific provisions.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

Currently there is no such obligation in place.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

According to the draft decisions on Markets 4. and 5 (after national consultation, before notification) the SMP operator has to provide information about its civil engineering infrastructure upon request, on a case-by-case basis. The SMP operators are not obliged to establish the database in question, and such database has not been established by the NRA or other institution either.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

At present the introduction of symmetrical regulation based on national legislation is under consideration.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

The new Hungarian government announced its national next generation broadband initiatives in 23(rd) December 2010 („Digitális Megújulás Cselekvési Terv“ 2010-2014).

The Digital Renewal Action Plan of Hungary foresees the following targets:

Until 2013: 2 Mbps download / 512 kbps upload for 100 % of households

Until 2014: 20 Mbps for 75 % of households (25% additional households + 50% households already covered).

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Ireland

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Eircom

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

Eircom have recently launched both Wholesale and Retail NGN fibre-based Ethernet Leased Line products. Its coverage is essentially limited to the current coverage of the legacy fibre-based leased line services i.e. less than 1% of its 1.6 million lines. Its access fibre coverage is essentially limited to business areas and the "premises passed" are otherwise those passed by its core network fibre. The wholesale service is interconnect based with an interconnect of 1Gb/s, with a 10Gb/s offer to be released by year end.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

The wholesale pricing matrix is complicated, and prices vary according to a number of contributory elements based on geographical region, anticipated customer concentration or density of customers at the connecting node, bandwidth of the circuit, and mix of QoS applied to the particular circuit. The geographic element is based on the region which is categorised as Urban, Provincial or Rural. Every NGN node or exchange in each region is then categorised as either high, high-to-medium or medium density. The circuit bandwidths range from 10Mb/s to 1Gb/s and there are 2 versions of QoS; Circuit based QoS offers a maximum of up to 5 options whilst traffic based has up to 85 options, the number of options available for both is also dependent on the circuit bandwidth. The most recent price list is available here: <http://www.eircomwholesale.ie/Reference-Offers/LLRO/>. There is no publicly available retail pricing.

Eircom have launched a wholesale capacity based Bitstream product which will allow OAO's to offer differentiated retail broadband products on Eircom ADSL 2+. Though this is not a true NGN offering, Eircom have named it "NGN Bitstream" as the ADSL 2+ nodes

are connected via its NGN Ethernet core network. They also have plans to launch a QoS enabled ADSL product.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Eircom announced in June 2010 plans for a FTTH trial to pass 10,000 homes/premises. The trial is based in two exchange areas; one in the Dublin suburb of Sandyford and the other in the provincial urban centre of Wexford in the south east of Ireland. In addition to FTTH Eircom included FTTC in the trial at two exchange areas in the Dublin area and the total number of homes to be passed was increased to 16000, (8000 each for FTTC and FTTH). It has offered OAO's an opportunity to participate in the trial on a joint venture basis and to this end, has established an industry forum which it chairs to work on and agree both the commercial and technical details of the anticipated offer. The agreed offer is expected to be completed by the end of this year with work to commence in March 2011 to last 6 months, with a launch date set for September 2011.

The preliminary description of the FTTH service by Eircom envisages 2 types of offering;

- *NGN Fibre based bitstream with a wholesale multicast facility*
- *Fibre PON unbundling with a dedicated splitter per Operator*

The proposed FTTC service consists of two types of offering:

- *NGN Fibre based bitstream with a wholesale multicast facility*
- *Cabinet launched VDSL2 services from an Operator DSLAM with associated feeder fibre between the exchange and the cabinet.*
- *VDSL2 based FTTC Bitstream Access*

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

UPC (originally called NTL) consolidated a number of larger and smaller cable TV companies over the past 10 years and is now the largest cable TV operator by some distance. There now remains only a small number of local cable operators with insignificant customer numbers. UPC is now a genuine triple play operator. The UPC cable TV network passes circa 800K homes, 605K of which are designated “2-way” i.e. can provide services other than pure broadcast services. It currently has over 173K broadband and 64K voice (VOIP) customers. Its broadband numbers equates to approximately 19% market share of the fixed line broadband market –this excluded any leased lines which may be used to supply internet access to businesses. UPC also offers business class services of Ethernet leased lines and Internet Access. UPC does offer Wholesale Ethernet leased lines to other operators. There is no published Business or Wholesale pricing and information is not available.

BT has fibre network across the country connecting all the major centres of population and many regional towns. Its network is based primarily on the national rail network and also uses ESBT and e-Net for both trunk and last-mile routes and connections and has fibre ploughed into many business centres and campuses. It announced in March 2010 the launch of its “Etherflow” product. This is based on its global product offering of the same name and also uses microwave radio and anticipates reselling the Eircom NGN Ethernet product to effect connectivity in areas. Pricing is not publically available.

ESBT (Electricity Supply Board Telecoms – a network subsidiary owned by the state electricity company), owns a national “figure-of-eight” fibre network with a spur to Donegal in the north-west of the country, with overall, over 1,300Km of fibre routed throughout the country using its high-voltage electricity transmission network. It offers leased line services and connects approximately 19 major towns and cities across the country and offers largely wholesale, and some retail Ethernet leased line services. Pricing is not publically available.

e-Net (The Government Metropolitan Area Networks) operates and maintains up to 93 Government built MANS in towns and cities of population greater than 10,000 throughout the country which have been used to a greater or lesser extent. The concession which e-Net received from the Government precludes it from entering the retail market and any backhaul it would build between the MANS must be completed by e-Net on a commercial basis. The MANS themselves are geographically limited in scope within the respective towns but can allow Altnets to establish interconnects with Eircom for instance, as well as effecting customer connections. e-Net offers Dark Fibre and managed leased lines services. Pricing is contained in Appendix 2

Aurora Networks is a wholly owned subsidiary of the National Gas distribution utility, Bord Gáis. It offers wholesale duct access and dark fibre. Its network is limited to specific routes within Dublin and between and within four regional centres. Pricing is not publically available.

There are 2 other triple-play FTTH operators (Magnet Networks and Digiweb) which combined have a small share of the overall fixed-line market share. The combined coverage is based primarily in new housing estates and apartment complexes in Dublin and a small number of regional/Dublin commuter towns. Magnet and Digiweb retail pricing for fibre based products are contained in Appendices 3 & 4. There is no publically available wholesale pricing from either company.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

UPC has announced plans to upgrade its network to the DOCSIS 3.0 standard though there is no public commitment of the expected milestones of this network upgrade. However, it has committed to launching what it claims will be a widely available 120Mb/s broadband service by the end of this year which indicates that the DOCSIS 3 upgrade of a substantial portion of its network will be completed by this time.

It has also announced the launch of a new VoD (Video on Demand), also planned for the end of 2010 and what can be described as other DOCSIS 3/NGN network based services such as offline storage, disaster recovery and SAN (Storage Area Networks).

BT announced in March 2010 the launch of its "Etherflow" product. This is based on its global product offering of the same name supplied primarily via its fibre network. However, it also uses microwave radio in place and also anticipates reselling the Eircom NGN Ethernet product to extend its product reach.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**

- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *The final decision for Market 4 was published in May 2010. No specific NGA remedies were mandated though general principals were adopted. Fibre was included in the WPNIA (Wholesale Physical Network Infrastructure Access) market definition and the general principle of "reasonable request" was reaffirmed.*
- b) *No specific product definition for Duct Access published by Eircom.*
- c) *N/a.*
- d) *Current NGA regulatory obligation in Market 4 –General principles, please refer to Appendix 5.*
- e) *Costings: N.a., will be subject of future consultation.*
- f) *Pricing: N.a., will be subject of future consultation.*
- g) *N/a.*

2.2 Dark fibre

As per 2.1 duct access.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)

- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

As per 2.1 duct access.

3.2 Concentration point/ manhole unbundling

As per 2.1 duct access.

3.3 Cabinet unbundling

As per 2.1 duct access.

3.4 ODF unbundling

As per 2.1 duct access.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

The current market analysis on Market 5 is still work in progress.

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

The migration path from current to next generation products will be the subject of further consultations.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

ComReg has nominally mandated a 5 years notice period but has acknowledged that there may be instances where less notice is acceptable. ComReg has therefore agreed to allow each instance to be treated on a case by case basis and any such closure must be approved by ComReg.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**)⁵?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

Civil engineering database: No such data base currently exists and would be part of future consultations on Market 4 NGA.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Under section 57 of the 2002 Communications Regulation Act (refers Appendix 6), the statute which established ComReg, any Operator has recourse to negotiate to share physical infrastructure owned by another operator and refer the issue to ComReg if negotiations prove unsuccessful. ComReg can also intervene of its own volition. To date, neither scenario has occurred. ComReg has therefore not invoked its powers in this regard.

Infrastructure sharing is however common practice particularly amongst mobile operators whereby many masts, high-sites and b-nodes sites are a shared resource. As referred to earlier, trench-sharing is in many instances attached as a condition for the awarding of civil licences to fixed line operator, by many local authorities.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

The government has built 93 MANS which have been passed to e-Net (refer section 1.2.1) to manage.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Appendix 1 UPC Retail Pricing

Television

Television	Select Pack	Extra	HD+Value Pack	HD+Max Pack	HD+
Price per month The amount you'll pay each month for this service. Price per month	€35.00		€25.75	€40.00	
Number of channels The number of TV and radio channels you'll enjoy with each pack. Number of channels	139		93	162	
ESPN HD included? ESPN HD is included in our Select Extra HD+ and Max HD+ Packs. ESPN HD included?			 No		
Digital+ HD Lets you pause, rewind and record live TV. Digital+ HD				 	
Multiroom Viewing Lets you watch what you want in another room. Multiroom Viewing	No		No		

Fibre Power Broadband from UPC

	Fibre Broadband 8Mb	PowerFibre Broadband 15Mb	PowerFibre Broadband 30Mb	Power Broadband 3Mb
Download/Upload speed Represents how quickly you can download or upload content from or to a website	8Mb / 1Mb	15Mb / 1Mb	30Mb / 1.5Mb	3Mb / 3Mb
Price per month The amount you'll pay each month for this service.	€25.00	€32.00	€42.00	
Usage Limits The amount of bandwidth usage included with each pack.	120GB	Unlimited	Unlimited	
Usage Limits FREE wireless router Ideal for busy homes where more than one person goes online at a time.	No	✓	✓	
FREE wireless router				

Home Phone

	Home Phone	Home Phone & Freetime World	Home Anytime World	Phone &
Price per month The amount you'll pay each month for this service.	€6.00	€13.00	€18.00	
Price per month Home Phone Our Home Phone services uses our cable so no need for an Eircom land line.	Home Phone FREE cordless phone	Home Phone FREE cordless phone	Home Phone FREE cordless phone	Home Phone
Call Bundles Save more by adding one of our call bundles giving you free calls.	None	Freetime World		Home Phone for just €18 a month including free local, national and international landline calls to 21 destinations at all times! Call the UK, Australia, Poland and more without watching the clock

There is also various bundles and combinations available depending on the TV package which can be found at <http://www.upc.ie/>

Appendix 2e-Net Pricing

Product/Service

1 RING AND SPUR DARK FIBRE PRODUCTS (ID CODE – DF-R AND DF-S)

1.1 1 Year Fibre licence cost per fibre pair

1 Year 1st Fibre 2nd 3rd 4th 5th

0-10%	€4.00	€3.80	€3.61	€3.43	€3.26
10%-20%	€3.95	€3.75	€3.56	€3.39	€3.22
20%-30%	€3.90	€3.71	€3.52	€3.34	€3.18
30%-40%	€3.85	€3.66	€3.47	€3.30	€3.14
40%-50%	€3.80	€3.61	€3.43	€3.26	€3.10
50%-60%	€3.75	€3.56	€3.38	€3.22	€3.05
60%-70%	€3.70	€3.52	€3.34	€3.17	€3.01
70%-80%	€3.60	€3.42	€3.25	€3.09	€2.93
80%-90%	€3.50	€3.33	€3.16	€3.00	€2.85
90%-100%	€3.45	€3.28	€3.11	€2.96	€2.81
Average	€3.75	€3.56	€3.38	€3.22	€3.05

1.2 3 Year Fibre licence cost per fibre pair

1.3

3 Year 1st Fibre 2nd 3rd 4th 5th

0-10%	€3.88	€3.68	€3.50	€3.32	€3.16
10%-20%	€3.85	€3.66	€3.47	€3.30	€3.14
20%-30%	€3.75	€3.56	€3.38	€3.22	€3.05
30%-40%	€3.70	€3.52	€3.34	€3.17	€3.01
40%-50%	€3.60	€3.42	€3.25	€3.09	€2.93
50%-60%	€3.50	€3.33	€3.16	€3.00	€2.85
60%-70%	€3.40	€3.23	€3.07	€2.92	€2.77
70%-80%	€1.85	€1.76	€1.67	€1.59	€1.51
80%-90%	€1.25	€1.19	€1.13	€1.07	€1.02
90%-100%	€1.00	€1.00	€1.00	€1.00	€1.00
Average	€2.98	€2.83	€2.70	€2.57	€2.44

1.3 5 Year Fibre licence cost per fibre pair

5 Year 1st Fibre 2nd 3rd 4th 5th

0-10%	€3.75	€3.38	€3.25	€3.00	€2.70
10%-20%	€3.50	€3.13	€3.00	€2.75	€2.45
20%-30%	€3.25	€2.88	€2.75	€2.50	€2.20
30%-40%	€3.00	€2.63	€2.50	€2.25	€1.95
40%-50%	€2.75	€2.38	€2.25	€2.00	€1.70
50%-60%	€2.45	€2.13	€2.00	€1.75	€1.45
60%-70%	€2.15	€1.88	€1.75	€1.50	€1.20
70%-80%	€1.85	€1.63	€1.50	€1.25	€1.00
80%-90%	€1.25	€1.00	€1.00	€1.00	€1.00
90%-100%	€1.00	€1.00	€1.00	€1.00	€1.00
Average	€2.50	€2.20	€2.10	€1.90	€1.67

1.4 Ten Year Fibre Licence – Cost per Fibre Pair**10 Year 1st Fibre 2nd 3rd 4th 5th**

0-10%	€3.19	€2.87	€2.76	€2.55	€2.30
10%-20%	€2.98	€2.66	€2.55	€2.34	€2.08
20%-30%	€2.76	€2.44	€2.34	€2.13	€1.87
30%-40%	€2.55	€2.23	€2.13	€1.91	€1.66
40%-50%	€2.34	€2.02	€1.91	€1.70	€1.45
50%-60%	€2.08	€1.81	€1.70	€1.49	€1.23
60%-70%	€1.83	€1.59	€1.49	€1.28	€1.02
70%-80%	€1.57	€1.38	€1.28	€1.06	€0.85
80%-90%	€1.06	€0.85	€0.85	€0.85	€0.85
90%-100%	€0.85	€0.85	€0.85	€0.85	€0.85
Average	€2.12	€1.87	€1.79	€1.62	€1.42

Notes

1.5 Prices are based on “Percentage Interval Route Length”. This figure is calculated by dividing the route distance required by the total route distance in the particular MAN. The route distance is

the length of fibre pair required to interconnect any two points. The minimum length will be such

as to connect the two points utilising full rings and or spurs as required.

1.6 The cumulative of the route distance for any one pair in use by Customer is used in the calculation expressed as a percentage. Tables 2.1, 2.2 and 2.3 show the discounts available for

multiple fibres and for longer term licences.

1.7 Nothing in the foregoing shall preclude e-Net from basing prices on percentage interval route

length discounts in the case of offerings involving more than one MAN.

2 DARK FIBRE - POINT TO POINT (DF-PTP)**Ring – PtP Minimum 250 Metres**

1 Year	Pair 1	Pair 2	Pair 3	Pair 4	Pair 5
0-10%	€ 6.00	€ 5.70	€ 5.42	€ 5.14	€ 4.89
10%-20%	€ 5.93	€ 5.63	€ 5.35	€ 5.08	€ 4.83
20%-30%	€ 5.85	€ 5.56	€ 5.28	€ 5.02	€ 4.76
30%-40%	€ 5.78	€ 5.49	€ 5.21	€ 4.95	€ 4.70
40%-50%	€ 5.70	€ 5.42	€ 5.14	€ 4.89	€ 4.64
50%-60%	€ 5.63	€ 5.34	€ 5.08	€ 4.82	€ 4.58
60%-70%	€ 5.55	€ 5.27	€ 5.01	€ 4.76	€ 4.52
70%-80%	€ 5.40	€ 5.13	€ 4.87	€ 4.63	€ 4.40
80%-90%	€ 5.25	€ 4.99	€ 4.74	€ 4.50	€ 4.28
90%-100%	€ 5.18	€ 4.92	€ 4.67	€ 4.44	€ 4.22

Ring – PtP Minimum 250 Mtres

3 Year	Pair 1	Pair 2	Pair 3	Pair 4	Pair 5
0-10%	€ 5.81	€ 5.52	€ 5.25	€ 4.98	€ 4.73
10%-20%	€ 5.78	€ 5.49	€ 5.21	€ 4.95	€ 4.70
20%-30%	€ 5.63	€ 5.34	€ 5.08	€ 4.82	€ 4.58
30%-40%	€ 5.55	€ 5.27	€ 5.01	€ 4.76	€ 4.52
40%-50%	€ 5.40	€ 5.13	€ 4.87	€ 4.63	€ 4.40
50%-60%	€ 5.25	€ 4.99	€ 4.74	€ 4.50	€ 4.28
60%-70%	€ 5.10	€ 4.85	€ 4.60	€ 4.37	€ 4.15
70%-80%	€ 2.78	€ 2.64	€ 2.50	€ 2.38	€ 2.26
80%-90%	€ 1.88	€ 1.78	€ 1.69	€ 1.61	€ 1.53
90%-100%	€ 1.50	€ 1.43	€ 1.35	€ 1.29	€ 1.22

Ring – PtP Minimum 250 Mtres

5 Year	Pair 1	Pair 2	Pair 3	Pair 4	Pair 5
0-10%	€ 5.63	€ 5.34	€ 5.08	€ 4.82	€ 4.58
10%-20%	€ 5.25	€ 4.99	€ 4.74	€ 4.50	€ 4.28
20%-30%	€ 4.88	€ 4.63	€ 4.40	€ 4.18	€ 3.97
30%-40%	€ 4.50	€ 4.28	€ 4.06	€ 3.86	€ 3.67
40%-50%	€ 4.13	€ 3.92	€ 3.72	€ 3.54	€ 3.36
50%-60%	€ 3.68	€ 3.49	€ 3.32	€ 3.15	€ 2.99
60%-70%	€ 3.23	€ 3.06	€ 2.91	€ 2.77	€ 2.63
70%-80%	€ 2.78	€ 2.64	€ 2.50	€ 2.38	€ 2.26
80%-90%	€ 1.88	€ 1.78	€ 1.69	€ 1.61	€ 1.53
90%-100%	€ 1.50	€ 1.43	€ 1.35	€ 1.29	€ 1.22

Ring – PtP Minimum 250 Mtres

10 Year	Pair 1	Pair 2	Pair 3	Pair 4	Pair 5
0-10%	€ 4.78	€ 4.54	€ 4.32	€ 4.10	€ 3.89
10%-20%	€ 4.46	€ 4.24	€ 4.03	€ 3.83	€ 3.63
20%-30%	€ 4.14	€ 3.94	€ 3.74	€ 3.55	€ 3.38
30%-40%	€ 3.83	€ 3.63	€ 3.45	€ 3.28	€ 3.12
40%-50%	€ 3.51	€ 3.33	€ 3.16	€ 3.01	€ 2.86
50%-60%	€ 3.12	€ 2.97	€ 2.82	€ 2.68	€ 2.54
60%-70%	€ 2.74	€ 2.60	€ 2.47	€ 2.35	€ 2.23
70%-80%	€ 2.36	€ 2.24	€ 2.13	€ 2.02	€ 1.92
80%-90%	€ 1.59	€ 1.51	€ 1.44	€ 1.37	€ 1.30
90%-100%	€ 1.28	€ 1.21	€ 1.15	€ 1.09	€ 1.04

e-Net pricing Contd

Managed products**METRO PRODUCT SUITE**

Eflexes Code	Product Category	Product Set	Non Recurring Setup (A)	Annual Recurring Rental 1 year term	Annual Recurring Rental 2 year term (B)
MSDH-E1	Metro SDH	E1	€8,500	€5,400	€4,500
MSDH-EI-PLUS	Metro SDH	Additional E 1	€1,000	€1,800	€1,500
MSDH-E3	Metro SDH	E3	€8,500	€13,800	€11,500
MSDH-DS3	Metro SDH	DS3	€8,500	€13,800	€11,500
MSDH-STM1	Metro SDH	STM 1	€8,500	€21,600	€18,000
MSDH-STM4	Metro SDH	STM 4	€8,500	€57,600	€48,000
MSDH-STM16	Metro SDH	STM 16	€10,000	€144,000	€120,000
MSDH-PoP	Metro SDH	SDH service into PoPed site or where existing interconnect is in place	€0	20%	20%
ME-2	Metro Ethernet	Ethernet 2M/bits	€7,500	€5,400	€4,500
ME-4	Metro Ethernet	Ethernet 4M/bits	€7,500	€5,400	€4,500
ME-6	Metro Ethernet	Ethernet 6M/bits	€7,500	€5,400	€4,500
ME-8	Metro Ethernet	Ethernet 8M/bits	€7,500	€5,400	€4,500
ME-10	Metro Ethernet	Ethernet 10M/bits	€7,500	€6,000	€5,000
ME-20	Metro Ethernet	Ethernet 20M/bits	€7,500	€7,200	€6,000
ME-30	Metro Ethernet	Ethernet 30M/bits	€7,500	€7,200	€6,000
ME-40	Metro Ethernet	Ethernet 40M/bits	€7,500	€7,200	€6,000
ME-50	Metro Ethernet	Ethernet 50M/bits	€7,500	€7,200	€6,000
ME-100	Metro Ethernet	Ethernet 100M/bits	€7,500	€7,200	€6,000
ME-200	Metro Ethernet	Ethernet 200M/bits	€7,500	€9,600	€8,000
ME-300	Metro Ethernet	Ethernet 300M/bits	€7,500	€12,480	€10,400
ME-400	Metro Ethernet	Ethernet 400M/bits	€7,500	€14,400	€12,000
ME-500	Metro Ethernet	Ethernet 500M/bits	€7,500	€16,320	€13,600
ME-600	Metro Ethernet	Ethernet 600M/bits	€7,500	€18,240	€15,200

e-Net pricing Contd

Managed products**METRO PRODUCT SUITE**

Eflexes Code	Product Category	Product Set	Non Recurring Setup (A)	Annual Recurring Rental 1 year term	Annual Recurring Rental 2 year term (B)
ME-700	Metro Ethernet	Ethernet 700M/bits	€7,500	€19,680	€16,400
ME-800	Metro Ethernet	Ethernet 800M/bits	€7,500	€21,120	€17,600
ME-900	Metro Ethernet	Ethernet 900M/bits	€7,500	€22,560	€18,800
ME-GE	Metro Ethernet	GigE	€7,500	€24,000	€20,000
ME-PoP	Metro Ethernet	SDH service into PoPed site or where existing interconnect is in place	€0	20%	20%

(A) Set-up charges are a min of €7,500 for Ethernet or €8,500 for SDH respectively for a new drop, depending on cost of works. For an existing drop the standard charge is €5,000.

(B) Further discounts are available based on term and volume.

e-Net Ethernet Premium Services (Metro only)

Eflexes Code	Product Category	Product Set	Non Recurring Setup	Annual Recurring Rental
ME-QinQ	Ethernet	Q-in-Q	€0	20%
ME-Pseudo	Ethernet	Pseudowire	€0	20%
ME-Layer1	Ethernet	Layer 1	€0	20%
ME-DualBox	Diversity	Dual boxes for hardware protection	€2,500 on second box	20%

e-Net SDH Premium Services

Eflexes Code	Product Category	Product Set	Non Recurring Setup	Annual Recurring Rental
SDH-MSP	MSP 1+1	SDH	TBA	+20%
SDH-2Prt	SNCP	2 ports no protection	TBA	+25%
SDH-Ele	SDH	STM-1, STM-4 electrical	€2,500	0%

CIRCUIT MODIFICATION

Eflexes Code	Product Category	Product Set	Location	Non Recurring Setup
CM-R	Circuit Modification	VLAN Tagging	Remote	€500
CM-S	Circuit Modification	VLAN Tagging	On-site	Cost of Works + €500
CM-R	Circuit Modification	Circuit Reconfiguration	Remote	€500
CM-S	Circuit Modification	Circuit Reconfiguration	On-Site	Cost of Works + €500
CM-P	Circuit Modification	Circuit Reconfiguration	Additional Port	€500

Survey

Eflexes Code	Product Category	Product Set	Once Off Charge
SU-I	Survey	Internal	€392
SU-E	Survey	External	€392
SU-F	Survey	Full	€500

Disconnection

Eflexes Code	Product Category	Product Set	Non Recurring Setup per drop
DC-DM	Disconnect charge	Disconnection of drop or managed service	€1,200

Reconnection

Eflexes Code	Product Category	Product Set	Non Recurring Setup per drop
RC-DM	Reconnection charge	Dispute invoice paid within 6 business weeks	€1000 + cost of works

Appendix 3 Magnet Retail Pricing –Fibre based product pricing

MAGNET SIMPLY TV+ Digital TV From only €25.10 per month

MAGNET CHOICE+ Broadband & Telephone From only €39.99 per month

MAGNET FIBRE BROADBAND Broadband from only €50.00 per month

MAGNET ULTIMATE+ Digital TV, Broadband & Telephone From only €54.99 per month

Appendix 4 Digiweb (formerly Smart Telecom) Fibre based product pricing

Basic TV Package €19.00

- €19 incl. VAT per month plus once-off installation fee (€80)
- 15 TV Channels

Digital TV & Telephone €60.00

- Free Smart-2-Smart telephone calls
- €60 incl. VAT per month plus once-off installation fee (€80)
- Telephone
- Full Digital TV pack (100+ Channels)

Digital Television €40.00

- Once-off installation fee (€80)
- Full Digital TV pack (100+ Channels)

Triple Play €75.00

- Free Smart-2-Smart telephone calls
- Free Installation
- Telephone
- Always on Broadband - up to 3Mb
- Full Digital TV pack (100+ Channels)

Appendix 5

General principles adopted in relation to Market 4 (WPNIA). Extract from the Decision Instrument contained within Document, ComReg 10/39, Response to Consultation and Decision, Market Review Wholesale Physical Network Infrastructure Access, Market 4 (WPNIA,) published 20 May 2010.

PART III - SMP OBLIGATIONS IN RELATION TO NEXT GENERATION WPNIA

(SECTIONS 13 TO 18 OF THE DECISION INSTRUMENT)

13. SMP OBLIGATIONS IN RELATION TO NEXT GENERATION WPNIA

13.1. ComReg is imposing certain SMP obligations on Eircom in respect of Next Generation WPNIA in the Market in accordance with and pursuant to Regulations 9, 10, 11, 12, 13 and 14 of the Access Regulations, as detailed further in sections 14 to 18 below.

14. OBLIGATIONS TO PROVIDE ACCESS

14.1. Pursuant to Regulation 13(1) of the Access Regulations, Eircom shall have an obligation to meet all reasonable requests from OAOs for the provision of Access.

14.2. Pursuant to Regulation 13(2) (b) of the Access Regulations, Eircom shall have an obligation to negotiate in good faith with OAOs requesting Access.

14.3. ComReg shall engage in a consultation to further specify other details and further implementation of the Access obligations.

15. OBLIGATIONS OF NON-DISCRIMINATION

15.1. Eircom shall have an obligation of non-discrimination as provided for by Regulation 11 of the Access Regulations in respect of Access, including for the avoidance of doubt in relation to Access to OSS.

15.2. ComReg shall engage in a consultation to further specify other details and further implementation of the non-discrimination obligation.

16. OBLIGATION OF TRANSPARENCY

16.1. Eircom shall have an obligation of transparency as provided for by Regulation 10 of the Access Regulations in respect of Access.

16.2. Notwithstanding the provisions of section 16.3 and in order to meet its transparency obligation, Eircom shall make publicly available, on a quarterly basis or such other suitably regular basis as may be specified by ComReg, information regarding the introduction of new infrastructures, technologies, services or facilities which could reasonably be expected to support services or facilities in respect of Next Generation WPNIA.

16.3. ComReg shall engage in a consultation to further specify other details and further implementation of the transparency obligation.

17. OBLIGATION OF ACCOUNTING SEPARATION

17.1. Pursuant to Regulation 12 of the Access Regulations, Eircom shall have an obligation to maintain separated accounts. All of the obligations in relation to accounting separation applying to Eircom and in force⁶¹ immediately prior to the effective date of this Decision Instrument related to the Market, shall be maintained in their entirety. Eircom shall comply with all of those obligations, pending any further decision to be made by ComReg following further consultation in relation to the details of and implementation of accounting separation obligations and in particular as regards any decision made by ComReg in respect of Consultation Document Accounting Separation and Cost Accounting Review – Draft Accounting Direction to Eircom Limited Document No.09/75 and any other decision or directions which may be issued by ComReg from time to time.

17.2. ComReg shall engage in a consultation to further specify other details and further implementation of the accounting separation obligation.

18. OBLIGATIONS RELATING TO PRICE CONTROL AND COST ACCOUNTING

18.1. Pursuant to Regulation 14(1) of the Access Regulations, Eircom shall be subject to a price control obligation. The content and implementation of the price control for Next Generation WPNIA shall be subject to further consultation.

18.2. Pursuant to Regulation 14(1) of the Access Regulations, Eircom shall continue to comply with all of the obligations in relation to cost accounting in force immediately prior to the effective date of this Decision Instrument, until any amendment by ComReg.

18.3. Pursuant to Regulation 14(1) of the Access Regulations, Eircom shall maintain appropriate cost accounting systems in respect of Next Generation WPNIA services and facilities.

Italy

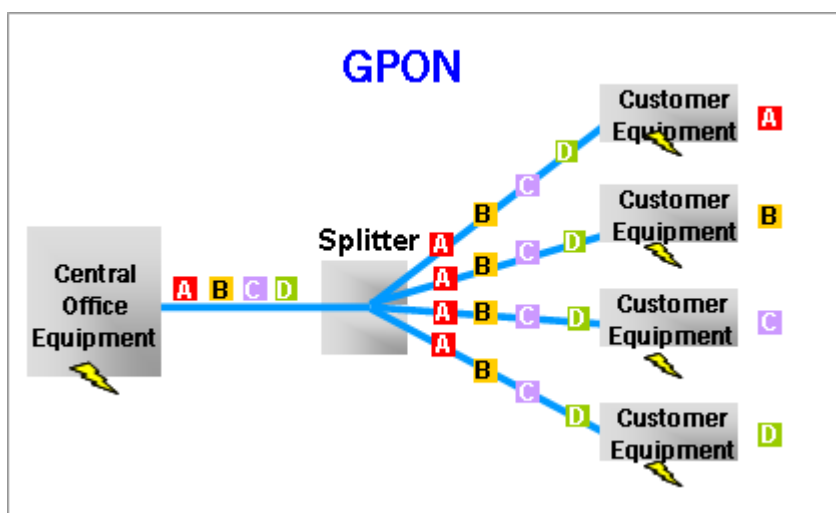
1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

NGAN rollout plans of Telecom ITALIA (Italian incumbent) are based on a FTTH-GPON model (as reported in the following figure).



The GPON architecture implemented by Telecom Italy involves two levels of splitting, the first placed in a street manhole and the second placed at the base of the building within a box called OTB (Optical Termination Box). From each optical fiber, in the local exchange, stems a GPON tree that can theoretically serve up to 128 housing units.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

According to Telecom Italia plans, submitted to NRA in compliance with the Undertaking n. 6, the number NGA passed households at the end of 2010 will be 519,600. The incumbent has planned to cover 1.300.000 housing units by 2012.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

In December 2007 Telecom Italia started a NGAN trial in Milan with a FTTB-GPON architecture (50 Mb/s downstream). During the second quarter of 2009 Telecom Italia started testing NGAN in Rome with a FTTH-GPON architecture and the access speed reached 100 Mb/s (the experimental retail offer is called "ALICE PHIBRA").

In February 2011 Agcom, with resolution n. 61/11/CONS, approved Telecom Italia 100 Mb/s offer. This offer, at a first stage, will be available only to 40.000 customers in 7 Italian main cities (Milano, Torino, Genova, Bologna, Roma, Napoli and Bari).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The main elements of Telecom Italia plans for NGA networks are:

- *Until 2012 the deployment will be focused in the main 14 metropolitan cities, adopting FTTH solution (FTTB as a backup solution);*
- *Endorsement of civil infrastructures sharing;*
- *Proposal for a complete switch off of copper network in Milan, to be achieved by 2015 and by 2018 in 3 other main cities;*
- *Telecom Italia estimates to cover 10 millions of households (i.e. about 50% of Italian citizens) by 2018;*
- *By December 2010 Telecom Italia intends to launch a commercial offer for FTTH at 100Mb/s in 6 Italian main cities.*

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Fastweb has invested, since 2000, more than 5 €billion for the development of a NGA network based on FTTH architecture, in the Italian main cities such as Bologna, Genova, Milano, Torino, Roma, Napoli and Bari.

Current coverage of the above mentioned NGA network corresponds to about 2 millions home passed with about 300.000 customers connected with FTTH.

In September 2010, Fastweb has started offering 100 Mbit connection on its fiber network for residential customers (previously targeted at business customers).

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Main alternative operators (Fastweb, Vodafone, Wind and Tiscali) have recently proposed a plan for a joint development of a NGAN.

The main elements of such plan for NGAN are:

- *Implementation of a single network for all operators via a separate FiberCo;*
- *Use of an FTTH-P2P architecture with full unbundling offered also to third parties on a non discriminatory basis;*
- *Migration of all customers to the NGAN with a gradual switch over plan;*
- *Target of covering 10 millions of inhabitants located in 15 Italian main cities within 5 years, investing 2,5 €billion;*
- *Extension to 30 million inhabitants located in the 500 biggest municipalities in 5-10 years investing 8,5 €billion*

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)

- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Telecom Italia (SMP on MK 4) has published (30 June 2009) a reference offer for duct access according to Agcom resolution n. 731/09/CONS (mandated). Telecom has submitted to AGCOM a new offer in October 2010.*
- b) *Telecom Italia (as SMP) is subject to the obligation to provide duct access to the alternative operators in order to enable them to install their own cables for the realization of their access networks.*

In particular, Telecom Italia offers the transfer of right of use (IRU) of a pipe of 10/12 mm for a period of 15 years on all its local network, including related analysis and maintenance activities.
- c) *Market 4.*

- d) *Current regulatory obligations: transparency (through the publication of a reference offer) non discrimination and access obligation.*
- e) *Currently there is no costing remedy mandated. Cost orientation based on LRIC approach will be mandated in case of confirmation of the Agcom proposal under public consultation (issued with decision 1/11/CONS).*
- f) *Currently prices are set on basis of fair and reasonable economic conditions. To this end the Authority may use international benchmarks. In case of confirmation of the Agcom proposal under public consultation (issued with decision 1/11/CONS) prices will cost oriented (LRIC model plus risk premium included in the cost of capital).*

2.2 Dark fibre

- a) *Telecom Italia (as SMP) has published (30 June 2009) a reference offer for the dark fiber according to Agcom resolution n. 731/09/CONS (mandated).*
- b) *Telecom Italia offers the access to dark fibre, consisting in the provisioning and maintenance of continuous sections of fibre belonging to its access and the backhauling network. Telecom Italia offers this service regardless the use for which it is required, independently from the availability of duct access.*
- c) *Market 4.*
- d) *Current regulatory obligations: transparency (through the publication of a reference offer) non discrimination and access obligation.*
- e) *Currently there is no costing remedy mandated. Cost orientation based on LRIC approach will be mandated in case of confirmation of the Agcom proposal under public consultation (issued with decision 1/11/CONS).*
- f) *Currently prices are set on basis of fair and reasonable economic conditions. To this end the Authority may use international benchmarks. In case of confirmation of the Agcom proposal under public consultation (issued with decision 1/11/CONS) prices will be cost oriented (LRIC model plus investment risk premium included in the cost of capital).*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Not currently available. In case of confirmation of Agcom proposal under discussion within public consultation issued with decision 1/11/cons SMP will be mandated to provide access to the NGA terminating segment only in those areas where NGA ULL is not mandated.*
- b) *Product definition: termination segment of the access network, from the last concentration point to the customer CPE. It includes wiring inside buildings.*
- c) *Included in **Market 4**.*

- d) Current **regulatory obligations**: such remedy, that could be available during 2012, is still under discussion and has been proposed by Agcom within public consultation issued with decision 1/11/CONS; includes:
- transparency obligation;
 - availability of reference offer;
 - non-discrimination obligations;
 - access obligations (Local exchange collocation + access to ducts or dark fiber to reach the concentration point).
- e) LRIC.
- f) LRIC + risk premium included in the cost of capital.
- g) Not applicable.

3.2 Concentration point/ manhole unbundling

- a) Not currently available.
- b) Product definition: unbundling between an intermediate concentration point and end user CPE.
- c) Included in **Market 4**.
- d) Current **regulatory obligations**: could be available since 2013. Such remedy, still under discussion, has been proposed by Agcom within public consultation issued with decision 1/11/CONS; includes:
- transparency obligation;
 - availability of reference offer;
 - non-discrimination obligations;
 - access obligations (Local exchange collocation + access to ducts or dark fiber to reach the concentration point).
- e) **Costing**: LRIC.
- f) **Pricing**: LRIC + risk premium included in the cost of capital.
- g) Not applicable.

3.3 Cabinet unbundling

- a) *Not currently available.*
- b) *Product definition: copper unbundling between the Cabinet end user CPE of the FTTN NGA network.*
- c) *Included in **Market 4**.*
- d) *Current **regulatory obligations**: could be available since 2013. Such remedy, still under discussion, has been proposed by Agcom within public consultation issued with decision 1/11/CONS; includes:*
 - *transparency obligation;*
 - *availability of reference offer;*
 - *non-discrimination obligations;*
 - *access obligations (Local exchange collocation + access to ducts or dark fiber to reach the concentration point).*
- e) **Costing**: *LRIC.*
- f) **Pricing**: *LRIC + risk premium included in the cost of capital.*
- g) *Not applicable.*

3.4 ODF unbundling

It is not foreseen in the Agcom public consultation issued with decision 1/11/CONS. Such remedy could be evaluated following to further developments of WDM technology.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
 - *Access to ducts*
 - *Access to dark fiber*
 - *Communication to Agcom and OLOs, with enough notice period, of NGAN development plans*
 - *Provision of a database of passive infrastructures.*

- *Price control, transparency, non discrimination*
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

According to public consultation issued with decision 1/11/CONS unbundled access to the fiber loop will be available only in those areas where only the SMP NGA network is available. Unbundling will be available from and intermediate concentration point of the GPON NGAN. ODF wavelength ULL will be taken into account in the future.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

The reference offer should include conditions for provision, assurance, SLA, technical interfaces.

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

Prices will be based on underlying costs plus an investment risk premium included in the cost of capital and to be evaluated according to relevant market conditions.

3.5 Enhanced Bitstream¹

- Not currently available;*
- Product definition: Level two transmission capacity between a delivery interface and the customer CPE;*
- Included in **Market 5**;*
- Current **regulatory obligations**: a first transitory IP version will be available during 2011. Bitstream remedy, introduced by Agcom with decision 731/09/CONS, technical*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

and regulatory specifications are under discussion within public consultation issued with decision 1/11/CONS; includes:

- *transparency obligation (in particular availability of reference offer);*
 - *non-discrimination obligations;*
 - *access obligations (includes collocation and interconnection KIT).*
- e) **Costing:** *LRIC (under discussion);*
- f) **Pricing:** *LRIC + risk premium included in the cost of capital (under discussion);*
- g) *Not applicable.*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

Local exchange, parent node, distant node (level 2 and 3)-under discussion

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

COS differentiation will be available both for ATM (ABR, VBR, CBR) and Ethernet (COS=0-7), Guaranteed bandwidth can be requested (under discussion).

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Yes (under discussion within public consultation issued with decision 1/11/CONS).

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

Bitstream will be available at national level until 2013 with prices cost oriented. After 2013, following to fibre ULL introduction, bitstream will not be available in those areas that are covered by ULL (sunset clause approach with switch off after 12-24 months from ULL availability). This approach has been proposed by Agcom within public consultation issued

with decision 1/11/CONS. Further differentiations in price control scheme might be introduced in some areas according to market analysis.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

Agcom has proposed a migration path within public consultation issued with decision 1/11/CONS.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations?²

SMP operator is allowed to decommission MDFs with a 5 year notice period (under discussion the possibility to foresee a 3 year period under specific market conditions).

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

Not discussed currently.

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “*in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies per geographical area. A reasonable **window of announcement** is necessary to create a level playing field on the retail market*”.

- Explain if such provisions are applied and what they look like.

Not yet applied.

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

Not yet applied.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

See reply above about MDF decommission notice period.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

Not yet.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:
 - **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?

Currently such database is managed by operators and local authorities.

SMP: *(according to decision 731/09/CONS) has to provide access to such database, concerning its own infrastructures.*

SMP and Non SMP: *According to the Italian communication Code, Information on new infrastructure should be communicated, by operators and local authorities, to the Ministry of communications (now ministry of economic development). Agcom has issued (still under discussion) a specific regulation (decision 105/10/CONS) for the implementation of a centralised database fed by all involved subjects (operators, local municipalities, public bodies). This database will be established and run by Agcom. The DB will be accessible by all operators.*

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- **Which data are collected** in this database?

Type of infrastructure, location, the proprietary (operator, public body).

- Does the information collected cover just telcos or also non-telcos?

Both.

- How is the **information** being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.

The database should be provided based on obligations.

1. *SMP: decision 731/09/CONS;*
2. *Non SMP and SMP: Law number 259/2003 and decision 105/10/CONS (under discussion).*

- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also **administrative** units?

The Agcom public consultation (decision 105/10/CONS) is proposing the implementation of a centralized database that can be accessed by operators and any administrative unit.

- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting **access** to the database?

This will be defined according to the outcome of the public consultation

- How are **business secrets** dealt with?

This will be defined according to the outcome of the public consultation

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? *(Note: this information may be helpful for other NRAs when setting up similar databases)*

There is not yet enough experience to draw conclusions.

- What are the set-up and running costs of the database, and who pays for them? Were the costs **shared** out based on agreements or formal obligations?

This issue will probably be defined at the end of the public consultation concerning the implementation of the infrastructure DB, above mentioned.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Symmetrical rules are provided in the Italian Code, Law 133/2008, Law 166/2002. Entities covered are operators and public administrative bodies (local authorities, concessionaries). Such legislation covers the provision of access to existing infrastructures (ducts, digs, etc) for fiber installation and the implementation of new passive infrastructures.

Further symmetrical rules are proposed by Agcom within public consultation issued with decision 1/11/CONS for access to in-house-wiring, ducts, dark fiber, fiber ULL in the case of bottlenecks.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

National initiatives include:

- *the establishment (by Agcom decision n. 64/09/CONS) of a NGN Committee to define guidelines for the NGN (such guidelines have been completed in September 2010);*
- *The Government's plan, "Italia Digitale" for the development of New Infrastructure for Next Generation Access Networks has been launched in public-private partnerships, to accelerate and optimize the implementation of European Agenda goals, which are beyond current investment capacity of the Italian TLC system: i.e. implementation of next-generation access infrastructure for about half the population by 2020. The project is aimed at creating and/or sharing ducts, dark fibre, vertical links, optic patch panels and optic links for radio stations, in line with the principle to develop a neutral and open infrastructure. The project, in accordance with EU regulation, particularly that one on "State Aids", and with national rules on NGN covers an area of about 13 million housing units (50% of total) and over 3 million apartment buildings spread throughout the country. In some cities, where development projects for NGAN networks are already planned, there could be, according to the principle of subsidiarity*

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

as defined in the MoU, either infrastructure in common (e.g. building terminations and vertical connections) or the complete infrastructure in sub-areas not included in short-term operator plans, coordinating actions to avoid unnecessary duplication of infrastructure installation and offering opportunities for faster and less expensive project development.

- *the start of NGA development projects by local authorities (Provinces, Regions) to overcome digital divide and provide advanced NGA broadband services, according to the CE recommendations on State Aids;*
 - *Agcom has issued a public consultation (decision 105/10/CONS) for the simplification of the procedures to get right of ways for the realization of NGNA networks (backbone network and access network) by the definition of transparent and non discriminatory symmetrical rules and for the implementation of a centralized and freely accessible passive infrastructure database;*
 - *Agcom has issued a public consultation (decision 1/11/CONS) for the definition of asymmetrical and symmetrical NGNA regulation.*
 - *Administrative simplification procedures were already introduced for both fixed and mobile connectivity in laws No. 133, 2008, No. 69, 2009 and No. 40, 2010.*
- Scope and **envisaged target** of the measure;

To support the development of NGA

- Current **achievements, milestones** reached.

Several local authorities projects for NGNA (promoted by Regions and Provinces, see above) have been approved by Agcom and passed to the European commission for the completion of the notification procedure.

“Italia digitale project is already operative with memorandum of understanding undersigned.

Latvia

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

SIA „Lattelecom“

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**
- Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)

- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

2.2 Dark fibre

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)

- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

3.2 Concentration point/ manhole unbundling

3.3 Cabinet unbundling

3.4 ODF unbundling

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?
- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”*.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:
 - **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
 - **Which data** are collected in this database?
 - Does the information collected cover just telcos or also non-telcos?

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
 - Scope and envisaged **target** of the measure;

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs’ strategies aiming at the promotion of next generation broadband.

- Current **achievements**, milestones reached.

Lithuania

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);
 - current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
 - available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

Available on symmetrical basis.

2.2 Dark fibre

Not applicable (Analysis of the markets 4 and 5 is not finished).

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)

- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

3.2 Concentration point/ manhole unbundling

Not applicable (Analysis of the markets 4 and 5 is not finished).

3.3 Cabinet unbundling

Not applicable (Analysis of the markets 4 and 5 is not finished).

3.4 ODF unbundling

Not applicable (Analysis of the markets 4 and 5 is not finished).

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

- a) *Available: on a voluntary basis*
- b) *Wholesale broadband access (ADSL) bitstream.*
- c) *Analysis of the markets 4 and 5 is not finished yet.*
- d) *Market 12 is not regulated.*
- e) *Not applicable.*
- f) *Not applicable.*
- g) *Not applicable.*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

Legal framework foresees an obligation on SMP operator to inform the Beneficiary 6 month prior to the elimination of the network element to which access is granted. Due to the fact that LLU is not widely popular (~600 lines unbundles so far) transition issues are not of relevance to the market.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²
- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”*.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

No transparency obligation is established. Incumbent's RO for duct access is publicly available since 2005. No access to the Incumbent's e-map is offered. Information about the Civil Engineering (CE) infrastructure is available from the municipalities (some of them provide access to the GIS tools with all CE infrastructure in it, but most of them provide access to information about CE infrastructure in paper only).

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Symmetrical provisions for infrastructure sharing and construction of the electronic communications networks are established in the Law of Electronic communications and further elaborated in the secondary legislation. 1) Under the established framework all the constructions of the ECN should be performed in accordance with the provisions of the secondary legislation which prescribes in details requirements for the construction of ECN e.g. the diameters of the ducts to be laid in particular circumstances, the size of the in-house cabinets, horizontal/vertical cabling etc. 2) Established framework as well obliges all the persons owning the infrastructure which could be used for the construction of the ECN under the certain conditions provide the access to such infrastructure for common use. In 2Q 2010 RRT complemented infrastructure sharing framework with the methodology for the calculation of the free space in the duct.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

In 2010 preparation of the National Broadband strategy was launched. It is planned to incorporate measures dedicated to simplification of the infrastructure construction and coordination of civil works. Rural areas: In 2009 II phase of the RAIN (Rural Area Information Technology Network) project was decided by the EC as not raising objections as the State aid contained therein is compatible with Article 87(3)(c) of the EC Treaty by the EC. The overall objective of RAIN: to develop an infrastructure of electronic networks offering wholesale broadband services in rural areas of Lithuania, which are currently not served and where there are no plans for coverage in the near future. During the II phase of the project the broadband network coverage will be extended from the current 80% to approximately 98% of the Lithuanian population. RAIN-2 construction works officially started in 2Q 2010. Urban areas: Some symmetrical measures taken (See sheet Nr. 6).

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

- Scope and envisaged **target** of the **measure**;
- Current **achievements**, milestones **reached**.

Malta

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

GO plc, copper-network operator. Advanced to its second phase of its FTTC upgrade – using ADSL2+ technology.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

No concrete plans for NGA roll-out yet.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

No NGA roll-out by Cable operator, still on DOCSIS 2.0.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

No announcements by competitors to date.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**
- Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)

- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

N/A.

2.2 Dark fibre

N/A.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)

- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

N/A.

3.2 Concentration point/ manhole unbundling

N/A.

3.3 Cabinet unbundling

- a) *Available on a mandated basis – sub-loop unbundling included in the RUO since 2004.*
- b) *Product definition: access to unbundled copper line at street cabinets.*
- c) *Included in Market 4 (Physical Access to Network Infrastructure).*

3.4 ODF unbundling

N/A.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

N/A.

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

The Authority will be consulting on migratory rules early next year. It is already in talks with the incumbent on the preliminary specifications but these are not public to date.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²
- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”*.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**)⁵?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

The Maltese Government expressed its intention to set-up such database, but the specific characteristics of this set-up are not yet known at this stage.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

N/A.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

Malta's National ICT Strategy highlights the importance of wiping out the digital divide and making sure that everyone in Malta has broadband connectivity at an affordable price coupled with the development and uptake of next-generation high-speed broadband infrastructures. The MCA is considering extending the current scope of the universal service - currently limited to the availability of a connection that is capable of sustaining a dial-up modem - to the provision, to permanent residences and business offices, of a fixed or wireless connection capable of sustaining broadband at a specified minimum downstream rate in line with that enjoyed by the majority of broadband subscribers. The consultation was launched in the 3rd quarter 2010 and the MCA is currently reviewing the responses.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

The Netherlands

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

KPN.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
 - *High network density,*
 - *Nationwide copper and cable network and roll-out of FTTH-network,*
 - *+/- 6 million broadband subscribers = 80 % of households and 38 % of all inhabitants,*
 - *Market shares: +/- 39 % cable and 59 % DSL, 2 % fibre,*
 - *Alternative LLU operators have 60-70 % coverage based on MDF-access and 10-15 % broadband.*

Copper

- *Nation wide copper based access network,*
- *60% coverage of ADSL2+, 10-20% coverage of VDSL2,*
- *VDSL roll-out mainly from the local exchange (MDF). Limited VDSL-rollout based on FttC. (5 pilot cities of the incumbent).*

Fibre-to-the-home

- *570.000 homes passed (q2 2010) by Reggefiber (joint venture of incumbent (KPN) and investment company Reggeborgh, in which KPN holds a share of 41%),*
- *Point to Point fibre solution, with two separate fibres to each household,*

- 5-10 % of households passed,
- 160.000 homes activated (q2 2010) by KPN (+/- 30.000) and other ISP's (+/- 130.000) on Reggefibers passive network.

Fibre-to-the office

- *In addition to the rollout of FttH networks by Reggefiber also a number of market players (KPN, Eurofiber, Colt Telecom, Tele2, BT NL, Verizon NL, Ziggo, UPC/Priority telecom, Delta/Zeelandnet) have invested in the roll-out of FttO networks. In dense city business areas as well as on business parks. These rollouts started in the late 80-ties and still continue especially on business parks.*
- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Copper

- *broadband speeds up to 30 Mbit/s, IPTV coverage to 80%, HDTV coverage to 70%.*

Fibre-to-the-home

- *Number of FttH homes passed by other companies than Reggefiber is very limited.*
- *Broadband speeds up to 100M/bit symmetrical; mainly triple play offers with HDTV.*

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Copper

- *Continuing VDSL network upgrades in 2011.*

Fibre-to-the-home

- *Reggefiber is targeting at 1.1-1.3 million homes passed by 2012.*

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Cable companies

- >95% coverage of DOCSIS 3 networks,
- Two largest cable companies Ziggo and UPC,
- Offering triple play bundles with HDTV up tot 120 Mbit/s.

Alternative LLU operators (Tele2/Bbnet and Online)

- Investing in VDSL form the local exchange (MDF).

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**

- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

Common obligations with regard to duct sharing are already in place (article 5.12 of the Telecommunications Act). Although this duct-regulation is being used for links in backbone and core-networks, it is not used for access networks. The reason is that traditionally cabling in Dutch access net-works is laid directly in the ground instead of using ducts. Therefore it is logical that there is no demand by market parties for duct access with regard to access networks.

2.2 Dark fibre

The incumbent has to provide backhaul services as an ancillary service in market 4. Backhaul services on FttH/FttO are offered as dark-fibre services. Backhaul is regulated from the street cabinet up to a higher point in the network (the MDF or another aggregation point in the incumbents NGN network). A transparency and reference offer, non-discrimination obligation (including a rule to prevent margin squeeze) and cost-orientation (EDC) apply.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

Not regulated.

3.2 Concentration point/ manhole unbundling

Not relevant.

3.3 Cabinet unbundling

Based on our market 4 analysis of 19 December 2008 KPN is obliged to offer unbundled access to the street cabinet including the ancillary services collocation and backhaul facilities. An alternative operator has the option to install his own equipment in the street cabinet or install his equipment in a separate cabinet. The design of the street cabinets facilitates the access of multiple operators. The backhaul services are offered as dark fibre and Ethernet. Backhaul is regulated from the street cabinet up to a higher point in the network (the MDF or an other aggregation point in the incumbents NGN network).

There is a non-discrimination obligation (including a rule to prevent margin squeeze) in place and a transparency obligation, including the obligation to publish a reference offer. KPN is obliged to charge cost-oriented tariffs (EDC).

Street cabinet unbundling became an issue in the Netherlands after the announcement of the incumbent NGN roll-out plans in 2005. In 2005 KPN announced the phasing out of MDF-access and a large roll-out to cabinet unbundling (FttC). After this announcement of KPN a reference offer, including tariffs was implemented between KPN, competitors (mainly Bbnd) under the supervision of OPTA.

The NGN plans of KPN have developed and been altered since 2005. On the one hand MDF access will be available for a much longer period and KPN and competitors are planning to offer VDSL from the MDF. On the other hand KPN has chosen a more mixed strategy of Fibre roll-out (FttH and FttO) and VDSL roll-out (FttC and VDSL from the MDF). In this strategy fibre roll-out is currently dominating.

Currently there are 5 FttC pilot cities by the incumbent. The incumbent is first targeting a commercialization of 450.000 homes passed now before rolling out further. The business case of subloop unbundling is difficult for competitors. Analysys Mason conducted a study for OPTA on the business case of subloop unbundling and concluded that due to economies of scale a business case on FttC by competitors will only be possible on a limited scale, for example in areas with mainly business customers. Currently no alternative provider is using the SDF-access service of the incumbent.

3.4 ODF unbundling

FttH

In the market-analyses (finalised December 2008) the unbundled fibre service (ODF Access) is defined in the same market as unbundled local loop services (MDF and SDF Access). KPN and its joint venture Reggefiber has been identified as market players with significant market power (SMP) for this wholesale market.

Based on these SMP an access obligation applies for Reggefiber for the non-discriminatory provisioning of ODF Access and the ancillary services Collocation and Backhaul. This access obligations also contains the publication of a Reference Offer (one month after the market analysis decision).

An announcement period of two months applies to changes in the references offer (including new services). The non-discrimination obligation contains the obligation that KPN can not launch a retail product based on this new wholesale product during this announcement period. The non-discrimination obligation also includes a rule to prevent margin squeeze.

For the tariff regulation a separate policy paper has been drawn by OPTA (<http://www.opta.nl/en/news/all-publications/publication/?id=2832>) in which the pricing principles of tariff regulations for ODF Access is described. Key point is to strike a balance between stimulating investments (and innovations) and remain a competitive environment. Important element of the tariffs is that the prices depend on the actual CAPEX per line in an developed area (called 'aansluitgebied'). Depending on the characteristics of the area (dense or more rural) a different tariff applies. These tariffs range from 12 – 17 Euro per line/per month (without discount) and 100 Euro installation fee.

OPTA sets a price-cap which is stable and predictable over a long period (price $t=0$ + yearly price indexation) including a reasonable rate of return (allowing a limited – project specific fibre – risk premium). OPTA checks the actual returns every new regulatory period (3 years) and compares the actual return with the allowed reasonable rate of return. Over performance ('excessive return') leads to a downward adjustment of the price cap (In this check, OPTA allows some extra return to limit the asymmetric regulatory risk, which is the risk that the regulator skims of positive returns while negative returns are for the risk of the investor). Under performance does not lead to an upward adjustment of the price cap. Under performance is for the risk of Reggefiber.

Tariff regulation by OPTA also contains risk sharing elements (an investment-contribution per line), volumes discounts based on total market volume to stimulate penetration and allowed regional price difference (based on actual CAPEX/line) facilitating investment incentives.

Based on the principles OPTA has set a tariff ceiling for ODF Access, Collocation and Backhaul Services (<http://www.opta.nl/nl/actueel/alle-publicaties/publicatie/?id=2976>).

FttO

The business networks (FttO) can also be technically unbundled, in the same manner as the rolled out FttH networks. OPTA concluded end 2008 that the unbundling of these FttO-networks is part of the same relevant market as FttH and MDF/SDF unbundled access. In October 2009 the court ruled that OPTA provided lack of evidence to come to this conclusion and asked OPTA to analyse this more in depth. As a result the remedies for FttO-access were been suspended.

On April 2010 OPTA again came to the conclusion that ODF FttO-access is part of the same relevant market as ODF FttH-access, MDF-access and MDF-access.

An ODF FttO access obligation applies now to KPN for the non-discriminatory provisioning of ODF Access and the ancillary services Collocation and Backhaul. This access obligations also contains the publication of a Reference Offer (<http://www.kpn-wholesale.com/nl/onze-producten/netwerk/fysieke-access/o/odf-access.aspx>). Cost orientation (EDC) is applied. The tariff policy rules for ODF-FttH do not apply for ODF FttO.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

The wholesale broadband market consists of the market for low quality wholesale broadband services (sometimes referred to as consumer bitstream) and the market for high quality broadband services (sometimes referred to as business bitstream). The overbooking-factor defines low (> 1:20) and high quality services (1:20 < 1:1). KPN has SMP on these markets. Access obligations apply nationally to copper and fibre access. Access is regulated at a regional point of interconnection. There is no demand for local access, because operators who rolled out to the local level offer WBA themselves based on local loop unbundling. There is no obligation for KPN to offer WBA at a national point interconnection, because there is competition on the regional-national backbone.

There is a transparency and reference offer and non-discrimination obligation (including a rule to prevent margin squeeze) in place. Cost orientation is applied (EDC) only for high quality WBA. For WBT-Low Quality no price regulation applies.

On April 13 2010 OPTA's leased lines market decision was destroyed in court. The court ruled that OPTA had insufficiently motivated that the leased lines market consists of a market for high capacity lines (>20 Mb) and low capacity lines (<20Mb). Both market contained 'leased lines' and non-overbooked wholesale broadband access services. OPTA is currently working on a new decisions (draft decision expected in may 2011)

The consumer WBA offer is offered as ATM-based service as well as Ethernet service. This service is based on a Point-to-Multipoint VLAN with 'best effort' quality. This includes ADSL, ADSL2+ and VDSL2 capabilities.

Important element is that the wholesale provisioning of multicast (especially for the broadcast of TV) is not part of the access obligations for WBA. This is due to the fact that the TV-market is not dominated by KPN, but by the cable providers, and is defined as a separate market. (so no triple play market). So this is not part of the regulated WBT service. Therefore all service providers offer their TV-services based on their own LLU or FttH network footprint.

The standard business WBA offer consists of an ATM service for ADSL(2+) and SDSL. An Ethernet Service has been developed for VDSL2 for FttH and FttO. This developed service is offered on the basis of a Point-to-Multipoint VLAN with best effort or premium quality. For FttO services KPN also offers a special business service which is offered on the basis of a Ethernet Point-to-Point VLAN per connection. It includes premium and best effort service levels.

Below, some *additional* questions on bitstream:

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

Currently no MDF exchange phasing out is foreseen before at least 2014.

OPTA adopted on 19th December 2008 its final decision regarding Markets 4 and 5, which includes some rules under which circumstances a withdrawal of access to the copper network that has already been granted could be reasonable.

First, phasing out of MDF-access services –OPTA identifies the ex-change/location as the smallest unit that can be phased out– is only allowed after a reasonable announcement period of at least 2 years. In practise the incumbent and KPN agreed on a three year announcement period.

Second, MDF-access customers need a reasonable period to determine to which alternative they want to migrate and an alternative (ODF/ODF and WBA) has to be available.

Third, there also needs to be a reasonable overlay period. Additionally, for the phasing out, the incumbent is not allowed to discriminate between itself and other MDF-access customers. This non-discrimination obligations also relates to the quality aspects of migration and to time periods, and means that the incumbent can only withdraw access if it does no longer use the copper pairs on that location for its own services.

Finally, the incumbent is obliged to publish at least every 3 months a planning overview of the SDF and ODF-locations that will become available and the MDF-locations that will be phased out.

Based on this market decision the incumbent is also obliged to publish a reference offer with the migration rules. See: <http://www.kpn-wholesale.com/media/83619/MDF%20Migration%20Agreement%20reference%20offer.pdf>.

This offer also contains compensation schemes for stranded assets and arrangements on the distribution of migration costs between the incumbent and competitors.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²
- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREK suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”*.
 - Explain if such provisions are applied and what they look like.
 - Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**)⁵?

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

⁵ See BoR (10) 08, Ch. E.2.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

Not relevant.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Not relevant.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

There is a discussion in the Netherlands about the role of Dutch municipalities to stimulate FttH roll-out in The Netherland. Especially the cable companies are against government involvement in the roll-out of FttH, because they claim that they already have a future proof nation wide NGA network based on coax DOCSIS 3.

To help municipalities the Ministry of Economic Affairs published a document containing a 'menu' to help municipalities to identify their role in stimulating the roll-out and take up of NGA. In most cases a facilitating role in the roll-out of networks (i.e. in opening the streets, licences etc.) or a role in the bundling of demand will be sufficient. But on top of that financial participation in NGN investment on a commercial basis (market economy investor principle) is possible.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Norway

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Incumbent: Telenor

Applied technologies: Cable, FTTH GPON

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

Telenor's FTTH-rollout: Less than 10 000 end users. No data available for homes passed.

Telenor's CATV-broadband: 239 000 end users (no data available on the distribution between Docsis 3 and older versions). No data available for homes passed.

Figures are from June 2010.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Telenor FTTH GPON

- *"Broadband Medium"; Internet connection, 8 Mb/s download/8 Mb/s upload, price: NOK 449/month*
- *"Broadband Premium"; Internet connection, 25 Mb/s download/25 Mb/s upload, price: NOK 549/month*
- *"Broadband Max"; Internet connection, 50 Mb/s download/50 Mb/s upload, price: NOK 1390/month*
- *For an additional NOK 178/month, you get IPTV (12 channels)*

- *For an additional NOK 10/month, you get telephone (not flat rate)*

Telenor CATV-broadband

- *“Mini”; Internet connection, 0,9 Mb/s download/0,9 Mb/s upload, price: NOK 247/month*
- *“Midi”; Internet connection, 5 Mb/s download/1 Mb/s upload, price: NOK 347/month*
- *“Maxi”; Internet connection, 12 Mb/s download/2,5 Mb/s upload, price: NOK 447/month*
- *“Mega”; Internet connection, 25 Mb/s download/2,5 Mb/s upload, price: NOK 547/month*
- *“Giga”; Internet connection, 70 Mb/s download/2,5 Mb/s upload, price: NOK 1447/month*
- *For an additional NOK 299/month, you get TV (40 channels)*
- *For an additional NOK 139/month, you get telephone (flat rate for national calls to fixed phones)*

All prices includes VAT.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Telenor has announced roll-out of VDSL2 to 30 % of the households by the end of 2011. FTTH-rollout has been slower than expected, but Telenor says FTTH is, and will still be, the preferred infrastructure for greenfields. Telenor will also continue upgrading the CATV-network for faster broadband.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

There are several operators in Norway rolling out NGAs, but the two biggest competitors to the incumbent are:

- *Lyse Tele and their 30+ regional partners; applied technology: FTTH P2P. Own infrastructure. 200 000 connected. Offers triple-play. Symmetric internet access between 10 and 400 Mbit/s. Prices between NOK 449 and 5990 per month.*
- *Get; applied technology: CATV. Own infrastructure. 160 000 connected. Offers triple-play. Capacities between 2 and 50 Mbit/s download offered. Prices between NOK 249 and 1199 per month.*

1.1.1 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Lyse Tele and partners have announced a target of 400 000 FTTH P2P connected customers, but no time period is given.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);

- **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Mandated (incumbent). No figures available regarding availability and use.*
- b) *Location of access point: Everywhere incumbent's ducts in relation to access networks are available.*
- c) *Included in market 4 (as a backhaul service).*
- d) *Access to ducts has been available for many years. Regulated since April 2009. Remedies: access obligation, price regulation, non-discrimination, reference offer, cost accounting obligation.*
- e) *Cost orientation based on the principle of historic costs.*
- f) *Pricing based on e)*

2.2 Dark fibre

- a) *Mandated (incumbent). Voluntary: several operators.*
- b) *Location of access point: Everywhere dark fibre is available.*
- c) *Included in market 4.*
- d) *Dark fibre has been available for many years. Regulated since May 2007. Remedies: access obligation, non-discrimination, reference offer, accounting separation.*
- e) *No price regulation.*

- f) *Volume discounts.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)

- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Access to private electronic communication networks (hereunder in-house wiring); specified in „Ecom Regulations“ of 16.02.2004 (National legislation).*
- b) *Access point shall be designed in a way that makes a change of operator possible, and also that more than one network operator can connect to the access point.*
- c) *Not included in any markets.*

3.2 Concentration point/ manhole unbundling

The obligations for sub-loop unbundling apply to any intermediate point between the end user and the local exchange, so could cover concentration points or manholes.

3.3 Cabinet unbundling

- a) *Sub-loop unbundling mandated (incumbent). So far, very limited use.*
- b) *Location of access point: Between the local exchange and end customer.*
- c) *Included in market 4.*
- d) *Has been available for many years, but not widely used. Same regulatory obligations as LLU. Latest decision April 2009. Remedies: access obligation, price regulation, non-discrimination, reference offer, cost accounting obligation.*
- e) *Historical costs.*
- f) *Price cap based on historical costs.*

3.4 ODF unbundling

Not mandated, and not available. No remedies imposed for fibre access networks.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

All remedies except accounting separation are in place with regard to sub-loop unbundling (FTTN/C).

With regard to FTTH/B no remedies are imposed. The reason for this is that the roll-out of FTTH/B is primarily carried out by alternative operators (power utility companies), and none of them were designated with SMP in the last decision for market 4 (April 2009).

- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

- Wholesale access to VDSL2-bitstream services is mandated when the incumbent itself starts offering VDSL2 to end users. The incumbent has announced that it will start offering wholesale VDSL2 from December 1, 2010. Three different access products are announced.*
- Wholesale VDSL2-bitstream services will similar to the existing wholesale ADSL-bitstream services, but available only from Ethernet DSLAMs and not ATM-DSLAMs.*
- Included in market 5.*
- Access obligation, reference offer, transparency, non-discrimination, accounting separation*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- e) *Historical costs in the accounting separation reporting.*
- f) *No price regulation.*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

Wholesale VDSL2-bitstream access will from December 1st 2010 be available as layer 2 and layer 3 services at national and regional delivery points.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

Yes, quality differentiation is possible. Telenor will offer three different profiles for VDSL2-bitstream (Basic, Premium and Professional) with different minimum bandwidth guarantees and different contention ratios.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

No, multicast is not available.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

No.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products?**

No detailed migration path exists.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? Yes, an obligation to provide info to co-located operators five years before decommissioning.

Yes, the notice period for decommissioning MDFs is 3 years.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the availability of an equivalent alternative wholesale product.²

As long as the incumbent notices alternative operators at least 3 years before decommissioning MDFs, such decommissioning is not contingent on any approval.

- In its report “NGA – Implementation Issues and Best Practice”³ BERC suggested that “*in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market*”.
- Explain if such provisions are applied and what they look like.

The incumbent is mandated to give notice when moving/establishing DSLAMs from the local exchange and closer to the end customers. The notice shall be given six month in advance as a minimum.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

No.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁴)?

No such provisions/measures.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

Alternative operators pay their own part, and prices should be cost oriented.

² See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

³ BoR (10) 08; Chapter E.2, p. 9.

⁴ See BoR (10) 08, Ch. E.2.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁵. In case such a database exists already in your country, explain:

No such database exists, and there is not yet any obligation to establish such a database.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

⁵ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Article 4-4 in the Norwegian Electronic Communications Act allows NPT to impose sharing of passive infrastructure also on non-SMP operators, but the criteria for imposing sharing based on Article 4-4 are not related to competition problems.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁶ Consider the following aspects:

The Norwegian government has not announced any specific measures or targets for next generation broadband.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁶ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Poland

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Incumbent: TP SA. types of lines: FTTH, FTTB, FTTC

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

number NGA lines: 973 (FTTH), 366 (FTTB/C). Penetration rate of NGA lines: 0,03% (percent of NGA lines in whole Incumbent's xDSL and FTTx lines)

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

TP has started a pilot project of services based on FTTx in Warsaw, probably next ones will soon follow in other cities, but the incumbent hasn't yet prepared commercial offer for these services.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Incumbent plans to upgrade its access network to launch the 58 000 NGA lines by 2012.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Biggest other telcos: Netia, Telefonía Dialog, UPC, Aster, Vectra, Toya, Multimedia Polska, Inea: FTTH, FTTB.

Number of active NGA lines: 182 (FTTH), 12 291 (FTTB), 37 192 (Others). Penetration rate of NGA lines: 1,59% (percent of NGA lines in whole new entrants xDSL, FTTx and cable lines).

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Major players announced fibre roll-out in Poland: INEA, UPC, Aster, Dialog.

Telefonia Dialog' strategy for the years 2009 – 2015 is to replace its existing network by PON – Passive Optical Network, which supplies a separate optical fibre to the socket of each subscriber.

INEA Company – a cable TV operator, is building its NGA infrastructure, widening the range of services provided by including offer addressed to business and corporate customers and implementing on demand service. The Company undertakes important investments in backbone networks connecting different locations in the region of Wielkopolska.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Available on a mandated basis (current Reference Infrastructure Access Offer for Cable Ducts based on Art. 12 of FD implemented into Polish Telecommunications Law, also planned SMP Market 4 decision). Number of the respective wholesale products: not applicable.*
- b) *Access to a complex or system of underground pipes and cable manholes/chambers used for laying telecommunication cables.*
- c) *Currently not included in any relevant market. Planned as one of Market 4 measures.*
- d) *Current regulatory obligations (amended Reference Infrastructure Access Offer for Cable Ducts available since 16th of July 2010):*

- *Reference offer.*
- *Access obligation.*

Proposed Market 4 remedies:

- *Reference offer (release date: 3 months after the SMP decision is issued).*
 - *Access obligation.*
 - *Transparency obligation – information on geographical location, network architecture, available capacity and other physical characteristics of civil engineering infrastructure; publication of Key Performance Indicators.*
 - *Non-discrimination obligations – inert alia: to offer identical terms and conditions in comparable circumstances; to prevent the exchange of unauthorized information between employees of the wholesale and retail part of SMP operator, ignoring safety rules; to apply IT systems for ordering telecommunication access to ensure equal access to information for all entities, and preventing discriminatory flow of unauthorized information.*
- e) *Costs determined based on cost model (Art. 13 of AD).*
- f) *Price control obligation – Art. 13 of AD (charges based on costs incurred).*
- g) *Not applicable.*

2.2 Dark fibre

- a) *Planned available on a mandated basis (SMP decision). Number of the respective wholesale products: not applicable.*
- b) *Access to unused optical fibres which are installed to ensure the reserve for possible future use. Specific product details will include the Reference offer.*
- c) *Currently not included in any relevant market. Planned as one of Market 4 measures.*
- d) *Proposed Market 4 remedies:*
- *Reference offer (release date: 3 months after the SMP decision is issued).*
 - *Access obligation.*
 - *Transparency obligation -- information on geographical location, physical characteristics, network architecture; publication of Key Performance Indicators.*

- *Non-discrimination obligations – inter alia: to offer identical terms and conditions in comparable circumstances; to prevent the exchange of unauthorized information between employees of the wholesale and retail part of SMP operator, ignoring safety rules; to apply IT systems for ordering telecommunication access to ensure equal access to information for all entities, and preventing discriminatory flow of unauthorized information.*
- e) *Costs determined based on cost model (Art. 13 of AD).*
- f) *Price control obligation – Art. 13 of AD (charges based on costs incurred).*
- g) *Not applicable.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)

- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Planned available on a mandated basis (planned SMP decision for Market 4). Number of the respective wholesale products: not applicable.*
- b) *Access to the segment of an access network which connects an end-user's premises to the first distribution point. The terminating segment includes in-building/house wiring. Specific product details will include the Reference offer.*
- c) *Currently not included in any relevant market. Planned as one of Market 4 measures.*
- d) *Proposed Market 4 remedies:*
 - *Reference offer (release date: 3 months after the SMP decision is issued).*
 - *Access obligation.*
 - *Transparency obligation -- information on geographical location, physical characteristics, network architecture; publication of Key Performance Indicators.*
 - *Non-discrimination obligations – inert alia: to offer identical terms and conditions in comparable circumstances; to prevent the exchange of unauthorized information between employees of the wholesale and retail part of SMP operator, ignoring safety rules; to apply IT systems for ordering telecommunication access to ensure equal access to information for all entities, and preventing discriminatory flow of unauthorized information.*
- e) *Costs determined based on cost model (Art. 13 of AD).*
- f) *Price control obligation – Art. 13 of AD (charges based on costs incurred).*
- g) *Not applicable.*

3.2 Concentration point/ manhole unbundling

- a) *Available on a mandated basis (current SMP decision: Wholesale unbundled access (including shared access) to metallic loops and sub-loops, for the purpose of providing broadband and voice services market; current Reference Infrastructure Access Offer for Cable Ducts; planned SMP Market 4 decision). Number of the respective wholesale products: We do not dispose information about unbundling loops in concentration point/manhole unbundling. Number of unbundling loops (full and shared) 75 803 (end of June 30 2010).*
- b) *As elements of duct, dark fibre access, local loop unbundling and terminating segment access. Specific product details will include the Reference offer.*
- c) *Currently included in part in Wholesale unbundled access (including shared access) to metallic loops and sub-loops, for the purpose of providing broadband and voice services market. Planned as one of Market 4 measures.*
- d) *Proposed Market 4 remedies:*
- *Reference offer (release date: 3 months after the SMP decision is issued).*
 - *Access obligation.*
 - *Transparency obligation -- information on geographical location, network architecture, available capacity and other physical characteristics of civil engineering infrastructure; publication of Key Performance Indicators.*
 - *Non-discrimination obligations – inerta alia: to offer identical terms and conditions in comparable circumstances; to prevent the exchange of unauthorized information between employees of the wholesale and retail part of SMP operator, ignoring safety rules; to apply IT systems for ordering telecommunication access to ensure equal access to information for all entities, and preventing discriminatory flow of unauthorized information.*
- e) *Costs determined based on cost model (Art. 13 of AD).*
- f) *Price control obligation – Art. 13 of AD (charges based on costs incurred).*
- g) *Not applicable.*

3.3 Cabinet unbundling

- a) *Available on a mandated basis (current SMP decision: Wholesale unbundled access (including shared access) to metallic loops and sub-loops, for the purpose of providing broadband and voice services market; planned SMP Market 4 decision). Number of the*

respective wholesale products: We do not dispose information about unbundling loops in the cabinets. Number of unbundling loops (full and shared) 75 803 (end of June 30 2010)

- b. Included in local loop unbundling definition (access to the physical circuit connecting the network termination point to a distribution frame or equivalent facility). Specific product details will include the Reference offer.*
- c. Currently included in Wholesale unbundled access (including shared access) to metallic loops and sub-loops as the element of access to sub-loops. Planned as one of Market 4 measures.*
- d. Proposed Market 4 remedies:*
 - Reference offer (release date: 3 months after the SMP decision is issued).*
 - Access obligation.*
 - Transparency obligation -- information on geographical location, physical characteristics, network architecture; publication of Key Performance Indicators.*
 - Non-discrimination obligations – inert alia: to offer identical terms and conditions in comparable circumstances; to prevent the exchange of unauthorized information between employees of the wholesale and retail part of SMP operator, ignoring safety rules; to apply IT systems for ordering telecommunication access to ensure equal access to information for all entities, and preventing discriminatory flow of unauthorized information.*
- b) Costs determined based on cost model (Art. 13 of AD).*
- c) Price control obligation – Art. 13 of AD (charges based on costs incurred).*
- d) Access to fibre loops is granted if no access to ducts or dark fibres is possible in a given local loop. This appropriate measure was designed as a proportionate application of the ladder of investment principle tackling market failures in Poland (corresponds to recital 3 and art. 3 NGA Recommendation).*

3.4 ODF unbundling

- a) Planned available on a mandated basis (planned SMP Market 4 decision). Number of the respective wholesale products: not applicable.*
- b) To be included in the Market 4 local loop definition (the physical circuit connecting the network termination point to a distribution frame or equivalent facility). Specific product details will include the Reference offer.*
- c) Currently not included in any relevant market. Planned as one of Market 4 measures.*

d) *Proposed Market 4 remedies:*

- *Reference offer (release date: 3 months after the SMP decision is issued).*
- *Access obligation.*
- *Transparency obligation -- information on geographical location, physical characteristics, network architecture; publication of Key Performance Indicators.*
- *Non-discrimination obligations – inert alia: to offer identical terms and conditions in comparable circumstances; to prevent the exchange of unauthorized information between employees of the wholesale and retail part of SMP operator, ignoring safety rules; to apply IT systems for ordering telecommunication access to ensure equal access to information for all entities, and preventing discriminatory flow of unauthorized information.*

e) *Costs determined based on cost model (Art. 13 of AD).*f) *Price control obligation – Art. 13 of AD (charges based on costs incurred).*g) *Access to fibre loops is granted if no access to ducts or dark fibres is possible in a given local loop. This appropriate measure was designed as a proportionate application of the ladder of investment principle tackling market failures in Poland (corresponds to recital 3 and art. 3 NGA Recommendation).*

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
 - *Obligations of access – Art. 12 of AD*
 - *Obligation of non-discrimination – Art. 10 of AD*
 - *Obligation of transparency – Art. 9 of AD*
 - *Obligation of accounting separation – Art. 11 of AD*
 - *Obligation for cost orientation of prices – Art. 13 of AD*
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

Unbundled access to fibre loops via LLU service is granted if no access to ducts or dark fibres is possible in a given local loop. The reason of conditional fibre loop unbundling is to give an incentive to investments both for SMP and alternative operators, as well as promoting infrastructure-based competition. This appropriate measure was designed as a proportionate application of the ladder of investment principle tackling market failures in Poland (corresponds to recital 3 and art. 3 NGA Recommendation).

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

The scope of the reference offer regarding fibre loop is actually covered by the minimum list of conditions as set out in FD, the difference is that it is more specific. However the reference offer in Market 4 will cover all wholesale network infrastructure access services and products, not only unbundled access to the fibre loop. Network elements to which access is offered are for example also distribution and concentration points, ducts, cables, lines, roof areas, masts, towers, poles. Furthermore there are backhaul services included.

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

Obligation for cost orientation of prices - art. 13 of AD, what means that charges should be based on costs incurred by the SMP operator. This obligation allows to recover the actual costs incurred related to the provision of services. Thus the regulation should be beneficial to the involvement of the SMP operator in investments, particularly those related to NGA.

3.5 Enhanced Bitstream¹

- Planned available on a mandated basis (planned SMP Market 5 decision). Number of the respective wholesale products: Number of users of BSA lines - 507 449 (end of June 30 2010).*
- Bitstream access in fixed location is situated downstream from the physical access covered by Market 4 listed above. Market 5 will include all kind of technologies at any level of the bitstream access. Specific product details will include the Reference offer.*
- Currently included in Market 12/2003. Planned to be included in Market 5.*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

d) *Proposed Market 5 remedies:*

- *Reference offer (release date: 3 months after the SMP decision is issued).*
- *Access obligation. SMP operator should be obliged to establish and provide new products for wholesale broadband access at least six months prior to when the SMP operator or its subsidiary will launch its own retail services.*
- *Transparency obligation – information on geographical location, physical characteristics, network architecture; publication of Key Performance Indicators.*
- *Non-discrimination obligations – in other words: to offer identical terms and conditions in comparable circumstances; to prevent the exchange of unauthorized information between employees of the wholesale and retail part of SMP operator, ignoring safety rules; to apply IT systems for ordering telecommunication access to ensure equal access to information for all entities, and preventing discriminatory flow of unauthorized information, applying Key Performance Indicators calculated separately for the retail part of SMP operator and separately for each telecom operator.*

e) *Costs determined based on cost model (Art. 13 of AD).*f) *Price control obligation – Art. 13 of AD (charges based on costs incurred).*g) *Not applicable.*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
 - *DSLAM Level*
 - *ATM Level (most popular in Poland)*
 - *IP Managed*
 - *IP Unmanaged*
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

Yes. Quality differentiation is possible in ATM Layer:

- *CBR;*
- *VBR rt;*
- *VBR nrt;*

- *UBR*.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

We have no final conclusions regarding this issue since the analysis of the Market 5 is still in progress. However the geographically differentiated analysis may result in the removing a bitstream access obligation if Market 4 regulation, in a given geographic area, results in effective competition (on the retail level).

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

There is no migration path envisaged beyond the obligation to migrate from copper to existing fibre loops within three months from the request by the alternative operator.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

One of the measures in Market 4, pursuant to article 12 of AD, is not to withdraw access to copper local loops already granted. In other cases SMP operator should inform about decommissioning MDFs 3 months in advance.

² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

As the telecommunications law now stands, there are no grounds for not allowing the SMP operator decommissioning its copper local loops not used by any alternative operator. As for copper local loops currently used, our position is that the SMP operator should maintain access to them as long as the alternative operator uses these particular loops (and pays for it).

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.

Taking as an example the Market 4 the SMP operator will be obliged to provide through the IT system current information on the technical specifications of the network and telecommunications equipment, performance and the network architecture, location and course of infrastructure elements and their capacity and occupancy, terms and conditions of service provision and use of the network, as well as charges relating to network infrastructure access including local loop and sub-loop, necessary for obtaining telecommunications access to the infrastructure including the local loop and sub-loop by telecommunications undertakings. The information should be available at the request of the telecommunications undertaking immediately, no later than within one week of the request receipt.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

In the past, the SMP operator did not provide alternative operators with all requested information and did not grant access to its IT systems providing such information.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

One of the Market 4 measures, pursuant to article 12 of AD, is not to withdraw access to copper local loops already granted by the SMP operator. It means that the SMP operator should maintain access to them as long as the alternative operator needs it.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

There are no relevant provisions.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

In Poland such a database does not exist. In addition, almost none of the operators have such a database which stores the inventory data on a capacity of ducts. In the near future the Head Office of Geodesy and Cartography plans to build a database, which will provide information on the underground infrastructure, however, it will only include information about taken strip of land.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

According to Act of 7 May 2010 on supporting the development of telecommunications networks and services every owner of ducts located on the property or in the building and in-building/house wiring (including fibre) is obliged to provide access to those resources to each telecom operator, if there are no other possibilities of ducts access or in-building/house wiring duplication.

Also under article 139 of the Telecommunications Law, the operator of public telecommunications network is obliged to allow access to buildings and telecommunications infrastructures to other operators of public telecommunications networks and the local government units and, in particular, to allow the installation, operation, surveillance and maintenance of telecommunications equipment, where the performance of such activities without such access would be impossible or difficult from the perspective of spatial planning, human health or environmental protection.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

Some activities related to the construction of NGN have been included in the Regional Operational Programs aiming to build a broadband backbone and distribution network. Construction of the ROP is now at the stage of feasibility studies. The requirements in this study applied to the network include a capacity of the class of NGN. As for access network in Poland it is a problem to get min 2 Mb to the recipient. Part of cable operators (TVK) take actions and modernize their networks by building fibre to the building. In Poland fixed operators are beyond a wider scale dialogue and do not lead such projects.

The new law on the development of telecommunications networks and services eliminate administrative barriers and promote investments in, inter alia, NGN. This act obliges local governments, entities performing tasks of general interest and these using public funds for construction and modernization of telecommunications infrastructure, owners, users or managers of property (including telecommunications), as well as National Treasury to provide access to telecommunications or technical infrastructure and enable to share it. The new legislation creates conditions for the development of competition in the market, in particular it fosters infrastructure-based competition, mainly due to lower costs of construction of telecommunications infrastructure and significantly increases the supply of infrastructure. With the new law, it is possible to unbundle resources of the infrastructure previously unavailable or inaccessible, such as energy, water and sewage infrastructure. This state of affairs can help overcoming many significant barriers in the construction of new generation networks.

Such sharing of infrastructure consists mainly of unbundling access to buildings and telecommunications lines installed in buildings and ducts located in the property or building, ensuring the feasibility of cable lines into the property, on or over it. Obligations to grant access are symmetrical, which means that they relate to all entities, which own or manage real estate and owners of cable ducts and telecommunication cables, which are located in these estates. New opportunities for network construction and use of infrastructure stems from the obligation to allow access and use of lighting poles and traction owned local government or the Treasury.

Equally important, the new legislation introduced, for the provision of telecommunications services, the institution of separate ownership of the infrastructure including fibre optic, cable channels and ducts, which facilitates the undertaking of joint investments and the

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

efficient sharing of telecommunications infrastructure, on the basis of common participation in the cost of its maintenance and management.

These legal conditions aim to ensure the openness of the network built and owned by local governments and entities carrying out tasks of general interest, and using public funds for construction and modernization of telecommunications infrastructure, as well as the efficient sharing of telecommunications infrastructure in places where its reproduction and usage face a large number of barriers and obstacles (buildings and real estates).

Another important action is related to the regulation of wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location (market 4). The most important elements of this regulation from the viewpoint of minimizing the barriers to the development of NGN is to encourage investments of the incumbent and to encourage such investments by alternative operators. The primary means of achieving this, is the access to passive infrastructure - sewers, dark fiber, as well as providing backhaul services. The incumbent will need to provide access to fiber-optic loops at the request of OA only when, it will fail to provide any of those forms of access to passive infrastructure. The market definition is wide enough to ensure that any solution for FTTx substitution to LLU in technology xDSL will be regulated allowing OA to use infrastructure of the incumbent in order to provide consumers with cutting-edge services. Prices for access to the network infrastructure of NGN / NGA of the incumbent are determined and based on actual costs incurred (Article 40 of the Polish Telecommunications Law), and not cost justified (based on a model of a hypothetical efficient operator), which will allow the incumbent to obtain a suitable return on investment, and therefore, it should provide a motivating incentive to invest in infrastructure. In addition, the price relationship between BSA and LLU services will be beneficial to LLU. However, if the regulation is supposed to bring desired results, the OA will have to show greater initiative in terms of their own investments than was the case so far, so that the burden of creation of a modern telecommunications infrastructure in Poland is based upon various entities operating in the telecommunications market.

Planned regulation of market 5 will be consistent with the measures taken for market 4.

Main focus of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

Portugal

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Portugal Telecom (PT), NGA services (3Play, with 100/200 Mbps) supported in a FTTH GPON

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

At the end of Q2, the total number of connected subscribers is [Confidential]

Homes passed by PT reached, at the end of 2009, [Confidential] homes, out of 5.602.413 homes in total in Portugal (although roughly 40% of those are 2nd houses).

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

PT - FTTH	TV (Ch.)	NET	Phone	Monthly fee (€)
<i>3p(tv+net+phone)</i>	<i>70-100</i>	<i>10Mb-100Mb</i>	<i>24h unlimited</i>	<i>40,99-99,90</i>
<i>2p (tv+net)</i>	<i>70-100</i>	<i>20Mb-100Mb</i>		<i>40,99-55,99</i>
<i>2p(net+phone)</i>		<i>30Mb-200Mb</i>	<i>24h unlimited</i>	<i>29,99-84,99</i>
<i>2p(tv+phone)</i>	<i>70-100</i>		<i>24h unlimited</i>	<i>30,90-35,5</i>
<i>1p (tv)</i>	<i>70</i>			<i>23,99</i>

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

There are no recent announcements from the incumbent. The 2009's objective of implementing a "nation-wide" FTTH network, passing 1.000.000 homes, has been already achieved by PT during 2010. The roll-out continues.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Providers of fixed broadband access services in operation: ADSL is provided by 15 operators, cable modem is provided by 7 operators and optical fibre (FTTH/B) by 12 alternative operators¹.

Fixed operators: Optimus (formerly Sonaecom) and Vodafone, both developing FTTH GPON networks.

Cable operators: ZON and Cabovisão, offering FTTH in greenfield areas and HFC-DOCSIS 3.0 (including the development of FTTLA, Fibre to the Last Amplifier) in the areas already covered by coax cable.

At the end of Q2, the total number of connected subscribers is [Confidential]:

Homes passed by Optimus and ZON reached, respectively [Confidential] homes in the main urban areas (out of 5.602.413 in total in Portugal) at the end of 2009.

¹ Of those, currently only 4 alternative operators are effectively developing NGA networks.

Optimus - FTTH	TV (Ch.)	NET	Phone	Monthly fee (€)
3p(tv+net+phone)	30-120	30Mb-100Mb	€0,05€/min - 24h unlimited - 24h national +16 MS unlimited	39,99-64,99
2p(net+phone)		30Mb-100Mb	24h unlimited – 24h national +16 MS unlimited	29,99-49,99
2p(tv+phone)	85-120		Nights (21h/9h) - 24h unlimited - 24h national +16 MS unlimited	29,99- 49,99
1p(tv)	60			23,99

Vodafone - FTTH	TV (Ch.)	NET	Phone	Monthly fee (€)
3p(tv+net+phone)	62-92	50Mb-300Mb	Nights (21h/9h) - 24h unlimited	39,90-93,90
2p(net+phone)		50Mb-300Mb	Nights (21h/9h)	22,99-69,99

ZON - FTTH	TV (Ch.)	NET	Phone	Monthly fee (€)
3p(tv+net+phone)	70-121	30Mb-1Gb	Nights (21h/9h) - 24h unlimited	44,36€ - 251,98€

Cabovisão FTTH	TV (Ch.)	NET	Phone	Monthly fee (€)
3p(tv+net+phone)	100	60Mb	24h unlimited	59,68

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The main fixed operators (including PT) have agreed with the Government in 2009 to roll out fibre networks to pass 1.5 million homes and businesses, which corresponds to around 1/3 of total premises (including secondary premises, e.g., vacation/weekend houses) and around 50% of principal homes passed. This roll-out is ongoing (see above)².

Recently, Vodafone and Cabovisão launched their 3P offers based on fibre (FTTH). In a statement, Vodafone announced that its FTTH offer is already available in some areas of the districts of Lisbon and Setúbal, and is expected to meet soon, 200.000 households in the metropolitan areas of Lisbon and Porto. Vodafone also informed that it intends to expand the fibre optic network through partnerships with other operators³.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).

² In February 2008, Sonaecom (now Optimus) has announced a €240 million investment focusing on the deployment of FTTH in the next three years. The objective is to reach 1 million homes passed (roughly 25% of Portugal's population of around 10.6 million). The operator, which plans to spread the capital expenditure equally across the three years of investment, believes it can reach breakeven from its FTTH operations within five years and cover the cost of its investment in nine. ZON aimed at deploying FTTH infrastructure by 2010. It announced investment outlays of €140 - 180 million for 2008-2010 regarding DOCSIS 3.0 covering 3.1 million houses.

³ In December 2009, Optimus reached an agreement with Vodafone, regarding their mutual cooperation in the construction, management, maintenance and operation of a NGA aiming obtaining mutual synergies and efficiency gains. Its implementation will involve a joint venture, owned by both companies on a 50-50 basis. It is the intention of both operators to open this NGA to all parties which are interested in having access thereto and compete in the market (the terms and conditions to be agreed upon).

- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Available in a mandated basis.*
- b) *Portugal has an active reference offer for duct access and associated infrastructure (poles, man-holes, etc.), mandatory for PT and not based initially on SMP, rather a direct obligation for PT to provide this access by the Portuguese National Law. However, having analysed the Market 4 in 2009, ANACOM concluded that new obligations should be imposed to the SMP party, namely duct access and the publication of the duct reference offer (ORAC).*
- c) *The ORAC rules must result in efficient and effective procedures. In particular, they include a procedures handbook and technical specifications (namely for cable installation, intervention and removal), which need to be followed by beneficiary entities.*

- d) *Market 4.*
- e) *An effective reference offer is in force since July 2006⁴.*
- *After the Market 4 analysis in 2009, ANACOM has imposed to PT, the SMP operator, several obligations, namely “Access to and use of specific resources networks” (access to ducts), non-discrimination and “Transparency in the publication of information, including reference offers” (publication of the ORAC, clear identification of the amendments made to the offer, prior notice of 30 days of changes in supply, provision and publication of indicators and performance levels in respect of quality of service in wholesaler offers and provision to operators of detailed and timely information on developments in the access network).*
 - *The ORAC is currently used by 16 undertakings. Since the introduction of that offer more than 4,800 information requests and more than 10,000 viability requests were made (until 2009).*
- f) *ANACOM's assessment of ducts and associated infra-structure prices was based on cost estimations, derived from the PTC's Cost Accounting System (a top-down, historic costs, FDC and ABC-type model). Costs for new services, which were not available at the cost accounting system, were estimated based on current costs, taking into consideration equipment and manpower costs and, when applicable, mark-ups for operating, maintenance and common costs were added⁵.*
- g) *A price list is publicly available, and ducts' (und subducts') price is quoted in €/m/cm² and month. In August 2008, ANACOM defined the price for access to the duct database⁶.*
- h) *By determination of 17 November 2009, ANACOM has approved a draft decision⁷ on the amendments to the reference ducts access offer, imposing several changes: improvements on the access (and QoS) to the “duct database” (on an Extranet), access to poles and other PT infra-structures, an IT system for handling requests and more strict QoS parameters and compensations to be paid to operators (in case of non compliance with the SLA). The final decision will be issued very soon.*

⁴ See the current version of this offer (in Portuguese) in <http://ptwholesale.telecom.pt/GSW/PT/Canais/ProdutosServicos/OfertasReferencia/ORAC/ORAC.htm>.

⁵ A detailed explanation of ANACOM's approach can be found in the report of the prior hearing granted to interested parties of 26th of May of 2006 in http://www.anacom.pt/streaming/Prior_hearing_report_26june2006.pdf?categoryId=38118&contentId=374927&field=ATTACHED_FILE.

⁶ Anacom has required PT to establish a suitable database (Extranet). This database is to contain location and space information. Access to this database resource is operational since January 2008.

⁷ See <http://www.anacom.pt/render.jsp?contentId=994322&languageId=1>.

2.2 Dark fibre

- a) *Available in a voluntary basis, but on a case-by-case basis (no national offer).*
- b) *No information available.*
- c) *Fibre is included in the Market 4 (2009).*
- d) *There are currently no obligations imposed.*
- e) *N/A.*
- f) *N/A.*
- g) *Having analysed the Market 4 in 2009, ANACOM concluded that new obligations should be imposed to the SMP party, namely within the “Access to and use of specific resources networks” obligation – Possibility of imposing access to dark fibre where access to ducts is not possible and Possibility of imposing obligations on access to fibre optic, following the evolution to next generation access networks, by way of specific decision. No decision has been made yet.*

However, in a recent RUO determination of February 2010, ANACOM imposed that where there are firm intentions on the part of the operators to co-locate in a new local exchange, PT shall take that interest into full account, including in the design of any new ducts, guaranteeing at all times the provision of dark fibre in the event that there is no space in the ducts.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):

- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Mandated through symmetrical regulation for fibre (SMP based access for copper).*
- b) *Access to the horizontal wiring infrastructure within buildings (access to “horizontal” infrastructure/cabling outside the buildings is out of the scope of this “product”).*
- Regarding fibre in-house wiring, new rules have been laid down in 2009. In this case, the first “building operator” to reach a (old) building has to install, within the vertical wiring infrastructure, at least two fibres per home /apartment and associated infrastructure.*
- c) *N/A.*
- d) *Symmetrical obligations – access and non-discrimination – are effectively in place regarding fibre in-house wiring since 2009.*
- e) *N/A.*
- f) *There are no regulated prices, the principle being full cost sharing between the operators in each building.*
- g) *N/A.*

3.2 Concentration point/ manhole unbundling

a)–g) N/A.

3.3 Cabinet unbundling

- a) *Available in a mandated basis (access to copper sub-loop).*
- b) *Sub-loop Unbundling (SLU) is possible and it is explicitly foreseen in PT's reference unbundling offer (RUO), although there are no unbundled sub-loops to date. It is subject to the same generic rules as LLU, but there may be a lack of detail as how SLU would apply in practice, mainly concerning prices and co-location conditions. I.e., details concerning co-location in street cabinets have not been determined (e.g. regarding space availability inside or close to the street cabinet, etc.).*
- c) *SLU is "included" in Market 4 (previously in Market 11).*
- d) *Having analysed the Market 11 (in 2005), ANACOM imposed to PT the following obligations: "Access to and use of specific resources networks" (e.g. grant access to local loops and sub-loops and associated resources); "Transparency in the publication of information, including reference offers" (e.g. publication of the RUO - ORALL); "Non-discrimination in the provision of access and interconnection"; "Separation of accounts for specific activities"; "Price control and cost accounting" (e.g. set cost-oriented prices); and "Financial Reporting".*

In 2005, it was imposed to PT, the SMP operator, the publication of the reference offer for Local Loop Unbundling (including SLU). However, ORALL (the RUO) is available to alternative operators since 2001.

- e) *To date, prices of LLU and associated resources have been regulated according to the principle of cost orientation of prices. ANACOM has based its estimates of costs on: (a) the analytical accounting system of PTC, audited annually; (b) the budgeted costs and the current costs of resources consumed and activities needed for the provision of services; and also with reference to practices in the European Union. In assessing prices consideration is also given to the criteria of economic efficiency.*
- f) *There are no unbundled sub-loops to date and no pricing is defined.*
- g) *ANACOM considered, in its analysis of Market 4, that the maintenance of the obligation to grant access to local loops and sub-loops and associated resources, including the "signal*

delivery service” – a short (fibre) backhaul from the co-located equipment to a close operator’s node – is justified and proportionate.

As discussed within the NGA consultation document⁸, in a FTTCab scenario it will be necessary to guarantee that the operators have an appropriate backhaul product for the connection to their network, whether through leased circuits, dark fibre or a specific backhaul product yet to be created, naturally paying prices that ensure a return on the investment – and on the associated risk – made in the network supporting these offers.

3.4 ODF unbundling

Currently, there is no mandated fibre unbundling in Portugal.

More specific questions regarding fibre unbundling mainly resulting from the Commission’s Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

In Market 4, and regarding fibre (FTTH/B), under the “Access to and use of specific resources networks” obligation to the SMP operator, it is outlined the:

- *Possibility of imposing access to dark fibre where access to ducts is not possible; and*
- *Possibility of imposing obligations on access to fibre optic, following the evolution to next generation access networks, by way of specific decision⁹.*

These obligations were not detailed and have not been put in place, i.e., no regulated access to the fibre of the SMP operator is currently and effectively in place.

- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

N/A.

⁸ See the Report in <http://www.anacom.pt/download.jsp?contentId=598666&fileId=908841&channel=graphic>.

⁹ Via specific decision taken in the context of a market consultation process.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

N/A.

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

N/A.

3.5 Enhanced Bitstream¹⁰

- Available on a mandated basis for copper/DSL. Currently, there is no mandated bitstream over fibre in Portugal.*
- Bitstream is carried at the PT's ATM/Ethernet transport network – with access at both National and Regional levels, but not at the local/MDF level.*

The traffic aggregation can be done both at level 3 (IP) and level 2 (ATM or Ethernet)¹¹.

Alternative operators may be co-located in PT's exchanges/MDF (or access through leased lines or own infra-structure).

- Bitstream is included in Market 5 (previously in Market 12).*
- Having analysed the Market 5 (in 2009), ANACOM concluded that no company has SMP in specific geographical areas (i.e., competitive areas – a new geographical market) and, therefore, that all obligations imposed on PT (in 2005) in those specific areas were removed*

In the other areas (non competitive areas – also a new geographical market), all the obligations were maintained: "Access to and use of specific resources" (e.g. access at different points, regional and national); "Transparency in the publication of information" (e.g. publication of the reference offer for broadband access, including SLAs and compensation for non-compliance); "Non-discrimination in the provision of access and

¹⁰ See ERG (09) 17, Ch. D.1, in particular p. 12.

¹¹ Currently on the basis of 28 regional Pol's and 2 national ones, where an operator may interconnect and collect the traffic.

interconnection”; “Separation of accounts for specific activities”; “Price control and cost accounting” (e.g. set cost oriented prices and retail-minus) and “Financial Reporting”.

- e) *To date, prices of bitstream and associated resources have been regulated according to the principle of cost orientation of prices and retail-minus. As with LLU, ANACOM has based its estimates of costs on the analytical accounting system of PTC and the budgeted costs and the current costs of resources consumed and activities needed for the provision of services; and also with reference to practices in the European Union.*
- f) *The prices are cost oriented (and retail minus for specific offers). No upfront payments or volume discounts exists.*
- g) *In the “NGA consultation”, ANACOM concluded that in non-competitive areas it is not likely that access to the local sub-loops will be a viable solution, as neither was access to the local loop. In these cases the most appropriate and priority solution appears to be virtual access to the network, i.e., advanced bitstream.*

Regarding the “technical evolution” (of the SMP’s network), ANACOM noted in the same document that “a possible first step towards the adaptation and preparation of [the bitstream offer] with respect to the evolution seen in networks and services over the short and medium term may be:

- *Extension and flexibility of Ethernet aggregation with respect to the entire offer, i.e., an extension of coverage with Ethernet technology to all exchange areas, with particular relevance for those areas not currently covered by the LLU beneficiary operators and whose coverage in the future by NGA will probably see (most) delay.*
- *Addition of flexibility to the offer of local access and logical Ethernet connections, in particular in terms of establishing classes of service/VLAN and QoS mechanisms, or others.”*

Below, some additional questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

See b) above.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

Yes, if the traffic aggregation is done at Level 2, i.e., using ATM or Ethernet aggregation. For example, using different VLANs with different QoS. Guaranteed bandwidth is also available in the cases of using ATM (CBR).

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

No.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

Yes. See d) above. *Bitstream access is not mandatory in competitive area.*

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

The migration is already occurring and several thousands of costumers (from the incumbent and also from alternative operators) have migrated to triple-play services based on FTTH (and DOCSIS 3.0) without problems so far.

In any case, transparency and regulatory certainty should be ensured, as well as continuity of the LLU based models over the short term (for as long as there is dominance in the access market). Otherwise, the operators could see their previous expectations disappointed and the evolution to NGA and actual competition in the market may be undermined.

More specifically, ANACOM will proceed to the definition of procedures for the migration of current wholesale products to any future NGA products, such as the unbundling of the local sub-loop/fibre or of the bitstream type. It will also address the definition of the process and effective migration of the end-customers of the operators which choose or which have to migrate to a new wholesale product or location (e.g. in case of the decommissioning of an MDF), seeking the minimization of the impact of network alterations on active services, i.e., with minimal disruption to retail services.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ¹²

The measures in this context are related to the publication, in a timely manner, of appropriate information on the evolution to NGA (including MDF decommissioning) and as well as ensuring the maintenance of LLU access for a reasonable period, which have been set out in the above mentioned RUO's determination of February 2010:

"D 27. In the case of relocation of loops for reasons attributable to PTC, and for the AP [MDF]¹³ where there are operators co-located, PTC shall give minimum prior notice of:

- *12 months where the number of active loops to be relocated is less than 1/3 of the total active loops in the MDF;*
- *36 months where the number of active loops to be relocated is more than 1/3 and less than 2/3 of the total number of active loops in this AP;*
- *60 months where the number of active loops to be relocated exceeds 2/3 of the total number of active loops in this AP (including in the event that the AP itself is decommissioned, and being reduced to 36 months, if an equivalent access can be guaranteed."*

Moreover, it was imposed that "D 30. PTC shall agree with the beneficiaries of the RUO (...) the general principles to be followed in planning and the technical conditions in case of any need to relocate equipment (already) co-located in exchanges and any migration of accesses/customers, subject to the intervention of this Authority in the event that no agreement between the parties can be reached. The specific conditions to be deployed in a given AP should follow the general principles and technical conditions agreed and established no later than 4 months prior to the date of equipment relocation"

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.¹⁴

In the same RUO decision, it was imposed that

¹² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

¹³ AP is equivalent to a MDF (in a local or remote exchange).

¹⁴ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

“D 31. Loops unbundled prior to relocation should not be relocated without checking for the possibility of alternative access (i.e. the express willingness of the end-user should prevail), unless there are severe impediments of a technical nature or in terms of network optimisation, which inhibit the unbundled loops from being maintained in the original AP and where grounds are provided, on a case by case basis, to the beneficiary operator and to ICP-ANACOM which may determine on such situations”.

That is, an equivalent access should be available, according to the end users’ request, unless an alternative is not feasible (or the loop cannot be maintained).

In its report “NGA – Implementation Issues and Best Practice”¹⁵ BEREC suggested that *“in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.*

- Explain if such provisions are applied and what they look like.

As mentioned above, the publication, in a timely manner, of appropriate information on the evolution to NGA (including MDF decommissioning) and as well as ensuring the maintenance of LLU access for a reasonable period, has been set out by ANACOM.

For example, the specific conditions to be deployed in a given local geographical area should follow the general principles and technical conditions agreed by PT and the RUO beneficiaries and established no later than 4 months prior to the date of equipment relocation.

The window of announcement of loop relocation or MDF decommissioning should not be smaller than 12 months (and up to 60 months in the case of decommissioning of more than 2/3 of the MDF/loops) – see above.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

N/A for NGA. However, regarding LLU, there were some practical problems in 2007-2009 over the remotization/relocation of loops by PT in some MDFs (i.e. decommissioning of some areas covered by some MDFs and relocation in remote MDFs), precluding the unbundling of local loops in those areas (previously covered). Rules of transparency and non-discrimination were enforced in this case, resulting in the above mentioned RUO determination of February 2010.

¹⁵ BoR (10) 08; Chapter E.2, p. 9.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**¹⁶)?

Several operators have made significant investments in co-installation and LLU unbundling, whereby it is necessary to consider appropriate periods and models for the transition, so that such investments are not put at risk and also so that the levels of competition which have already been achieved are not jeopardised, while account must also be taken of the risk that this transition may result in a (re)monopolisation in the electronic communications markets. In this sense, there is a need to define mechanisms which provide for non-disruptive migration to NGA, involving the maintenance of the LLU offer in the short to medium term and improving transparency and non-discrimination. However, there are no measures involving compensations to LLU operators.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

No specific provisions related to the cost of migration were defined.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts¹⁷. In case such a database exists already in your country, explain:

Assuming that the NGA Recommendation refers to the SMP infrastructure, our answer refers to the PT's database containing information on its ducts and associated infrastructure.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?

The database was established and is operated by PT.

ANACOM is working on the implementation of a national infrastructure database containing also information of other entities (telcos and non-telcos) – see section 6.

In what follows, the emphasis will be on the incumbent duct's database.

¹⁶ See BoR (10) 08, Ch. E.2.

¹⁷ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- **Which data** are collected in this database?

Location (geographically represented) and (space) availability of ducts and associated infrastructure.

- Does the information **collected** cover just telcos or also non-telcos?

The information concerns only PT infrastructure. See below.

- How is the information **being** provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.

The database and the information therein were imposed by ANACOM to PT, in parallel with the imposition of the ORAC (duct reference offer). The obligation to build a database on ducts for access by the beneficiaries of the ORAC results from the decision of ANACOM of July 2004 which set out the minimum requisites of that offer.

- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?

Only the operators beneficiaries of the ORAC can access the database (and ANACOM).

- Are there **different levels** of accessible information e.g. depending on the type of the entity requesting access to the database?

No. The information is accessible in real time by any beneficiary of the ORAC. There is, however, a geographical segmentation, i.e., there are different prices for the access to the information in certain areas (e.g., the price is higher for the main metropolitan areas of Lisbon and Porto).

- How are **business secrets** dealt with?

N/A.

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)

Indeed. The database and the information therein were and are fundamental for the effective and efficient development of alternative optical infrastructures in Portugal, although not particularly in “white areas” in the case of NGA, as alternative operators have only been developing its FTTH networks in the “black areas” of Lisbon and Porto. For broadband (supported on LLU), however, the alternative operators have used effectively

PT's duct offer also for developing their fibre transport networks in "grey areas" (i.e., beyond the "black areas").

Regarding the problems in establishing the database, PT was always critical of this obligation, having fought it in the national courts. Since the beginning, PT have been consistently delaying the availability of the database and, more so, of the information on space availability in ducts, information of paramount importance to the alternative operators.

But currently, PTC has a more open view on the database issue.

- What are the set-up and running costs of the database, and who pays for them? Were the costs **shared** out based on agreements or formal obligations?

In addition to the principle of cost orientation of prices, there are other principles that should be employed in the analysis of the cost of the database and definition of its price. A key principle is that only those incremental costs arising as a result of the obligation imposed on PT to develop a database shall be considered relevant. That is, any costs that PT has incurred or would incur, in the absence of the imposition of the obligation concerned, should not, a priori, be accepted for the purpose of setting the price of the database access service¹⁸.

Regarding information on "all" infrastructure from other (non SMP) operators and entities (beyond the SMP operator), following the Decree-Law nr. 123 of 2009 (see Chapter 6 below), a database/centralised information system (CIS) will be established by ANACOM, containing data on all civil infrastructures held by public bodies, utilities and by electronic communications operators¹⁹ – ducts and associated infrastructure (poles, man-holes, etc.).

Through the CIS it will be possible to access comprehensive and geo-referenced information on all infrastructures, (space) availability, information on procedures and conditions for the allocation of rights of way and information on advertisements of construction of new ducts and other suitable infrastructures.

The CIS is based on the principles of information sharing and reciprocity, and it may be accessed by all bodies that ensure fulfilment of related information obligations. Hence, the CIS is of fundamental importance for an open and effective access, by all electronic

18 Therefore no regard should be given to costs connected to:
 (a) local surveys needed for the provision of information on ducts;
 (b) updating records; or
 (c) the acquisition of cartographic information.

19 Pending the actual implementation of the CIS, the NRA shall adapt the arrangements for provision of information on access to ducts, masts, other facilities and locations by the SMP operator (also the concessionary of the "telecommunications public service"), so as to achieve coordination with the CIS.

communications companies, to civil infrastructures, whose usefulness goes beyond the electronic communications sector, as it may be a great help in the planning of other networks and in the scope of territorial planning.

The use of harmonized procedures (e.g. for requesting and granting access) is another relevant aspect, particularly as regards the relationship between operators and local authorities, an issue of indisputable importance to avoid uncertainties and obstacles in the infrastructures' set up²⁰.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

The Portuguese Government published in 2009 new legislation on access to passive infrastructure either at the horizontal and vertical levels, that is, access to all ducts and associated infrastructure (from all entities, namely utilities) and also imposing symmetric regulation on the installation and access to in-house wiring.

The Decree-Law nr. 123/2009, of 21 May^{21,22}, sets out the general principles, namely the principles of competition, open access, non-discrimination, effectiveness and transparency, concerning the promotion of the construction, set up and access to infrastructures suitable for the accommodation of electronic communications networks – in a technological neutral approach – in property owned by private entities and public bodies, comprising not only the State, Autonomous Regions and local authorities, bodies under their authority or supervision, performing administrative tasks, regardless of their entrepreneurial nature, but also public companies, concessionaries and other bodies holding infrastructures that integrate the public domain of the State, Autonomous Regions and local authorities.

Provision is thus made for an open and non-discriminatory access to ducts, masts and other facilities owned by any operator (excluding the SMP operator – PT Comunicações,

²⁰ Thus, this legislation constitutes an attempt to rationalise the intervention in public spaces, reducing situations involving street works and enabling a reduction of expenses with the construction of suitable infrastructures suitable, without placing an undue burden on bodies promoting the construction.

²¹ See <http://www.anacom.pt/render.jsp?contentId=976754>.

²² Modified by the Decree Law nr. 258/2009, of 25 September:
<http://www.anacom.pt/render.jsp?contentId=993122&languageId=1>.

S.A. -, regulated by ANACOM and according to the Law nr. 5/2004, "Telecom Law"²³) and bodies that above mentioned, even though operating in other sectors, hold duct networks.

That Decree-Law (123/2009) establishes the regime that applies to infrastructures for telecommunications in buildings (ITED). The compulsory set up of fibre optics in the scope of the ITED has been laid down, in addition to that of copper and coaxial cable, which has been compulsory so far²⁴. Rules have been laid down not only to promote the set up of fibre optics in new buildings but also to avoid monopolization of ITED infrastructures by the first operator in buildings already built by the time the new regime went into force. In this case, the first operator builds the optical infrastructure, including 2 fibres per apartment (in buildings), allowing an "open access" to a second operator reaching the building.

Decree-Law 123/2009 also establishes, for the first time, the legal regime that applies to telecommunications infrastructures in housing developments, urban settlements and concentrations of buildings.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.²⁵ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

In Portugal, the Government:

- *determined in a Resolution of July 2008 that the investment on NGAs should be deemed as one of the strategic priorities for the Country as far as the electronic communications sector is concerned. The specific guidelines for NGAs includes the implementation of an effective and non-discriminatory access to ducts and other passive (civil) infrastructures, regardless of the respective owner, and the reduction of vertical barriers to the roll out of fibre optics in buildings, also preventing the first operator from monopolizing the access;*
- *following this Resolution, published new legislation in 2009;*

²³ See Law nr. 5/2004, of 10th of February (<http://www.anacom.pt/render.jsp?contentId=975162>).

²⁴ involving in this context an evolution as regards the framework defined by previous Decree-Law nr. 59/2000. See more information in ANACOM's website: <http://www.anacom.pt/render.jsp?contentId=957230>.

²⁵ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

- *in July 2009, launched a first of a series of Public Tenders in order to create several NGAs in broad rural areas with the aim of promoting social and territorial cohesion;*
 - *in February 2010, announced the awards for the installation, management, operation and maintenance of NGAs in 3 broad regional areas of mainland Portugal, with private and public investment, including State Aid (State and EU funding).*
- Scope and **envisaged target** of the measure;

The Government's strategic guidelines for the development and investment on next generation networks comprise: i) inducing a confidence attitude regarding investment and national development²⁶; ii) promoting a competitive electronic communications market and to ensure the removal of barriers to market access by the operators²⁷; and iii) ensuring access to technologically advanced products and services²⁸. This Resolution includes the Government's specific guidelines for NGAs, such as the implementation of an effective and non-discriminatory access to ducts and other passive (civil) infrastructures, regardless of the respective owner²⁹, and the adoption of solutions aimed at eliminating or reducing vertical barriers to the roll out of fibre optics, so as to prevent the first operator from monopolizing the access to buildings. Following this Resolution, the Portuguese Government published new legislation – see Chapter 6 above.

26 Thereby promoting a model based on competition of infrastructure rather than of services, which, according with the Portuguese Government, does not offer the same benefits to the economy and to consumers. Within this scope, clear and transparent regulatory principles needed to be defined, for operators to make informed investment decisions, while not hindering efficient and timely investment on next generation networks.

27 The Government takes the responsibility to evaluate the measures that can be adopted in order to foster the development of next generation networks, namely in geographical areas with low broadband penetration, as well as to modernize current network infrastructure. In this context, access by all operators to underground infrastructure is deemed important, considering that the costs for building ducts are a considerable part of investment on fibre optics. A central concern within this scope is also to promote the elimination of vertical barriers that hinder the roll out in buildings of optical solutions in connection with the next generation networks.

28 It is important to ensure the existence of an effective demand regarding the offer of products and services over next generation networks. The Government is available to analyse and implement, together with all entities active on the sector, the measures that seem more adequate to promote the access by all consumers to technologically innovative products and services, under equal terms, always taking into account citizens with special needs, intending to promote the mass adoption of high speed Internet offerings and the development of advanced solutions enabling the connection to next generation networks, namely of all secondary education schools, hospitals and health centres in the Country.

29 Including the provision for technical standards on infrastructures for telecommunications in housing developments, urban settlements and concentrations of buildings (ITUR), the civil infrastructure (e.g. ducts) connected to the building

- **Current achievements**, milestones reached.

In July 2009, the Portuguese Government launched a first of a series of Public Tenders in order to create several NGAs in broad rural areas with the aim of promoting social and territorial cohesion³⁰. At the 6th of February 2010, the Minister for Communications announced the award of the tenders for the installation, management, operation and maintenance of NGAs in the Centre, North and Alentejo/Algarve zones of mainland Portugal, with private and public investment, including State aid (State and EU funding)³¹. (State aid) applications were notified to the European Commission in advance, under existing Community funding programs and only after the full completion of this process it will be possible to conclude whether we are or not, before a State aid.

³⁰ See, for instance, <http://www.anacom.pt/render.jsp?categoryId=332665>.

³¹ This is an investment in total of 156.5 million euros, which will provide high speed access (at least 40 Mbps and up to 100 Mbps) electronic communications networks, covering more than one million people (more than 10% of all population living in almost half of the total municipalities in the Portuguese territory – in more remote and under served areas) and is expected to create 20,000 jobs.

Romania

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Romtelecom – the strategy for developing its NGA network is based initially on FTTC/FTTB+VDSL deployment and in later stages on FTTH based on GPON technology. So far, FTTH take-up is very limited.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

As of June 30 2010, out of the total number of NGA lines in Romania, comprising of FTTC/FTTN(VDSL services), FTTB/UTP/FTP, FTTH and DOCSIS 3.0, the incumbent provides broadband services on 1.87%.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Retail services include both PSTN (fixed and mobile) and VoIP(fixed) telephony services, broadband services (ADSL, VDSL, FTTH, mobile), TV (IPTV). The tariff for the 30 Mbps internet access service “Clicknet Power” is 7.32 EUR (including VAT), while the triple play offer (broadband, voice and IPTV) starts from 20.21 EUR (including VAT).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The strategy for developing its NGA network is based initially on FTTC/FTTB(VDSL) deployment and in later stages on FTTH based on GPON technology. No recent announcements regarding specific roll-out plans for NGA network.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

RCS&RDS is the leading retail broadband access provider in Romania. Started originally as a cable operator, migrated most of its cable access network to FTTB/UTP/FTP and FTTH network. UPC is a cable operator which recently started to invest in DOCSIS 3.0. The RCS&RDS standalone 100 Mbps internet access "Fiberlink" costs 9.17 EUR (including VAT), while the 5-play offer from the same operator (digital cable TV, fixed internet access, fixed telephony, mobile telephony and mobile internet access) starts from 16.22 EUR (including VAT).

As of June 30 2010, out of the total number of NGA lines in Romania, comprising of FTTC/FTTN(VDSL services), FTTB/UTP/FTP, FTTH and DOCSIS 3.0, the competitors provide broadband services on 98.17%.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

No recent announcements regarding roll-out plans for NGA networks.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).

- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

According to the incumbent, duct access may be available shortly, on voluntary basis; commercial standard offer may also be available in the same time.

2.2 Dark fibre

Dark fibre is not available (voluntary or mandated).

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

Access to in-house wiring or equivalent is not available (voluntary or mandated).

3.2 Concentration point/ manhole unbundling

Concentration point/ manhole unbundling is not available.

3.3 Cabinet unbundling

- a) *Cabinet unbundling is available on a mandated basis. The take-up of the service is minimum.*
- b) *Unbundling at the cabinet, access to the copper loop, is done at the physical layer.*
- c) *Cabinet unbundling is included in market 4 - wholesale (physical) network infrastructure access.*
- d) *Current regulatory obligations include:*
 - *transparency obligation including requirements to provide information on the planned NGA network topology;*
 - *publication of reference offer;*
 - *non-discrimination obligations;*
 - *access obligations, including collocation and backhaul products.*
- e) *The tariffs for cabinet unbundling are set based on LRIC model.*
- f) *When establishing the LLU tariffs, including the cabinet unbundling scenario, the SMP operator must ensure that the margin between the retail and the wholesale tariffs is sufficient enough to allow a hypothetical operator to enter the market.*

3.4 ODF unbundling

ODF unbundling is not available (voluntary or mandated).

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

All remedies according to Art. 9-13 AD are in place with regard to copper local loop in the FTTN(FTTC) scenario.

- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

ANCOM didn't impose unbundled access to the fibre loop.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

ANCOM didn't impose unbundled access to the fibre loop.

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

ANCOM didn't impose unbundled access to the fibre loop.

3.5 Enhanced Bitstream¹

Bitstream is not regulated in Romania (no SMP on market 5).

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

ANCOM just finalized the analysis of market 4 adopting the decision regarding the obligations imposed on the designated SMP operator (the incumbent). When drafting and adopting the decision, ANCOM took into account the latest development of the access network thus adapting the obligations imposed to the migration to the NGA.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

Yes. The decommissioning of a MDF will be notified by publication in RUO two years in advance.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

Taking into account the limited take-up of the LLU services and the low probability of decommissioning MDF within the timeframe of the current market analysis, the 2 years term provides an acceptable predictability to the operators interested in LLU.

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “*in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market*”.

- Explain if such provisions are applied and what they look like.

The incumbent has the obligation to publish in ORA the plans for upgrading the access network at least 12 months before the upgrade. The incumbent has the obligation to

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

publish details with respect to network elements affected and coverage areas of the network elements to be installed.

For the street cabinets (ONUs) included in the plans for upgrading, the competitor may request the installation of a larger street cabinet by sending a request to the incumbent at least 11 months before the estimated date for installation of the cabinet.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

Due to limited take-up of LLU, the practical experience with the provisions regarding the publication of upgrade plans is limited. The obligation to install on request a larger street cabinet is in force since 1st of October 2010.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

No.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

No.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

So far, a database containing information regarding ducts was not established. However, the creation of a database regarding access to public property is provisioned in a draft infrastructure law.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Currently, no symmetrical regulation based on national legislation.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

The Ministry has initiated a State aid scheme for financing electronic communications networks for broadband in rural areas of Romania. The project is based on the National

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Strategy for Broadband. The details of the project are about to be set by the Ministry with the cooperation of several institutions, ANCOM included.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

Slovak Republic

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Slovak Telekom a.s.: technology applied – FTTH GPON, FTTB

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

20 994 connected / NETWORK COVERAGE – ST FTTH as of 31.05.2010 – 260 279

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Slovak Telekom: product name – Optik 2; Bandwidth – 20/1 Mbps; Price – 17, 95 €

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

N/A.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Orange SK

42 738 connected / 301 940 coverage FTTH GPON

Product name – Štart; Bandwidth – 20/2, Price – 19,90 €

Antik Telecom

27 864 / 70000 FTTB

Product name – Štandard; 64/64; Price – 17,92 €

SWAN

13294 / 61850 FTTB, FTTH

Product name – Klasik; 20/1; Price – 14, 90 €

Slovanet

10296 / 44713 FTTB, FTTN

Product name – Rýchlejší internet Maxi; 12 / 0,5; Price 25€

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Total investment in NGA network roll-out = 200 mil. €

NGA Roll-out plans in 5 years = 15 mil. €

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)

- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

No NGA wholesale products.

2.2 Dark fibre

No NGA wholesale products.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

No NGA wholesale access products available.

3.2 Concentration point/ manhole unbundling

No NGA wholesale access products available.

3.3 Cabinet unbundling

No NGA wholesale access products available.

3.4 ODF unbundling

No NGA wholesale access products available.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

No NGA wholesale products.

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

No migration path envisaged.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²
- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³
- In its report "NGA – Implementation Issues and Best Practice"⁴ BEREC suggested that "*in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market*".

² BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

- Explain if such provisions are applied and what they look like.
- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:
 - **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
 - **Which data** are collected in this database?
 - Does the information collected cover just telcos or also non-telcos?
 - How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
 - What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
 - Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
 - How are **business secrets** dealt with?

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
 - Scope and envisaged **target** of the measure;
 - Current **achievements**, milestones reached.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs’ strategies aiming at the promotion of next generation broadband.

Slovenia

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Telekom Slovenije (the incumbent) is/has been rolling out its fibre network in Slovenia using FTTH P2P network topology.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

Combined FTTH penetration in Slovenia is 11,1% per households and FTTH connections represent 14,8% of all broadband connections. Telekom Slovenije has a 46,6% FTTH market share, whereas if comparing only active FTTH connections its market share is 38,4%.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Telekom Slovenije offers triple play services (including VOD) over fibre and broadband speeds in the range from 20/20 Mbit/s up to 1/1Gbit/s with varied prices in relation to bandwidth (from 22 EUR/month for 20/20 Mbit/s to 140 EUR/month for 100/100 Mbit/s).

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The incumbent has not announced any significant additional NGA rollout plans at this time.

1.2 Competitors (other telcos, cable)

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

The alternative operator T-2 is/has been rolling out its fibre network in Slovenia using FTTH P2P network topology. Combined FTTH penetration in Slovenia is 11,1% per households and FTTH connections represent 14,8% of all broadband connections. T-2 has a 53,4% FTTH market share, whereas if comparing only active FTTH connections its market share is 61,6%. T-2 offers triple play services (including VOD) over fibre and broadband speeds in the range from 10/10 Mbit/s up to 1/1Gbit/s with varied prices in relation to bandwidth (from 19 EUR/month for 10/10 Mbit/s to 49 EUR/month for 100/100 Mbit/s and 1000 EUR/month for 1/1 Gbit/s).

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

The alternative operators have not announced any significant additional NGA rollout plans at this time.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

-

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Access to ducts to be available on a mandated basis due to market analysis notified in November 2010 (final measure expected early 2011). This will only be mandatory for the SMP operator Telekom Slovenije.*
- b) *Access to ducts for the needs of operators for construction of their own network and access to the sub-loop.*
- c) *Included in market 4.*
- d) *Obligations will be imposed with the final measure (expected early 2011):*
 - *Access obligations in relation to ducts (see b above),*

- *Transparency in relation to network topology and duct availability,*
- *Reference offer will have to contain also conditions for duct access,*
- *Non discrimination obligations in relation to duct access (availability of information, first come first serve principle...).*

e) *LRIC.*

f) *LRIC based prices.*

2.2 Dark fibre

a) *Access to dark fibre to be available on a mandated basis due to market analysis notified in November 2010 (final measure expected early 2011).*

b) *Access to dark fibre where Telekom Slovenije replaces copper with fibre loops on individual locations of MDF where one or more AOs is present in the co-location, or where ducts are not available.*

c) *Included in market 4.*

d) *Obligations will be imposed with the final measure (expected early 2011):*

- *Access obligations in relation to dark fibre (see b above),*
- *Transparency in relation to dark fibre availability,*
- *Reference offer will have to contain also conditions for access to dark fibre,*
- *Non discrimination obligations in relation to access to dark fibre (availability of information, first come first serve principle...).*

e) *LRIC.*

f) *LRIC based prices.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Access to in-house wiring to be available on a mandated basis due to market analysis notified in November 2010 (final measure expected early 2011).*
- b) *Access to in-house wiring to be mandated when it is owned by the SMP operator (Telekom Slovenije) and in accordance with the technical possibilities. This remedy will be related primarily to the existing in-house wiring, as the shared use of in-house wiring in the case of new buildings are already regulated by national electronic communication Act (ZEKom). In case of existing in-house wiring Telekom Slovenije will be obliged to enable access at an already constructed distribution point.*
- c) *Included in market 4.*

- d) –
- e) *LRIC.*
- f) *LRIC based prices.*

3.2 Concentration point/ manhole unbundling

- a) *Access to manholes to be available on a mandated basis due to market analysis notified in November 2010 (final measure expected early 2011). This will only be mandatory for the SMP operator Telekom Slovenije.*
- b) *Access to manholes for the needs of operators for construction of their own network and access to the sub-loop.*
- c) *Included in market 4*
- d) *Obligations will be imposed with the final measure (expected early 2011):*
 - *Access obligations in relation to manholes (see b above),*
 - *Transparency in relation to network topology and manhole availability,*
 - *Reference offer will have to contain also conditions for manhole access,*
 - *Non discrimination obligations in relation to manhole access (availability of information, first come first serve principle...).*
- e) *LRIC.*
- f) *LRIC based prices.*

3.3 Cabinet unbundling

- a) *Cabinet unbundling (local sub loop unbundling) to be available on a mandated basis due to market analysis notified in November 2010 (final measure expected early 2011).*
- b) *Local sub-loop means a part of the local loop connecting the network termination point at the subscriber's premises to a concentration point or a specified intermediate access point. Access to the sub-loop is necessary because it enables operators which build their own access networks to get even closer to the end-user, which enhances investments in the network.*
- c) *Included in market 4.*

- d) *Obligations will be imposed with the final measure (expected early 2011):*
- *Access obligations in relation to sub-loops,*
 - *Transparency obligations in relation to sub-loop unbundling,*
 - *Reference offer will have to contain also conditions for access to the sub loops,*
 - *Non discrimination obligations in relation to sub loop access (availability of information, first come first serve principle...).*
- e) *LRIC.*
- f) *LRIC based prices.*

3.4 ODF unbundling

- a) *ODF unbundling (fibre loop unbundling) to be available on a mandated basis due to market analysis notified in November 2010 (final measure expected early 2011).*
- b) *Access to FTTH will be mandated.*
- c) *Included in market 4.*
- d) *Obligations will be imposed with the final measure (expected early 2011):*
- *Access obligations in relation to fibre loops,*
 - *Transparency obligations in relation to fibre loop unbundling,*
 - *Reference offer will have to contain also conditions for access to the fibre loops,*
 - *Non discrimination obligations in relation to fibre loop access,*
 - *Obligation of accounting separation.*
- e) *LRIC.*
- f) *LRIC based prices.*

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

None yet, fibre was not included in the previous round analysis, while all of the remedies according to Art. 9-13 AD will be imposed due to market analysis notified in November 2010 (final measure expected early 2011). The obligations will include:

- *Access to and use of specific network facilities:*
 - *Access to copper loops and sub-loops, optical loops and in-house wiring,*
 - *Access to ducts, manholes, dark fibre and active Ethernet connections for the needs of operators for construction of their own network and access to the sub-loop,*
 - *Access to dark fibre (FTTH and FTTC) where Telekom Slovenije replaces copper with fibre loops on individual locations of MDF where one or more AOs is present in the co-location, or where ducts are not available,*
 - *Bulk migration from copper to fibre, 5 years for phase out,*
 - *Co-location at MDF and street cabinets,*
 - *SLA and KPI, compensations for delays and fault clearance.*
- *Non-discrimination,*
- *Transparency (RUO),*
- *Price control and cost accounting (LRIC),*
- *Accounting separation.*
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

No, no exceptions since market 4 is a national geographic market with no remedy differentiation.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

The reference offer for unbundled access to fibre loop will include the prices, the reasonable time limits for implementation, and the sanctions for failing to meet such time limits, other conditions and quality parameters (SLA and KPI), all the conditions and data for the access to shafts and canalisation, optical loops, non-luminous optical fibres, house

installation, active Ethernet (or other form of) connections, and all others that comply with the obligations proposed in the analysis of market 4. In addition Telekom Slovenije will have to include in the reference offer data on reserved loops for technical purposes, the most frequent defects and the time limits foreseen for the remedy of such defects.

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

- a) *Access to bitstream was already imposed in the previous round market analysis and will also be imposed based on the market analysis notified in November 2010 (final measure expected early 2011).*
- b) *Telekom Slovenije will have to ensure access to its network at the level of the broadband access node at the level of access to BRAS (or other similar devices) with transfer over the aggregation network with inclusion of transfer over an IP/MPLS (or similar) backbone network and allow access to technical interfaces, protocols, and other technologies that are necessary for this kind of access.*
- c) *Included in market 4.*
- d) *Obligations will be imposed with the final measure (expected early 2011):*
 - *Access to and use of certain network elements and facilities that are necessary or bit-stream access,*
 - *non-discrimination,*
 - *transparency,*
 - *price control and cost accounting obligations;*
 - *obligation of accounting separation.*
- e) *Retail minus.*
- f) *Retail minus price.*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

Local level – access on MSAN point or DSLAM as an equivalent device.

Regional level – transmission access to BRAS (broadband remote access server).

National level - access in administrated networks through IP/MPLS.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Yes, as a part of non-discrimination obligation Telekom Slovenije will have to provide such forms of bit-stream access as enable operators to provide all the services that can be supplied to residents and/or business users through such access in equal quality in relation to services supplied in the retail market by itself or through subsidiary undertakings or partner undertakings (e.g. IP telephone (VoIP), IP television (IPTV), Video on Demand (VoD), virtual private network (VPN MPLS) and other services). These services should be provided in a similar manner in relation to services Telekom Slovenije provides to itself or its subsidiary undertakings or partner undertakings, if necessary it should also allow installation of the alternative operator's equipment.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

No, no exceptions since market 5 is a national geographic market with no remedy differentiation.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

With the obligation based on the market analysis notified in November 2010 (final measure expected early 2011) APEK will oblige Telekom Slovenije that in the case of absence of a different written agreement, it will be allowed to eliminate a specific location or individual copper local loop only after at least 5 years have passed from the date of the beginning of use by the alternative operator. Telekom Slovenije will be obliged to allow alternative operators reasonable period to prepare for the transition (in the form of an obligation to inform operators about the decommissioning in advance).

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

Telekom Slovenije will be obliged to allow alternative operators reasonable period to prepare for the transition (in the form of an obligation to inform operators about the decommissioning in advance).

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

If an equivalent alternative wholesale product will be available to the alternative operator and the operator wants to switch, it will be able to conclude a written agreement with Telekom Slovenije, which will allow Telekom Slovenije to decommission a specific location or individual copper local loop before the minimum 5 year phase-out period.

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREC suggested that “in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.

Telekom Slovenije will be obliged to provide the information on the beginning of supplying a new service at least 6 months prior to it but not later than its own internal organisational units and associated undertakings are informed thereof.

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

-

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

No.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

No.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?

The Ministry which is also responsible for electronic communications (MVZT) runs a database on all public infrastructure, which should include also information on ducts, but only information on locations and no specific information on available capacity.

- **Which data are collected** in this database?

See above.

- Does the information **collected** cover just telcos or also non-telcos?

Non-telcos as well.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- How is the information **being** provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.

APEK has no specific information on this.

- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?

It is public.

- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets dealt** with?

APEK has no specific information on this.

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool **contribute** to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared **out** based on agreements or formal obligations?

APEK has no specific information on this.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

The shared use of in-house wiring in the case of new buildings is regulated by the national electronic communications Act (ZEKom). Moreover ZEKom also obliges any investors into any form of electronic communications infrastructure to inform APEK on any planned investments. APEK then publishes planned investments on its website which gives all other interested parties a chance to express their interest for co-investment and to conduct a co-investment agreement. If an agreement is not reached ZEKom gives APEK the power to resolve disagreements with a binding decision.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:

The Government of the Republic of Slovenia has published a Strategy of broadband networks development in July 2008, which aims to encourage the development of technologically neutral high speed broadband networks, especially in poorly developed, geographically remote and sparsely populated areas. The main goals of the strategy in regard to promoting next generation broadband are:

- *90% of the population to have access to broadband with minimum speed of 20 Mbit/s by 2015,*
- *90% of the population to have optical access (FTTH) or comparable (more advanced) connection by 2020.*

The government is preparing a revised strategy for information society development, which will include NGA development measures. APEK has no specific information on the new strategy at this time.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Spain

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Movistar (commercial name of Telefónica) is deploying an NGA network based on FTTH (GPON) technology and VDSL2.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

As of June 2010, the FTTH roll-out reached 360,000 passed homes. The VDSL2 roll-out is currently mainly from the local exchange.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

The commercial offers of Movistar (Telefónica) based on FTTH and VDSL2 are:

Network	Name	Type	Characteristics	Price
FTTH	Futura 50Mb Imagenio Familiar DVR	Triple play offer	50 Mbit/s HSI, Data & voice flat- rate, IPTV with DVR,	61.80 €/month + 13.97 €/month land line rental
FTTH	Futura 50Mb	Double play offer	50 Mbit/s HSI, Data & voice flat- rate	40.90 €/month + 13.97 €/month land line rental
VDSL2	Linea Internet 30Mb	Double play offer	30 Mbit/s HSI, Data & voice flat- rate	45.90 €/month + 13.97 €/month land line rental

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

No new announcements have been made.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Operator: Jazztel. It is deploying VDSL2 technology. 60% of its access network has coverage for multiservice access (VDSL2/ADSL2+ bonding), the objective being 80% by end 2010.

The commercial offers based on this network are:

Name	Type	Characteristics	Price
VDSL2 30 Mb	Double play offer	30 Mbit/s HSI, Data & voice flat-rate	39.95 €/month + 13.95 €/month land line rental

Operator: ONQ. Technology: Cable operator (HFC) with own infrastructure which has upgraded part of its network to DOCSIS 3.0, covering 3,8 million homes

The commercial offers based on this network are:

Name	Type	Characteristics	Price
NO 50 Mb	Double play offer	50 Mbit/s HSI, Data & voice flat-rate	45.90 €/month + 14 €/month land line rental
ONO 50 Mb	Triple play offer	50 Mbit/s HSI, Data & voice flat-rate, TV	50.90 €/month + 14 €/month land line rental

Operator: GITPA. It operates a public (Asturcón, part of Government of Asturias) open access network based on FTTH/GPON with a coverage of 45 towns in Asturias, with a total of over 51,000 homes being covered (9.5% of the total number of homes in Asturias) by the end of 2010, when all phases of the expansion are finished.

The commercial offers of one of the service providers making use of this network, Adamo, are:

Name	Type	Characteristics	Price
100 Mb	Double play offer	100 Mbit/s HSI, data & voice flat-rate	35.00 €/month
100Mb	Single play offer	100 Mbit/s HSI, data & voice flat-rate	29.00 €/month

Operator: Mundo R. Cable operator (HFC) with own infrastructure which has upgraded part of its network to DOCSIS 3.0.

The commercial offers based on this network are:

Name	Type	Characteristics	Price
Combo3 30 Mb	Quadruple play offer	30 Mbit/s HSI, data & voice (fixed and Mundo R mobiles) flat-rate Limited channels	64.90 €/month
ComboR 30Mb	Quadruple play offer	30 Mbit/s HSI, data & voice (fixed and mobile telephony) flat-rate TV	89.16 €/month
Combo3 100 Mb	Quadruple play offer	100 Mbit/s HSI, data & voice (fixed and MundoR mobiles) flat-rate Limited channels	112.10 €/month
ComboR 100Mb	Quadruple play offer	100 Mbit/s HSI, data & voice (fixed and mobile telephony) flat-rate TV	136.36 €/month

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The cable operator ONO has announced the upgrade of its entire network to DOCSIS 3.0. In October 2010 it has reached four million passed homes, and it plans to complete the upgrade in the upcoming months, reaching a total of some seven million households.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

Offered by Telefónica:

- a) *Mandated access to civil infrastructure, including ducts, manholes and poles. Already around 1000km of incumbent's ducts have been accessed by other operators.*
- b) *Access to ducts and chambers up to the building entrance. Collocation in exchanges is included as well.*
- c) *Obligation imposed as ancillary service in Market 4.*
- d) *Obligations included:*

- *Transparency: yes,*
 - *Reference offer: yes, available since March 2009,*
 - *Non-discrimination: yes.*
- e) *Cost-oriented prices, determined from incumbent's costs accounting (current costs).*
- f) *No long-term pricing models considered.*

2.2 Dark fibre

- a) *Mandated to Telefónica as part of the access to civil infrastructure, in case no space is available. In practice not used yet.*
- b) *Only established in general terms, no detailed product definition is available.*
- c) *Market 4.*
- d) *Obligations included:*
- *Transparency: yes,*
 - *Reference offer: no,*
 - *Non-discrimination: yes.*
- e) *Prices must be cost-oriented, but have not been established by CMT.*
- f) *No long-term pricing models considered.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**

- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

- a) *Mandated as symmetric obligation to all operators deploying FTTH. Agreements specifying technical and economic access terms already in place, but not used in practice yet.*
- b) *Access points located in the building base. When first operator deploys junction boxes in the public domain (thus covering several buildings), then the access point is moved to that point.*
- c) *Obligations are imposed to all operators (symmetrical obligations), so they are not defined in the framework of any relevant market.*
- d) *Obligations included:*
- *Transparency: yes,*
 - *Reference offer: no (but signed agreements include the technical procedures),*
 - *Non-discrimination: yes.*

- e) *Reasonable prices, not determined by CMT.*
- f) *No long-term pricing models considered.*

3.2 Concentration point/ manhole unbundling

Covered in the general access obligation to in-house wiring: when first operator deploys junction boxes (distribution point) in the public domain (e.g. in manholes) thus covering several buildings, then the access point is moved to that point.

Access conditions are identical to those specified in the general access obligation to in-house wiring.

3.3 Cabinet unbundling

Subloop unbundling (SLU) is imposed as a remedy in Market 4 with the same obligations as LLU: cost orientation, non-discrimination and transparency; detailed operational procedures for access are not defined as currently there is no demand.

3.4 ODF unbundling

Not available as fibre is not included in market 4 (FTTH is deployed in a point to multipoint architecture). Instead, access to the fibre terminating segment is available via the symmetric access to in-building wiring.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

All remedies are in place with regard to FTTN/FTTB (both are forms of SLU). Fibre (as FTTH) is not included in Market 4.

- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

- a) *Mandated to Telefónica, as operator with SMP in Market 5.*
- b) *Bitstream is available:*
 - *At a regional level, based on ATM (L2), for ADSL and ADSL2+ (140.000 lines);*
 - *At a regional (province) and a national level, for all xDSL forms including VDSL2, based on IP (328.000 lines);*
 - *A new enhanced bitstream service (called NEBA) has been recently approved (Nov 2010), available at a regional (province) level, with 50 access points, for all xDSL forms (including VDSL2) and for fibre (FTTH). It is based on a transparent Ethernet (L2) transport from the end customer to the access point. It provides 3 QoS levels and is designed to allow for maximum flexibility and a high degree of independence from the retail offers of the incumbent. It will be operational 1st January 2012.*
- c) *Market 5.*
- d) *Obligations:*
 - *Transparency,*
 - *Reference Offer: Existing bitstream forms have a reference offer. For the new NEBA enhanced bitstream, a functional specification has been approved and a reference offer will be available 1st march 2011,*
 - *Non-discrimination,*
 - *Cost-orientation and account separation,*
 - *All retail offers and prices must be communicated in advance to CMT, which will then check its replicability.*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- e) *cost oriented. Prices for the existing bitstream forms have been set using the regulatory accounting information and a bottom-up cost model. Prices for the new NEBA enhanced bitstream are under study.*
- f) *Consistency of prices between Market 4 and Market 5 remedies is taken into account when setting bitstream prices.*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

In the existing bitstream forms:

- *ATM access: Layer 2, available at 109 points,*
- *IP access: Layer 3, available at 50 points and at a single national point.*

The new enhanced bitstream, NEBA, a Layer 2 Ethernet product, will be available at 50 points.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

In the existing bitstream services, quality differentiation is available as SBR (with defined SCR/PCR ratios and a defined CLR) and UBR (best effort) for ATM access. Also, it is available as Gold and Silver (best effort) variants for IP access.

The new NEBA enhanced bitstream will provide services targeted to residential as well as to business users with different qualities and assignment of different priorities to the traffic.

Three QoS levels are defined, with specified SLAs (including delay, delay variation and packet loss). No processing and no interaction with the incumbent's network takes place at upper network layers, thus maximising independence of offers, potential for innovation and quality differentiation.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Not as part of the product functionalities. Frame transmission is fully transparent.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a

bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

According to the obligations imposed in Market 5 analysis, bitstream services are currently limited to products with a maximum speed of 30 Mbit/s, as there is considerable uncertainty regarding the retail and wholesale demand for ultra-broadband speeds and Market 4 measures allow for infrastructure-based competition. This limit is subject to review in future market analysis.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

Remedies allowing infrastructure-based competition are available (market 4 remedies). Additionally, market 5 remedies (like the enhanced bitstream) allow for NGA competition even in areas where alternative infrastructure has not been deployed.

Procedures for migration from different wholesale products to bitstream are available.

Within market 4 obligations, conditions for MDF-closure have been defined.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ²

Yes, current market 4 analysis imposes the obligation to Telefónica to submit to the NRA authorization any modification in the access network that would change the conditions for the unbundling wholesale access service. In particular, referring to decommissioning MDFs, Telefónica must maintain all unbundling wholesale services in any exchange currently open to collocation for at least 5 years, after the announcement of a MDF decommission (1 year for the other exchanges). However, Telefónica and the involved operators can reach an agreement with different conditions if they wish.

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

In order to ensure that the network transformation process has effectively begun, the decommission announcement is only possible when, for at least 25% of Telefónica's customers in the MDF (retail and bitstream), all services are provided through other means than copper cables from that MDF. Telefónica must also inform about the exact date to close the exchange.

- In its report "NGA – Implementation Issues and Best Practice"⁴ BEREC suggested that "in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market".
 - Explain if such provisions are applied and what they look like.

At least 6 months in advance, Telefónica must provide to the alternative operators using wholesale access services and to the NRA detailed information about any change foreseen in the architecture and characteristics of the copper access network, including those that even without affecting the wholesale access service conditions could imply a potential change on the retail service offer. Therefore, all network nodes relating to FTTN deployment must be announced six months in advance.

Additionally, Telefónica must inform about the FTTH deployment plans by providing updated information at least 6 months in advance. Hence, Telefónica must provide the list of central offices which act as optical headers, the location and the area covered by each one as well as the date they will be operational.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

No remarkable problems have been detected.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

The conditions defined for MDF-closure are designed to avoid those issues, given the time period allowed for the decommission.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

No such provisions exist currently.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

Access to a database is provided by Telefónica as part of its Reference Offer for duct access (imposed in Market 4 analysis). It provides information about the geographical location and characteristics of the civil infrastructure (ducts, manholes, poles, etc). It is available to operators requesting access.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?

The database is managed by the incumbent operator.

- **Which data** are collected in this database?

Cartographic maps showing location and number of available ducts, chambers and poles.

- Does the information collected cover just telcos or also non-telcos?

Just telcos: the civil infrastructures of Telefónica.

- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.

Based on obligations imposed in the analysis of market 4.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?

Only operators are provided access to the database. Operators must be registered in CMT database.

- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?

No.

- How are **business secrets** dealt with?

Operators must sign non-disclosure agreements.

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)

Regarding practical problems, it is challenging to add data about available space (not occupied yet) in infrastructures, given that the incumbent operator maintains that such data is not available.

- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

These costs are included in the price per meter of duct used. Thus, prices are shared by operators who effectively access the incumbent’s infrastructures.

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Art. 13.2 General Telecommunications Act: when exceptional circumstances occur, CMT is entitled to impose access obligations to operators not declared with SMP.

The referred exceptional circumstances were identified and justified in regards with in-building fibre deployment (problems with space, negotiations with building property, etc.), so CMT used the legal framework to impose obligations to all operators.

All operators that deploy fibre inside buildings are included in the measures imposed by CMT.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

Common Telecommunications Infrastructures in buildings: ensure that new buildings are equipped with specific infrastructure for telecommunications infrastructure, including that related with NGAs.

Draft regulation on infrastructures in new roads and railways: facilitate the deployment of telecommunications infrastructure in new roads and railways.

Public Aid to support NGA and Broadband Deployments: state aid programme to support the deployment of high speed broadband networks in “white areas.”

- Scope and envisaged **target** of the measure;

Common Telecommunications: In 1998 Spain adopted a regulation guaranteeing that any new multi-dwelling building will be equipped with a Common Telecommunications Infrastructure. The specification of the minimum technical requirements for all these elements was reviewed in 2003, and now a new revision is underway to take account of the evolution of networks and services (i.e. NGAs and DTT). To that end, a new Decree is being drafted to include provisions regarding:

- *The inclusion in new buildings of specific infrastructures (ducts) according to the access networks (i.e. cable, fibre, copper) existing in the area where the building is located.*
- *In case of fibre, two individual fibres shall link the lower cabinet with each apartment*
- *The in-house wiring will be replaced by structured cabling, so to improve the bandwidth available in each household.*

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

- *The MATV system shall be adapted for the reception and distribution of DTT.*

Draft regulation on infrastructures in new road and railways: Works on new railways and road infrastructures have a high cost on their own, so it is possible to build in parallel, at a marginal cost, telecommunication infrastructures supporting the deployment of new broadband networks. Furthermore, adequate spaces will be reserved along these infrastructures to facilitate the installation of mobile base stations, so to ensure adequate coverage of mobile communications.

The draft Decree will guarantee that all new project roads or railways built by the National Government will include adequate ducts for the deployment of broadband networks as well as specific facilities (space and energy) for the installation of mobile base stations.

A standard capacity dimensioning for the facilities will be defined according to the different typologies of projects, however the operators will be allowed to consult each individual project before its formal adoption, so they can express its views on the capacity of specific facilities considered in the project compared to their needs.

Public Aid to support NGA and Broadband Deployments: In 2005 Spain adopted the Plan Avanza as the umbrella strategy for the advancement of the Information Society (IS). Its first Action Plan identified a number of objectives reflecting both the technological and socio-economic dimensions necessary for consolidating the knowledge economy in Spain, as well as the need to converge with other EU member countries in key IS dimensions. One of them was to close the Digital Divide to improve quality of life for citizens by ensuring equitable and universal access to ICT infrastructures (in particular, mobile networks, broadband Internet and digital terrestrial television), as well as to increase take-up of digital public services.

This objective was in the focus of the PEBA project (National Program for Broadband Deployment in Rural and Isolated Areas) implemented between 2005 and 2008, aiming to expand the availability of broadband services. With a total budget of 90 M€, the main outcome was reaching 99% of population with broadband coverage (compared to 82% in 2005), meaning that over 8 million people gained broadband coverage under the programme.

Taking these results as a starting point, a new framework called “Plan Avanza 2 - 2011-2015 Strategy” has identified 10 new objectives, one of them being the spreading of telecommunication networks and increasing their capacity.

As a key action to reach this objective, on July 30th a State Aid programme was adopted providing financial support (in form of soft credits, up to a total amount of 200M€) to operators for the extension of the present coverage of basic broadband networks and the deployment of high speed broadband networks (over 50Mb/s) in areas presently lacking these infrastructures and where no commercial deployments are envisaged in the coming three years.

- Current **achievements**, milestones reached.

Common Telecommunications: Since the adoption of this regulation building activity has been quite intense in Spain, so presently over 20% of households are equipped with Common Telecommunication Infrastructures, easing the deployments of the last segment of NGAs to an important part of the population, as it will be sufficient for operators to connect its networks to the basement of the building (once the forthcoming regulation enters in force) or to deploy them over the available space in the ducts (for buildings built under the original regulation).

Draft regulation on infrastructures in new road and railways: Decree yet to be approved.

Public Aid to support NGA and Broadband Deployments: increased broadband coverage from 82% of the population (2005) to 99% (2009).

Sweden

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);
 - current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
 - available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

TeliaSonera covers 97% of the population with xDSL- or fibre-based broadband over which triple play can be provided. The fibre network is generally based on FTTH P2P. There are no specific data on current coverage of NGA lines.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

TeliaSonera has expressed that 50% of the population should be reached by the fibre network in 2014. TeliaSoneras roll-out of fibre-based NGA networks is however made case by case where commercially viable.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Sweden has got roughly 150 independent municipality networks. These networks are expanded based on plans for each municipality.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

N/A, based on plans for each municipality.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).
- Included in **Market X**
- Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)

- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

No.

2.2 Dark fibre

- a) *Available on a mandated basis.*
- b) *Fibre backhaul, max 50 km..*
- c) *Included in Market 4.*
- d) *Transparency, reference offer, non-discrimination, access obligation.*
- e) *As of today non-discriminatory pricing, 2011 Costing by LRIC.*
- f) *Pricing N/A .*
- g) *Obligation to provide co-locating operators access to co-location space with own or other operators fibre.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).

- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

No, in-house wiring is generally owned by estate owner.

3.2 Concentration point/ manhole unbundling

Yes, if technically feasible.

- a) *Available on a mandated basis.*
- b) *Access fibre.*
- c) *Included in Market 4.*
- d) *Transparency, reference offer, non-discrimination, access obligations.*
- e) *Today non-discriminatory pricing, 2011 Costing by LRIC.*

- f) *Pricing N/A.*
- g) *Access fibre to be provided between ODF-stations, if less than 10 km between customer and access ODF in neighbouring ODF-stations.*

3.3 Cabinet unbundling

Yes, if technically feasible.

- a) *Available on a mandated basis.*
- b) *Access fibre.*
- c) *Included in Market 4.*
- d) *Transparency, reference offer, non-discrimination, access obligations.*
- e) *Today non-discriminatory pricing, 2011 Costing by LRIC.*
- f) *Pricing N/A.*
- g) *Access fibre to be provided between ODF-stations, if less than 10 km between customer and access ODF in neighbouring ODF-stations.*

3.4 ODF unbundling

- a) *Available on a mandated basis .*
- b) *Access fibre.*
- c) *Included in Market 4.*
- d) *Transparency, reference offer, non-discrimination, access obligations.*
- e) *Today non-discriminatory pricing, 2011 Costing by LRIC.*
- f) *Pricing N/A.*
- g) *Access fibre to be provided between ODF-stations, if less than 10 km between customer and access ODF in neighbouring ODF-stations.*

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

There are no specific rules for FttH/B/N.

- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

No exceptions from the obligation.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).

As of today non-discriminatory pricing.

- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

2011 Costing by LRIC;. As the proposal stands, there is no general risk premium for NGA.

3.5 Enhanced Bitstream¹

- Available on a mandated basis.*
- Bitstream.*
- Included in Market 5.*
- Transparency, reference offer, non-discrimination, access obligations.*
- Costing by LRIC.*
- Pricing N/A.*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

Access available at level 2a (100+ access points gives national coverage) and 2 b (27 metro Ethernet rings with 27 access points gives national coverage).

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Multicast will be available 2011.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

No exceptions for the incumbent.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**?

No.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? Yes, an obligation to provide info to co-located operators five years before decommissioning.

There is an obligation on market 4 for the incumbent to provide such info 5 years in advance.

- In its report "NGA – Implementation Issues and Best Practice"² BEREC suggested that "*in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market*".

² BoR (10) 08; Chapter E.2, p. 9.

No such provisions are applied.

- Are there any provisions dealing with **stranded assets**?

Yes, compensation related to remaining non-depreciated value.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts³. In case such a database exists already in your country, explain:

No such database is planned.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? *(Note: this information may be helpful for other NRAs when setting up similar databases)*

³ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

No symmetrical regulation.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁴ Consider the following aspects:

According to the broadband strategy adopted by the government in 2009, the national target is that 40 % of households should have access to broadband providing at least 100Mbit/s in 2014 and in 2020 90 % should have access to the same. Some financial support for rolling out fibre in areas with low population density.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁴ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Switzerland

Summary of the answers of Switzerland

In Switzerland 81% of the households can be connected by VDSL and 87% by cable. Only a few thousand households are currently connected via fibre. In several cities the utility companies and Swisscom (incumbent operator) deploy FTTH. Most cities will provide wholesale offers over FTTH on a voluntary basis. Wholesale access with regard to broadband service provision is mandated only for copper bitstream (only local access), the unbundled copper line and ducts. Other transmission media such as coax and fibre in the access network are not subject to regulation by law.

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);
 - current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;
 - available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

<i>Incumbent name</i>	<i>Swisscom</i>	
<i>Applied technology</i>	<i>VDSL, FTTH P2P, FTTB</i>	
Coverage & numbers		
<i>Potential coverage VDSL</i>	<i>81%</i>	
<i>Households with VDSL</i>	<i>55%</i>	
<i>Number Fibre accesses (2009)</i>	<i>16000</i>	
Services		
<i>Number DSL clients ≥ 10 Mbps (2009)</i>	<i>448'630</i>	<i>Provisional data (Swisscom + competition)</i>
<i>Number Fibre clients ≥ 10 Mbps (2009)</i>	<i>7'185</i>	<i>Provisional data (Swisscom + competition)</i>
<i>Abo Infinity (DSL)</i>		<i>For residential</i>
<i>Type</i>	<i>Internet + domestic telephony</i>	
<i>Bandwidth</i>	<i>1.1 – 20 Mbps / 0.2 – 1 Mbps</i>	
<i>Price</i>	<i>94.25 CHF/month</i>	<i>69 CHF + 25.25 CHF</i>
<i>Abo Casa Trio (DSL)</i>		<i>For residential</i>
<i>Type</i>	<i>TV + VoD + Internet + domestic telephony</i>	
<i>Bandwidth</i>	<i>1.1 – 20 Mbps / 0.2 – 1 Mbps</i>	<i>Shared with TV + VOD</i>
<i>Price</i>	<i>111 CHF/month</i>	<i>Plus 2.25 CHF/month (copyright fees)</i>
<i>Vivo Casa: basic, comfort, top (DSL or FTTH)</i>		<i>For residential</i>
<i>Type</i>	<i>TV + VoD + Internet + telephony</i>	
<i>Bandwidth</i>	<i>Max 10/1 Mbps up to max 50/5 Mbps</i>	<i>Max 50/5 Mbps only over FTTH</i>
<i>Price</i>	<i>99 – 179 CHF/month</i>	
<i>Business Internet (DSL)</i>		<i>For SME</i>
<i>Type</i>	<i>Business profile Internet</i>	
<i>Bandwidth</i>	<i>Asymmetric and symmetric</i>	<i>Up to 20 Mbps/5 Mbps</i>
<i>Price</i>	<i>958 CHF/Month for 20/5 Mbps</i>	
<i>Internet Location Networking (DSL)</i>		<i>For SME</i>
<i>Type</i>	<i>Internet access + Ethernet connection between locations</i>	
<i>Bandwidth</i>	<i>Up to 20/5 Mbps for Internet Up to 100 Mbps symmetrical for Ethernet</i>	
<i>Price</i>	<i>upon request</i>	

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Swisscom is rolling out 4 Fibres in certain cities. Generally, roll-outs are made in cooperation with a local utility. They build each a network in certain areas and divide the costs in the end. They provide two fibres to the other constructing operator. Swisscom announced the goal to connect more than 1 million households with FTTH until end of 2015 (approximately 1/3 of households in CH).

The cooperation contracts contain different network architectures. In general, they put four fibres from the building entry point (BEP) to the apartment. A minimum of two of them are spliced in any case. If not spliced, the other can be spliced later by an alternative operator. How they handle the fibres after the BEP is different between the cities and depends on the exact cooperation conditions. At least, each partner connects one fibre from the BEP to its point of presence. Sometimes, the utility uses also the incumbents ODF, sometimes they build its own ODF (utility substation). There's also the possibility in the future for another Telco operator, e.g. cable operators to have access on another access point, e.g. manhole or concentration point or BEP.. Usually, the local utilities provide only wholesale offers.

Issues of multifibre co-investment in Switzerland

In Switzerland multifibre co-investments are currently not foreseen on the basis of joint-ventures, but on the basis of co-investment contracts, which regulate rights and duties of the partners regarding NGAN construction and access.

- *Indefeasible rights of use (IRU): The constructing multifibre operator provides access to one or more fibres to the other partner. In Switzerland this happens usually in form of an IRU, which transfers certain rights of property and access but others not. The IRU is in certain cases granted for a period of 30 years¹.*
- *Layer 1-exclusivity: certain contracts (e.g. Base²) between the incumbent and the utilities contain an agreement on layer 1-exclusivity, i.e. a specific partner is not allowed to sell layer 1 product to other operators.*
- *Regional exclusivities: certain contracts contain regional exclusivities, i.e. the contract foresees that the construction in certain areas is carried out exclusively by the partner designated in the contract (e.g. Geneva³). Access by the other partner is regulated by the contract.*

¹ http://www.swisscom.ch/GHQ/content/Media/Medienmitteilungen/2010/20100219_02_MM_IWB_Vorvertrag.htm?lang=de?&print=true&format=Portrait&FRAMELESS=true&NRNODEGUID={31649908-EADD-4B9D-A043-FFC74FB2E061}&NRORIGINALURL=/NR/exeres/31649908-EADD-4B9D-A043-FFC74FB2E061,frameless.htm%3Flang%3Dde&NRCACHEHINT=Guest&lang=de.

² <http://www.grosserrat.bs.ch/dokumente/100365/000000365810.pdf> (p. 17).

³ http://www.swisscom.ch/GHQ/content/Media/Medienmitteilungen/2010/20100204_MM_Glasfasernetz_Genf.htm.

- *Cost allocation: All projects foresee some form of investment sharing. In many cases the incumbent bears 60% of the investment and the utility 40%⁴.*
- *Compensation mechanism: certain contracts foresee a compensation mechanism in case market shares result not to correspond to the investment share. In the case of Basel for example it is foreseen that the investment costs are periodically adapted to the effective market shares on the market⁵.*

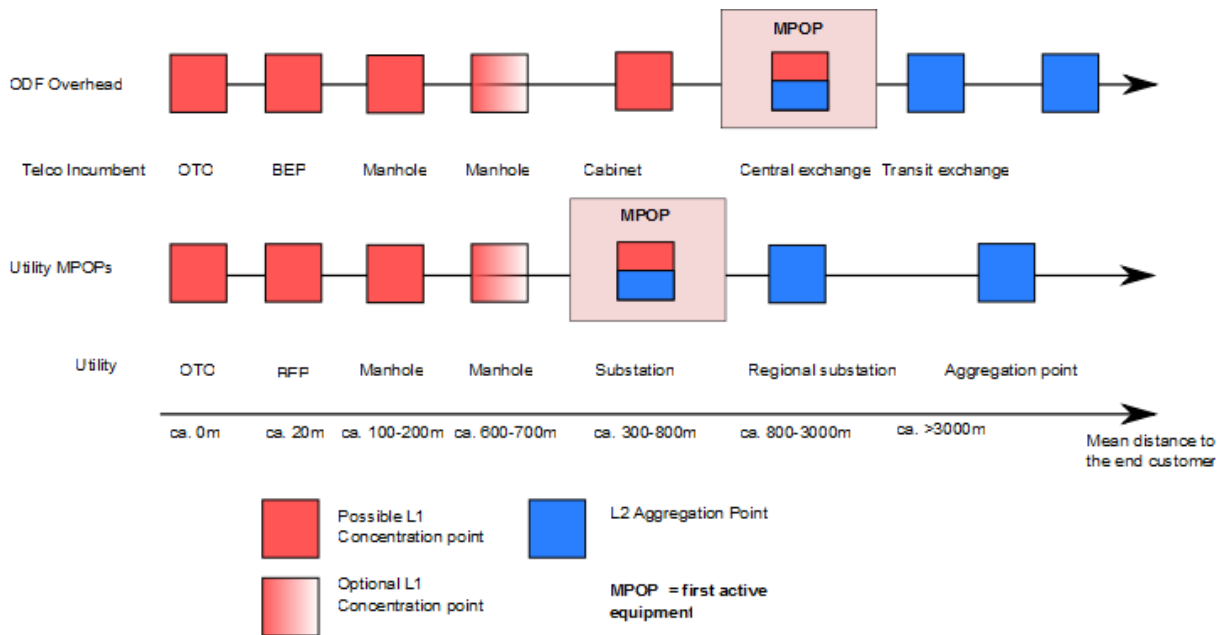


Figure 1: Model network architecture of Multifibre co-investments(BAKOM expert estimations)

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

⁴ <http://www.grosserrat.bs.ch/dokumente/100365/000000365810.pdf> (p. 19).

⁵ <http://www.grosserrat.bs.ch/dokumente/100365/000000365810.pdf> (p. 11).

Network		
Cablecom & other cable operators		
Applied technology	DOCSIS over cable	Under deployment
Number of accesses	1.5 Mio	
Number of cable accesses in CH	2.7 Mio (appr. 87% of 3.1 Mio)	Most of them have DOCSIS
Various cities and areas		
Applied technology	FTTH- P2P	
Number of FTTH accesses (2009)	6000	Sierre has 3200 active FTTH clients and 7000 can be reached
Sunrise		
Applied technology	xDSL	
Number of unbundled DSL accesses (Sunrise + Others, Aug 2010)	230'000	See ULL Statistics, High bandwidth only near Swisscom central exchange
Services		
Cablecom		
Combination deal	For residential customers	
Type	Internet + domestic telephony + digital TV over cable	
Bandwidth Internet	From 20/2 Mbps up to 100/7 Mbps	Not shared with TV Broadcasting. Max speed. Best effort.
Price	From 102.10 up to 152.10 CHF/Month	Plus 2.25 CHF/Month copyright fees
GGAmur (example of 3rd party provider over Cable and FTTH)		
Triplex (over Cable)		
Type	Internet + domestic telephony + digital TV over Cable	
Bandwidth Internet	25/1 Mbps	
Price	91.00 CHF/Month	Plus 2.20 CHF/Month copyright fees
Triplex (over FTTH)		
Type	Internet + domestic telephony + digital TV over FTTH	
Bandwidth	50/5 Mbps	
Price	109.00 CHF/Month	Plus 2.20 CHF/Month copyright fees
Connect Pro		
Type	Internet with higher priority for businesses	
Bandwidth	15/4 Mbps – 50/10 Mbps	
Price	280 – 830 CHF/month	
IP-Transit		
Type	Symmetric Internet access with higher priority for businesses	
Bandwidth	5 – 100 Mbps	
Price	670 – 4'490 CHF/Month	
Interconnect		
Type	Interconnection of several company locations	
Price	On request	
Quickline (example of 3rd party provider over Cable and FTTH)		
All-in-One-10000		
Type	Internet + domestic telephony + digital TV over cable	
Bandwidth Internet	10/1 Mbps	
Price	69.00 CHF/month + cable access costs	Plus 2.25 CHF/Month copyright fees
All-in-One-30/10		
Type	Internet + domestic telephony (or mobile access) + TV (HD) over FTTH	
Bandwidth Internet	30/10 Mbps	
Price	99.00 CHF/Month	Plus 2.25 CHF/Month copyright fees
Type	Internet + domestic telephony +	

Remark with respect to competing FTTH operators.

List of operators which asked for identification code used to label optical communication outlet at OFCOM:

Elektrizitätswerk Zürich, Sankt Galler Stadtwerke, Industrielle Werke Basel, Services industriels de Genève, Sateldranse, VTX, Valaiscom, Energie Wasser Luzern, Energie und Wasser Meilen, Swisscom, Groupe E, Energie Wasser Bern, Stadtwerk Winterthur, GA Weissenstein GmbH, Genossenschaft Elektra Fislisbach, EKT AG, Localnet AG, Aziende Municipalizzate Bellinzona.

Remark with respect to GGAmur and Quickline:

Several service providers use open access to L2 of FTTH networks of utility companies in Switzerland. "Zürinet" for example lists 12 service providers:

Orange, Sunrise, netstream, INIT7, GGAmur, MYGATE, dataway, Everywhere, iWay.ch, caberlink, Telecom Liechtenstein, leunet.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Cablecom announced expansion of HFC (Hybrid Fibre Coax) network.

In city-areas, local utilities are rolling out four fibres in cooperation with Swisscom. In Certain other regions or villages, small local utilities are rolling out fibre without a telco partner. Most of them provide only wholesale offers (Layer 1 & 2).

Sunrise signed a letter of intent with some of this local utilities to use one of their fibres.

For details of the roll-out co-operations with the incumbent see also chapter 1.1.2. Most of the local utilities provide only wholesale offers.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *SMP-Operator (Swisscom is mandated to offer duct access to other operators). There are also voluntary duct offers of other operators.*
- b) *Duct access between two geographical locations (central exchange, man hole, building entry point) for entering a specific number of telecommunication cables.*
- c) *separate duct market (SMP analysis by Comcom/BAKOM under way).*
- d) *regulated duct offer available but regulated terms and conditions are under legal review. Access obligation only if capacity is available.*
- e) *LRIC.*

2.2 Dark fibre

- a) *No mandated offer.*
- b) –
- c) *No dark fibre market foreseen.*
- d) *None.*

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain).
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)

- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

There are no rules for any access products based on fibre. In Switzerland, the law allows regulation only on copper-based access-products.

3.1 Access to in-house wiring or equivalent

No regulated offer to date. Offers on a voluntary basis are unknown at the moment.

3.2 Concentration point/ manhole unbundling

No regulated offer to date. Offers on a voluntary basis are expected.

3.3 Cabinet unbundling

- a) *Regulated offer available (only copper-based product).*
- b) *–*
- c) *Separate market (no SMP analysis).*
- d) *Cost-based price regulation on hold as parties agreed to renegotiate. Collocation if capacity is available.*
- e) *Would be LRIC.*

3.4 ODF unbundling

- a) *Regulated offer available for copper local loop. No regulated offer for fiber local loop*
- b) *Copper local loop (Endpoint local exchange)*
- c) *Separate market (no SMPO analysis provided as incumbent has recognized its SMP position (ex-post regime))*
- d) *Cost-based price regulation with collocation obligation*
- e) *LRIC*

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream⁶

- a) *Regulatory bitstream access is offered from the central exchange over copper lines. Swisscom voluntary offers BBCS and also carrier line and Ethernet services. Utilities voluntary offer access on layer 2.*
- b) *BBCS consists of PPP data links between a Swisscom point presence and end customers typically over DSL. The layer 2 access consists of virtual LANs for connecting service providers with clients connected over FTTH.*
- c) *No Market Analysis*
- d) *Utilities will provide non-discriminatory access on Layer 2*
- e) *–*
- f) *Price for regulatory bitstream access is 26.60 – 29.10 CHF/Month including phone line*

Below, some *additional* questions on bitstream:

⁶ See ERG (09) 17, Ch. D.1, in particular p. 12.

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)
- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.
- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

4 Migration issues

At the moment, there are no such measures foreseen.

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?
- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations? ⁷
- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.⁸
- In its report "NGA – Implementation Issues and Best Practice"⁹ BEREC suggested that "*in addition to the reference offer – wholesale customers should be able to obtain relevant*

⁷ BoR (10) 98, p. 9 suggests "Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations" whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

⁸ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.
- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).
- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**¹⁰)?
- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts¹¹. In case such a database exists already in your country, explain:

A database according to Art. 17 of the Draft NGA Recommendation doesn't exist in Switzerland. The Incumbent is obligated to provide an Information System about capacity and geographical information of their ducts. This database is operated by the incumbent. But this case is still under legal revision.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.

⁹ BoR (10) 08; Chapter E.2, p. 9.

¹⁰ See BoR (10) 08, Ch. E.2.

¹¹ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

Actual Swiss regulation is only applied on telco operators. So, there's no symmetrical regulation in Switzerland.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.¹² Consider the following aspects:

At the moment there are no national broadband initiatives. The incumbent Swisscom is rolling out fibre in certain cities in cooperation with the respective utility (compare section 1.1.2 and 1.2.2).

¹² This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

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Turkey

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

Türk Telekom is rolling out its NGA network via using ADSL and VDSL2 technology with FTTC solutions.

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

As of June 30, 2010 Turk Telekom's FTTC network had a coverage of 1,350,000 homes passed and 755,000 subscriber. 3,320 of these subscribers are VDSL2 subscribers and the rest of them are ADSL subscribers.

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Via the needed technology (ADSL orVDSL2), 16 and 32 Mbps download speed can be achieved. There is no multi-play service offered by the incumbent as it is legally allowed to offer the DSL service only at wholesale level.

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Incumbent operator currently offers VDSL2 service, furthermore it plans to extend the fibre infrastructure to the building in this and next years. However, there is no announcement of the incumbent regarding NGA deployment.

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

One alternative operator has commenced the NGA deployment countrywide, having reached to 390,000 home passed and around 100.000 subscribers as of 30th June, 2010. The so-called operator has reached to those subscribers via FTTB, offering a speed up to 100 Mbps. There are some other operators deploying their own fibre in some local areas.

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

The so-called alternative operator has announced that it plans to reach 1 million home passed until the end of 2010.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain)
- Included in **Market X**
- Current **regulatory obligations** (available since ..., also mention remedies still under discussion):

- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

- a) *Duct access is mandated by the ICTA in February 2009 only at the backhaul level for the limited aims of providing BSA, LLU and interconnection. To that end, a duct sharing annex to the wholesale reference offers has been put into force to announce the relevant prices, terms and conditions.*
- b) –
- c) –
- d) –
- e) –
- f) –
- g) *Besides, building entrances and inner-building cabling are mandated within the framework of a specific annex to the wholesale reference offers.*

2.2 Dark fibre

There is no dark fibre obligation currently.

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain)
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since.., also mention remedies still under discussion):
 - **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

There is no dark in-house wiring regulation.

3.2 Concentration point/ manhole unbundling

There is no concentration point or manhole unbundling regulation.

3.3 Cabinet unbundling

There is no cabinet unbundling regulation currently.

3.4 ODF unbundling

There is no ODF unbundling regulation currently.

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.
- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**) from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.
- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

Below, some *additional* questions on bitstream:

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

Both IP and ATM level bit stream access is applicable, there are 12 operators offering IP level BSA service, but ATM level BSA has not been preferred by any operator, even though pertaining prices, terms and conditions have been approved by ICTA.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

Retail operators are dependent on the incumbent's tariff packages offered at wholesale level, but the operators are able to differentiate the quality of service to the extent the nature of BSA allows.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Yes, incumbent operator provides the single stream of information of several subscribers to the alternative operators at SSG (Service Selection Gateway).

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

A geographic differentiation is not applied in regulatory measures with regard to BSA.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products?**

There is no migration path envisaged from current to next generation access products in Turkey. Therefore, it is no longer possible for us to give any explanation in response to the questions listed below.

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? Yes, an obligation to provide info to co-located operators five years before decommissioning.
- In its report “NGA – Implementation Issues and Best Practice”² BEREC suggested that “*in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies per geographical area. A reasonable **window of announcement** is necessary to create a level playing field on the retail market*”.
- Are there any provisions dealing with **stranded assets**?

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts³. In case such a database exists already in your country, explain:

There is no database containing information of all ducts in Turkey. Therefore, it is no longer possible for us to give any explanation in response to the questions listed below.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information collected cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the legal grounds for any obligations.
- What are the legal **requirements** that must be met to be entitled to get access to this database? Who in your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to the database?
- How are **business secrets** dealt with?

² BoR (10) 08; Chapter E.2, p. 9

³ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace “all ducts” with “civil engineering infrastructure”.

- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “white” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared out based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

There is no symmetrical regulation based on national legislation in Turkey.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁴ Consider the following aspects:

There is no initiative or measure relating to national next generation broadband in Turkey. There are just a number of ministry-level plans and future projections regarding broadband subscribers for the ICT and macro-political purposes. Therefore, it is no longer possible for us to give any explanation in response to the questions listed below.

- **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; outlining the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);
- Scope and envisaged **target** of the measure;
- Current **achievements**, milestones reached.

⁴ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

United Kingdom

1 Market developments

1.1 Incumbent

1.1.1 Actual roll-out

- Illustrate the current status of NGA roll-out in your country. Consider the following aspects
 - name of the operator and applied technology (e.g. FTTH GPON, FTTH P2P, FTTB, VDSL, Cable);

British Telekom; technology: FTTC, FTTH GPON

- current coverage of the network and number of NGA lines (passed/connected). Please provide figures as of June 30 2010;

Coverage: 1.5 million households passed for NGA (no data on homes connected)

- available retail services (e.g. product name, type of service (e.g. triple play), bandwidth, price level, price structure).

Services: bandwidths up to 40 Mbit/s download for FTTC, up to 100 Mbit/s download for FTTP

1.1.2 Announced roll-out plans

- Has the incumbent announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

BT's announced plans cover the period to the end of 2015:

- *technology: mix of FTTH (GPON) and FTTC – expected to be c.75% FTTC,*
- *coverage: targets are 40% households by mid-2012, 66% by end of 2015,*
- *services: bandwidths up to 40 Mbit/s download for FTTC, up to 100 Mbit/s download for FTTP.*

1.2 Competitors (other telcos, cable)

1.2.1 Actual roll-out

- Illustrate the current status of NGA roll-out of competitors (e.g. telcos or cable operators) in your country. Consider the aspects addressed in 1.1.1. and add number of NGA lines (passed/connected). Please provide figures as of June 30 2010.

Virgin Media

- *technology: cable;*
- *coverage: 46% (13 million) UK premises passed with 50 Mbit/s capability, 14% (3.9 million) connected to broadband (576,000 subscribers on 20 Mbit/s service and 74,000 subscribers on 50 Mbit/s service);*
- *services: broadband available in bundles – over 60% on triple-play, over 10% on quadruple-play; bandwidths up to 50 Mbit/s download.*

1.2.2 Announced roll-out plans

- Have competitors announced roll-out plans for NGA networks? For which period? When answering this question consider the aspects addressed mentioned in 1.1.1.

Virgin Media plans to offer a 100 Mbit/s service from December 2010 and to upgrade its entire network to 100 Mbit/s by mid-2012 and plans to extend coverage using overhead electricity lines and using duct and pole access obligation on BT (imposed in October 2010); size of increase not known.

2 Wholesale products to reach an access point

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products. Under each answer, provide information for the main operators providing these products, to the extent that information is available on access products provided by non-SMP providers:

- Available: on a **voluntary/mandated** basis (please provide figures (number of the respective wholesale products) as of June 30 2010)
- Product definition (main features, e.g. location of access point along the value chain).

- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure

2.1 Duct Access

Not available at 30 June 2010 (n.b. mandated in Market 4 on 7 October 2010)

2.2 Dark fibre

Not available at 30 June 2010 (and not mandated since then)

3 Access products available

Please note: the following questions relate to NGA wholesale access products as defined in ERG's/BEREC's NGA Reports only. Current generation wholesale access products are dealt with in the questionnaire of the Remedies PT monitoring ERG WLA/WBA CPs.

The following sub-items should be answered for each of the following access products:

- a) Available: on a **voluntary/mandated** basis (please provide figures (number of the respective access products) as of June 30 2010)
- b) Product definition (main features, e.g. location of access point along the value chain)
- c) Included in **Market X**
- d) Current **regulatory obligations** (available since ..., also mention remedies still under discussion):
- **transparency** obligation e.g. requirements to provide information on the planned NGA network topology, according to Art. 5 FD, see also Art. 4 Draft NGA Recommendation;
 - availability of **reference offer**; time period to establish a Reference Offers (see Draft NGA Recommendation Art. 15);
 - **non-discrimination** obligations (e.g. provisions restricting launch of retail product until wholesale product is available, see Draft NGA Recommendation Art. 32);
 - **access obligations** (different types of mandated products? Details of product variants)
- e) **Costing** (e.g. LRIC, CCA, costs determined based on cost model; cost allocation issues, cost of capital (specific to NGA, see ERG (09) 17 Ch. D.3.2 and Annex of the Draft NGA Rec.)
- f) **Pricing** (e.g. long-term pricing models such as upfront payments, volume discounts; price-cap; measures to ensure consistency of remedies in Markets 4 and 5) (see Art. 5 Draft NGA Rec.)
- g) Mention any other relevant SMP regulatory measure and provide any other remarks on NGA regulation in your country.

3.1 Access to in-house wiring or equivalent

Not available at 30 June 2010 (and not mandated since then).

3.2 Concentration point/ manhole unbundling

The obligations are the same as those described under 3.3 below, but without specific mention of concentration points or manholes. The obligations for sub-loop unbundling apply to any intermediate point between the end user and the local exchange, so could cover concentration points or manholes.

3.3 Cabinet unbundling

- a) *Available: on a mandated basis – no data available on number of unbundled sub-loops*
- b) *Product definition: sub loop unbundling is mainly seen as using separate cabinets, although the formal obligation allows for other variants if requested*
- c) *Included in Market 4*
- d) *Current regulatory obligations:*
 - *transparency obligation (notifying changes in charges and terms and conditions; notifying technical information);*
 - *availability of reference offer (including contents and processes for updating);*
 - *non-discrimination obligations (no undue discrimination, rather than strict no discrimination);*
 - *access obligations (whilst the obligation could cover shared cabinets, the current reference offer only covers separate cabinets)*
- e) *Costing: LRIC-plus pricing mandated*
- f) *Pricing: no notable pricing features; no regulated controls on prices*
- g) *Not applicable*

3.4 ODF unbundling

Not available at 30 June 2010 (and not mandated since then).

More specific questions regarding fibre unbundling mainly resulting from the Commission's Draft NGA Recommendation:

- Specify for Market 4 which of the **remedies** according to Art. 9-13 AD are **in place** with regard to FttH/B and FttN.

No fibre unbundling remedies imposed on the SMP providers in Market 4. For KCom (Hull Area only) no specific access remedies are imposed, based on limited demand for such access. For BT, unbundled fibre access is not mandated due to low availability of fibre, relative cost of access and the availability of other (more proportionate) access products.

- **Art. 22f** Draft NGA Rec. foresees to mandate **unbundled access to the fibre loop** irrespective of the network architecture and topology implemented by the SMP operator. Are there any **exceptions** applying to SMP providers (e.g., **in certain geographic areas**)

from such an obligation? If so, specify these exceptions and elaborate on the reasoning for *not* imposing unbundled access to the fibre loop.

No, no exceptions since market 4 is a national geographic market with no remedy differentiation.

- Specify the conditions of the **reference offer** for unbundled access to the fibre loop, in particular those conditions that go beyond the minimum list of conditions as set out in Annex II FD (→ **Art. 24** Draft NGA Rec).
- What is the basis of the prices charged for access to the unbundled fibre loop (e.g., **cost-orientation**)? Is a **premium** incorporated reflecting any additional and quantifiable investment risk? If so, how you took account of the various **factors of uncertainty** on the one hand and the criteria **mitigating** the risk of NGA investment for the SMP operator on the other hand (→ **Art. 25** and Annex I Draft NGA Rec.).

3.5 Enhanced Bitstream¹

- a) *Available: on a voluntary basis at 30 June 2010 (mandated on 7 October 2010) – no data available on customer numbers*
- b) *Product definition: the regulatory requirements (from 7 October) cover 5 key characteristics:*
 - *local interconnection,*
 - *service-agnostic access (a ‘raw’ connection that can be used for any service),*
 - *uncontended access (between customer premises and local serving exchange),*
 - *control of access (competitors control, as much as possible, the services offered and quality levels),*
 - *control of customer premises equipment (for competitors – for service differentiation).*
- c) *Included in Market 4*
- d) *Current regulatory obligations (available since 7 October 2010):*
 - *transparency obligation (notifying changes in charges and terms and conditions; notifying technical information);*
 - *availability of reference offer (including contents and processes for updating);*

¹ See ERG (09) 17, Ch. D.1, in particular p. 12.

- *non-discrimination obligations (strict no discrimination requirement);*
 - *access obligations (product will be available for both FTTC and FTTP deployments)*
- e) *Costing: no obligations on costing for mandated product*
- f) *Pricing: no notable pricing features at this point; no regulated controls on prices*
- g) *Not applicable*

Below, some *additional* questions on bitstream:

- Please describe the different points of access available (e.g. at the broadband PoP, MDF) and the layers (layer 2, 3)

Access would in general be available at the local NGA exchange. This would vary depending on the technology involved, but would involve the first sensible local point of interconnection. In terms of layers, this would involve raw Ethernet access – at layer 2.

- Is quality differentiation possible and how is it implemented? Please mention the relevant quality parameters and state whether guaranteed bandwidth is available.

The details of the product specification are being discussed by industry, but we would expect different quality levels to be available. We expect competitors to have a choice of dedicated capacity and/or control over quality of service parameters.

- Is multi-cast technology available for alternative operators (e.g. as part of the regulated product)?

Multi-cast is not part of the mandated product, but we expect the product to be raw enough that other CPs can use it to build their own multi-cast capability using the access product available. BT may also decide to offer a multi-cast product in a commercial basis.

More specific questions regarding bitstream resulting from the Commission's Draft NGA Recommendation:

- Did your NRA apply **exceptions** (e.g., in certain geographic areas) from **imposing** wholesale **bitstream** access on SMP providers? If so, elaborate on the reasoning of that decision. The Draft NGA Recommendation foresees in Art. 37 the possibility of removing a bitstream access obligation if access to the fibre loop, in a given geographic area, results in effective competition.

No exceptions applied.

4 Migration issues

- Is there a migration **path envisaged from current to next generation access products**? What does it look like? To what extent is the NRA involved in setting up the migration path?

There are no current detailed plans to withdraw current generation access products, so no migration plan exists

- Are there any specific provisions for **decommissioning MDFs** that may help to create a level playing field and avoid discriminatory situations? E.g., is a certain notice period required so that competitors are informed about such decommissioning a reasonable period in advance, thereby avoiding discriminatory situations?²

There are no current detailed plans to decommission MDFs, and this is unlikely to change before at least the next review of Market 4 has been completed. BT has a general obligation in Market 4 to notify technical changes with an appropriate period of notice, which should be sufficient to ensure that competitors receive reasonable notice of any decommissioning. BT publishes details of its NGA roll-out plans for individual exchanges a year in advance of changes being made. The functional separation obligations on BT should avoid its downstream businesses having better knowledge of these changes than its competitors.

- Elaborate on the rationale for allowing or not allowing a decommissioning of MDFs, and any conditions involved. E.g., approval for a phase-out may be made contingent upon the **availability of an equivalent alternative wholesale product**.³

Not relevant at this point – the NGA roll-out is currently intended to be all overlaid on the current copper network, rather than replacing it.

- In its report “NGA – Implementation Issues and Best Practice”⁴ BEREK suggested that “in addition to the reference offer – wholesale customers should be able to obtain relevant information on roll-out of new infrastructures or technologies **per geographical area**. A reasonable **window of announcement** is necessary to create a level playing field on the retail market”.

- Explain if such provisions are applied and what they look like.

² BoR (10) 98, p. 9 suggests “Information on phasing out legacy wholesale service should be announced a reasonable period in advance to avoid discriminatory situations” whereas the Draft NGA Recommendation envisaged (Art. 39) a general five year transitional period.

³ See ERG (07) 16rev2, Ch. 4.5.2 and in particular the flow-chart diagram illustrating procedural issues in the substitution phase.

⁴ BoR (10) 08; Chapter E.2, p. 9.

As stated above, competitors receive good notice of changes, on a geographic basis.

- Elaborate on your practical experiences with such provisions (e.g. have there been any practical problems with enforcing such provisions?).

No problems experienced.

- Are there any provisions dealing with **stranded assets**? Investments by alternative operators get sunk if the closure of MDFs implies that pay-back periods are shorter than initially expected. Are there any measures in place to solve the problem of stranded assets and what do they look like (e.g. **compensation schemes**⁵)?

There are no plans to close MDFs, as BT's NGA network is currently intended to be an overlay to its copper network. So no provisions are needed for MDF closures. NGA local exchanges are also expected to be located at existing exchange sites, which should limit the eventual costs of changes.

- Are there any provisions relating to the **costs of migration**? E.g., how are the costs of migration split between the SMP operator and the competitors?

No. This issue has not yet arisen.

5 Transparency regarding civil engineering infrastructure

- **Art. 17** of the Draft NGA Recommendation foresees the establishment of a **database** containing information on (e.g.) geographical location, available capacity of all ducts⁶. In case such a database exists already in your country, explain:

No such database exists in the UK.

- **Who established/runs** this database: the NRA or another institution, possibly in co-operation with the NRA?
- **Which data** are collected in this database?
- Does the information **collected** cover just telcos or also non-telcos?
- How is the information being provided, on a **voluntary** basis or based on **obligations**? Specify the **legal** grounds for any obligations.

⁵ See BoR (10) 08, Ch. E.2.

⁶ Note: In its Opinion to this Draft Recommendation BEREC suggested to replace "all ducts" with "civil engineering infrastructure".

- What are the legal **requirements** that must be met to be entitled to get access to this database? Who **in** your country is entitled to access this database, only operators or also administrative units?
- Are there different **levels** of accessible information e.g. depending on the type of the entity requesting access to **the** database?
- How are **business secrets** dealt with?
- If relevant, elaborate on **practical experiences** in your country with such databases. Did this tool contribute to a more efficient provision of broadband services, in particular in “**white**” areas? Did any practical problems occur when establishing/running the database? (*Note: this information may be helpful for other NRAs when setting up similar databases*)
- What are the set-up and running costs of the database, and who pays for them? Were the costs shared **out** based on agreements or formal obligations?

6 Symmetrical regulation based on national legislation

- E.g. laws in France, Portugal, Spain: elaborate e.g. on the scope and content of the national legislation applied and also on which entities are covered by this legislation (see ERG (09) 17 Section D5).

No such regulation to enable access to NGA is implemented in the UK at this point.

7 National next generation broadband initiatives/ measures

- Illustrate the main content of initiatives/measures aiming at promoting next generation broadband.⁷ Consider the following aspects:
 - **Main focus** of the initiative/measure (e.g. providing broadband in currently underserved areas; **outlining** the regulatory approach towards NGAs networks in order to provide legal certainty and planning security for operators; providing transparency);

Providing superfast broadband in remote areas. Sharing of non-SMP infrastructure.

- Scope and envisaged **target** of the measure;

⁷ This may be initiatives/measures adopted by the government. Where appropriate you may also refer to NRAs' strategies aiming at the promotion of next generation broadband.

Rural areas - pilot projects identified to test fibre roll-out in rural areas and to understand how to co-ordinate resources where the market is not likely to invest. A consultation is planned on details of a relaxation in rules on overhead deployment of telecommunications cables in rural areas. Sharing the infrastructure of both non-SMP telecoms infrastructure (under Article 12) and non-telecommunications utilities (e.g., sewage, gas and electricity) to support fibre roll-out.

- Current **achievements, milestones** reached.

Sharing of non-telecoms infrastructure - consultation completed, results awaited.

Article 12 powers – Government has recently published its approach and consultation on implementing the revised EC framework, which is to be made law in the UK by May 2011.