Vodafone Response to the relevant markets consultation

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1. Introduction

Vodafone welcomes the opportunity to respond to The European Commission's consultation on the revision of the recommendation on relevant markets. We envisage the revised recommendation will be in place from 2014-2020. During this period the migration to all IP networks will have advanced significantly and might be complete. The list of revised markets needs to be compatible with this technological development.

We believe the current framework for assessing relevant markets – the three criteria test – remains appropriate. From the current list of relevant markets, there is no sign that any are becoming competitive. In some cases this is because the markets are inherently uncompetitive and *ex ante* regulation will be required for the foreseeable future. In other cases the definition of the market is inhibiting fair competition and the boundaries of the market need to change. Our main proposals are:

- The removal of the retail market for fixed telephony access. This market remains uncompetitive but this is best solved through wholesale obligations especially fit-for-purpose Wholesale Line Rental (WLR) products and effective margin squeeze analysis.
- A market for general wholesale access to fixed networks should replace the current markets 4 and 5 (and to an extent market 6). This market can be either national or several sub-national markets depending on local circumstances.
- Different forms of access should be mandated depending on both supply and competitive conditions as analysed and implemented at the appropriate geographic level.
- The market for wholesale access to fixed networks should include a sub market for the provision of wholesale fixed voice services. This market should remain relevant until the migration to all IP solutions removes the distinction between voice and data services.
- A market for access to key physical infrastructure – ducts and dark fibre - but not including any active equipment should be defined. This market would primarily facilitate fibre-based mobile backhaul.
- The review period should differ by market. For some markets such as termination markets, there is no need to perform a market analysis every two years given the expectation that operators will have SMP in these markets for the foreseeable future. For the access to fixed networks market, including the sub-market of wholesale fixed voice access, there might be a need for shorter review periods given their dynamic nature.

This document is structured as follows. In section 2 we set out the status of competition in each of the relevant markets and the implications thereof. We also set out the expected trends in the provision of communication services that will have an impact on market definition. In section 3 we set out the detailed arguments and analyses that support our proposals as set out above and conclude on the list of relevant markets. In section 4 we respond to the specific questions in the consultation.

2. Current status of competition by market

The table below shows the assessed status of competition in each of the relevant markets according to the European Commission website.

16/04/2012 Art 7 Market Overview

	Effective competition -no ex ante regulation
	No effective competition - ex ante regulation
	Partial competition - partial ex ante regulation
W	Withdrawal (totally or partially) not yet-renotified
V	Veto

1	1st round-competition/regulation
2	2nd round-competition/regulation
3	3rd round-competition/regulation
4	4th round-competition/regulation

	NEW RECOMMENDATION							OLD RECOMMENDATION								
	Access to PSTN for res & non-res.	Call orig. on fixed network	Call term. on fixed network	Unbund. access	Broadb. access	Term. segments LL	Voice call term. on mobile networks	Local/nat. call for res.	Internat. call for res.	Local/nat. call for non-res.	Internat. call for non-res.	Retail LL	Transit on fixed network	Trunk segments LL	Access & call orig. on mobile network	Broadcast Transmis.
	Market 1	Market 2	Market 3	Market 4	Market 5	Market 6	Market 7	ex-Mkt 3	ex-Mkt 4	ex-Mkt 5	ex-Mkt 6	ex-Mkt 7	ex-Mkt 10	ex-Mkt 14	ex-Mkt 15	ex-Mkt 18
Austria	3	3	3	3	3	3	3	3	2	3	3	3	1	2	1	2
Belgium	1	1	2	2	2	1	2	2	1	2	1	1	2	1	1	w
Bulgaria	1	1	1	1	1		1	1	1	1	1		1			
Cyprus	2	2	2	2	2	1	2	2	2	2	2	1	2	1	2	1
Czech Republic	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	2
Denmark	2	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1
Estonia	2	2	2	2	2	2	2	1	1	1	1	1	1	2	1	2
Finland	2	2	2	3	3	1	1	2	1	2	1	1	2	1	V	2
France	3	3	3	3	3	2	3	1	1	1	1	2	1	2	W	2
Germany	2	2	2	3	2	1	2	2	1	2	1	2	2	1	1	2
Greece	2	2	2	3	3	1	2	2	1	2	1	1	2	1	1	1
Hungary	3	3	3	3	3	3	4	2	2	2	2	3	2	2	2	1
Ireland	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	1
Italy	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
Latvia	1	2	3	1	2	2	2	1	1	1	1	3	1	1	1	1
Lithuania	1	1	3	2	1	1	2	2	1	2	1	1	1	1	1	2
Luxemburg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Malta	2	2	2	1	1	1	2	2	2	2	2	1	2	1	1	1
Netherlands	2	2	3	2	2	2	2	2	2	2	2	2	2	2	1	2
Poland	1	2	2	2	2	1	3	1	1	1	1	1	1	1	2	2
Portugal	1	1	1	2	2	2	2	1	1	1	1	2	1	2		1
Romania	1	1	2	1	1	1	2	1	1	1	1		1			1
Slovakia	2	3	2	f/w	1	2	2	2	2	2	2	2	2	1	1	2
Slovenia	2	2	2	3	3	2	3	1	1	1	1	2	2	1	2	2
Spain	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2
Sweden	2	2	2	2	2	1	2	1	1	1	1	2	2	1	1	2
UK	2	2	2	2	2	2	3	2	2	2	2	2	2	2	1	1

From this snapshot the immediate reaction is that there is little scope to remove any of the markets from the list. Markets 2, 3, 4 and 7 have been deemed uncompetitive in every Member State and whilst there are islands of competition in markets 1, 5 and 6, at a European level one can only conclude that each of the seven markets remains uncompetitive. This gives rise to two possible courses of action:

1. Maintain all the existing markets in their current form (and consider adding additional markets) and accept that each of the markets will remain uncompetitive in the near to medium term.
2. Redefine the list of markets if it can create a more competitive environment subject to the condition that the degree of consumer protection afforded by the current list of markets is not reduced.

The latter option appears more attractive. The European Commission should be seeking to define the set of markets that will give rise to the most competitive environment to the benefit of consumers. The set of markets needs to be consistent with the expected market trends from 2014 – 2020. We see the main trends that will have an impact on market definition as follows:

- The migration of voice services to IP. This is likely to include the separation between network access and voice service provision
- The growth in traffic carried by mobile networks will see microwave-based backhaul solutions reach their limits and mobile operators will be required to upgrade to fibre-based backhaul solutions.
- Services will increasingly be purchased in bundles. The ability for competitors to be able to replicate bundle offers will be essential for the effective functioning of these markets. The market analysis framework will need to ensure competition problems do not arise as a result of lack of access to the network products that support these bundles. In addition, NRAs (and Competition Authorities) will need to ensure that other bottlenecks, e.g. exclusive content, do not give rise to competition problems.

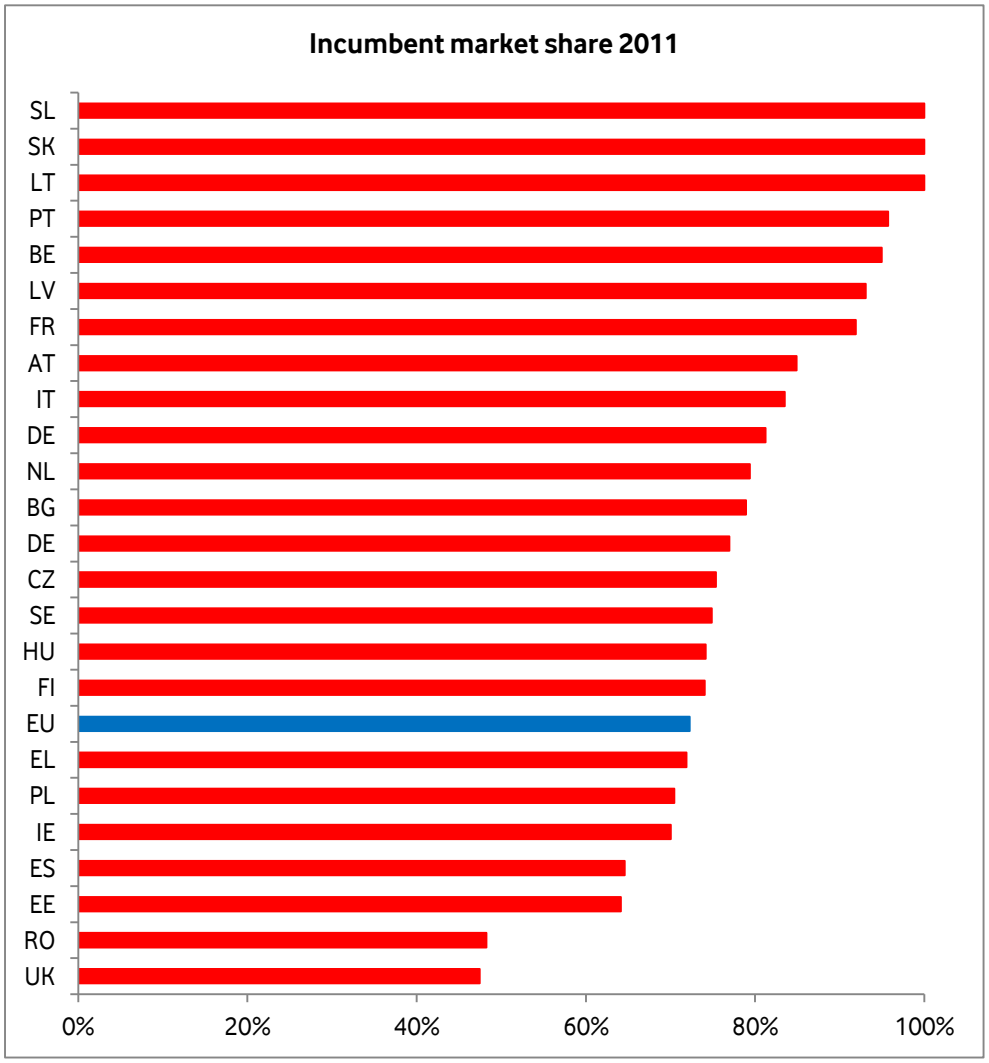
Our detailed analyses in the following sections set out the changes required to the list of relevant markets that we believe will deliver both sustainable competition and positive consumer outcomes given the expected market developments.

3. Detailed analyses

This sections sets out the detailed analyses and argumentation in relation to each of our key findings.

The retail market for fixed telephony access

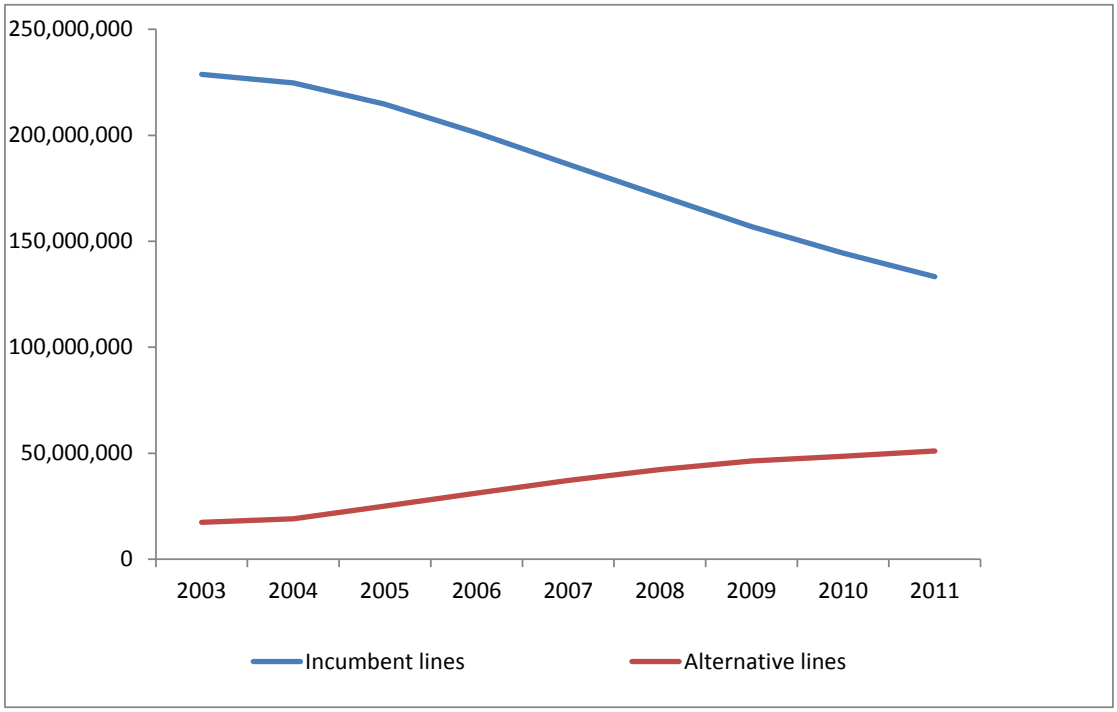
After more than a decade of European telecoms regulation with a focus on wholesale access there shouldn't be any need for *ex ante* regulation of retail markets. However, when looking at the market share of incumbents in relation to fixed voice markets, there is no sign that the retail market is competitive. The chart below shows incumbent operators' market shares of voice channels at the end of 2011.



Source: AnalysysMason market matrix

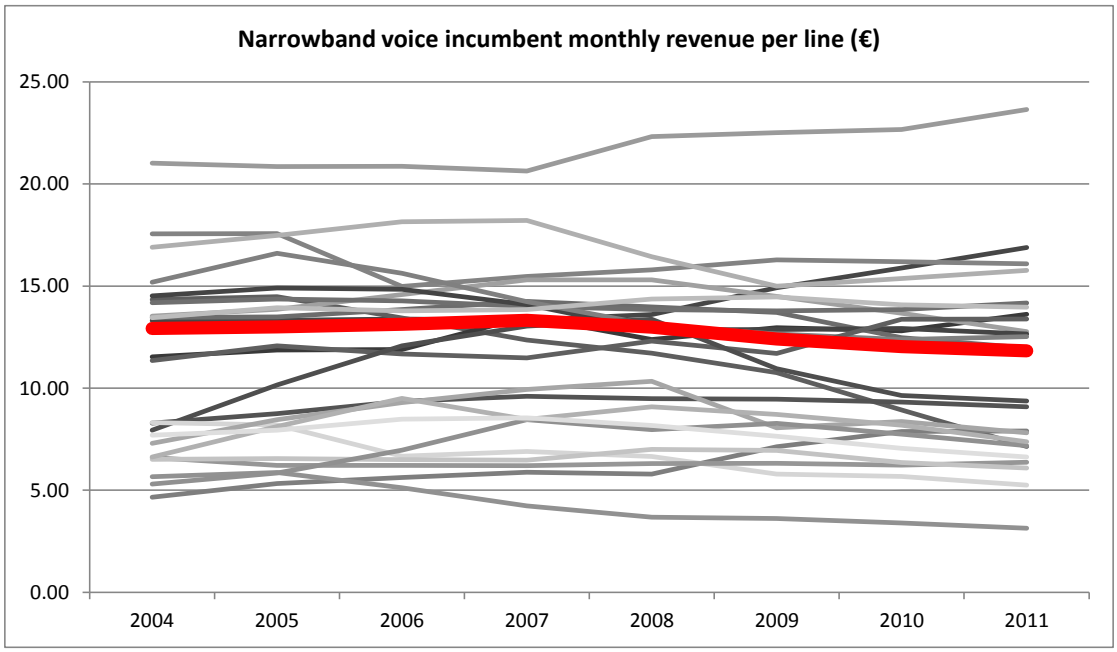
Incumbents still retain over 70% market share for fixed voice retail subscriptions. Whilst incumbents have lost share over time – as shown in the chart below - there is still no evidence

that the distribution of market shares is consistent with markets that are either effectively competitive or moving towards effective competition in the near future.



Source: AnalysysMason market matrix

It is also worth noting that the pricing of retail fixed voice access has remained relatively stable over time.



Source: AnalysysMason market matrix (thick red line is weighted average of country-specific prices)

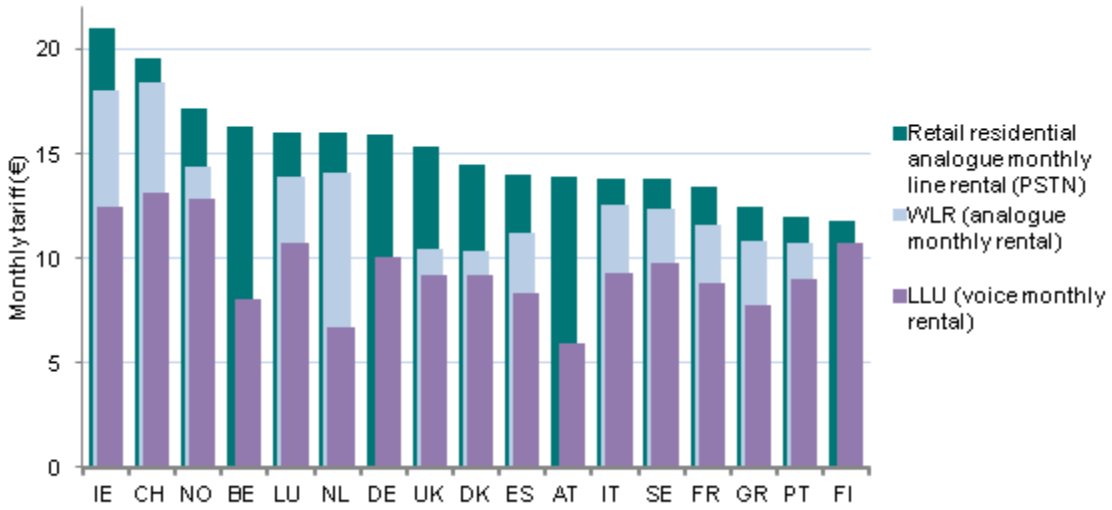
In a truly competitive market one would expect a far stronger price reaction from operators faced with shrinking markets. However, both the individual country prices, and the average prices across all countries show a high degree of stability.

All the evidence presented above indicates that the retail market for fixed voice access is not displaying the characteristics of a competitive market. A possible conclusion is that this supports the view that this market should remain in the list of markets susceptible to *ex ante* regulation. In the absence of any changes to other markets Vodafone would agree with this conclusion. However, Vodafone is of the view that this market is not moving towards effective competition **because** it is regulated at a retail level.

This gives rise to two undesirable consequences:

1. There is less focus on ensuring the wholesale conditions (price and non-price) are in place to allow alternative operators to compete with the incumbent
2. Regulatory pricing decisions remove pricing flexibility from the incumbent yielding price stability even in the face of a shrinking market

The graph below shows the 'space' between the incumbent's retail price and the wholesale line rental price. The graph shows retail margins of less than €3 per line per month in many member states. It is therefore no surprise that incumbents retain such a high share of the market.



Source: Cullen International

Vodafone believes that in the near term, the solution to these problems is to remove retail price regulation which is still present in many member states[1] and ensure the incumbents' wholesale fixed voice products are fit for purpose. Fit-for-purpose products will allow alternative operators to provide retail voice services of the same quality as the incumbent operator, with no barrier to switching and priced at a level that allows a reasonable return for efficient operators (i.e. there is

[1] In some member states markets 1, 4 and 5 are analysed jointly and only wholesale remedies are applied in relation to market 1. In other member states retail remedies including price control have been applied in market 1 when the incumbent is found to have SMP.

no margin squeeze). This can be achieved within the context of the general market for wholesale fixed access (the combination of current markets 4 and 5) which is described further below. For the avoidance of doubt the removal of the retail market for fixed telephony access cannot lead to any lessening of wholesale regulation for fixed telephony access in the short term at least. The remedies currently applied at a wholesale level including wholesale line rental and compliance with margin squeeze obligations must be maintained and in many cases strengthened to enhance the competitive process.

In the medium term, the distinction between voice services and data services should disappear although the exact timeframe for this remains highly uncertain. Customers will be buying fixed network access on which voice and/or data services will be provided. The artificial distinction between voice and data access from either a wholesale or retail perspective will not be present. The costs of providing fixed access (as opposed to fixed services) are fully shared between voice and data whether on fibre or copper and it is only a legacy of historic regulatory decisions that this distinction remains. A single access fee per connection should apply at a wholesale level with no tying of services[2]. This will ensure a level playing field for the provision of access and a competitive and innovative environment for the provision of communication services.

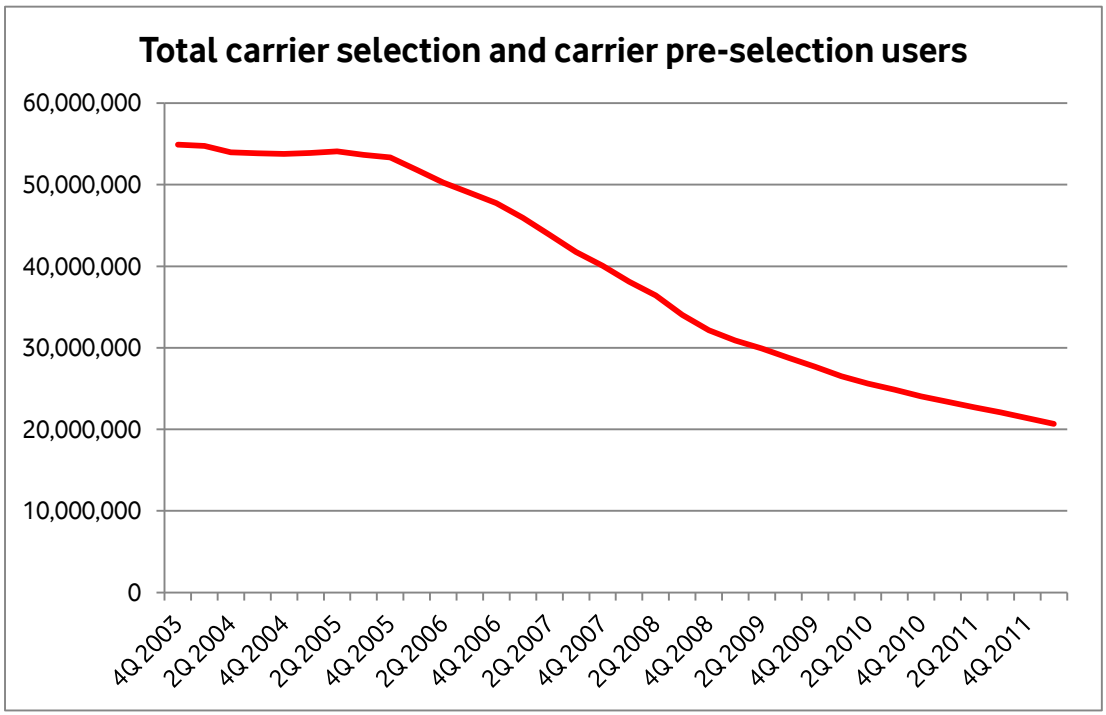
In some markets elements of retail price regulation remain to ensure access to a basic telephony service at an affordable price. The removal of the retail market for fixed telephony access should not have any impact on this measure as it can be implemented through Universal Service obligations rather than market analysis. A change in the list of relevant markets will also give NRAs the opportunity to re-examine the need for such regulation in the first place and specifically whether alternative provision of a basic voice telephony service – especially prepaid mobile solutions – are sufficient.

Recommendation: Remove the retail market for fixed telephony access from the list of relevant markets. This should not lead to any lessening of wholesale regulation for fixed telephony access. NRAs must ensure a fit-for-purpose wholesale telephony product within the market for wholesale fixed network access is available until the point in time when the distinction between voice access and data access disappears. A fit-for-purpose wholesale product will allow alternative operators to provide retail voice services of the same quality as the incumbent operator, with no barrier to switching and priced at a level that allows a reasonable return for efficient operators.

The wholesale market for call origination

The market for wholesale call origination has declined significantly in recent years. Since 2003, the total number of carrier selection and carrier pre-selection users has reduced from over 50m to approximately 20m, as shown in the chart below.

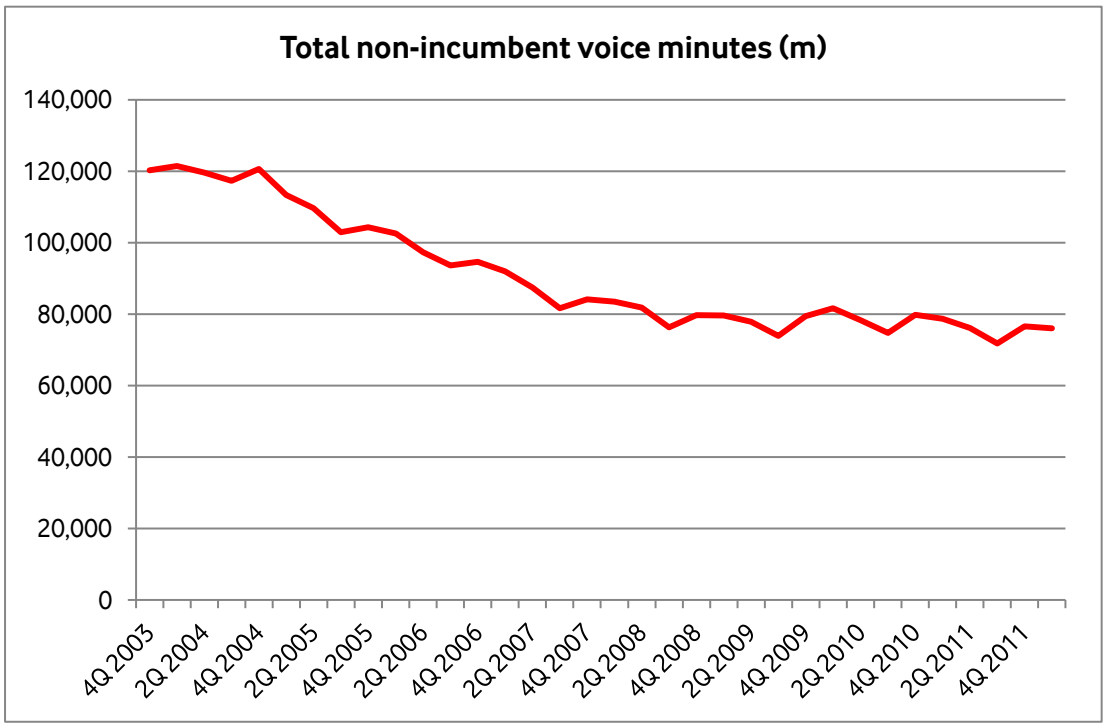
[2] E.g. In some member states, customers are only allowed to buy broadband services if they also subscribe to a voice service.



Source: AnalysysMason market matrix

Despite the falling number of carrier selection and carrier pre-selection users, it is still relied upon by 20 million European customers (which represents about 15% of incumbents' narrowband lines). In the absence of carrier selection and carrier pre-selection, these 20 million European customers would be faced with less choice.

We note that the number of minutes carried by non-incumbents (excluding VOIP) has stabilised at around 80 billion minutes per quarter. The majority of these minutes will still be based on carrier selection and carrier pre-selection.



Source: AnalysysMason market matrix

Apart from assessing the market for call origination in terms of size, we have also considered its importance in different segments. In the business segment, it is Vodafone's experience that a significant number of large enterprise customers require fixed voice services based on carrier pre-selection. This is because some large enterprises – especially those with business critical telephony requirements – are still not prepared to migrate to VOIP-based solutions that are unable (or perceived to be unable) to match traditional circuit switched voice for quality and reliability. In the absence of a regulated wholesale call origination product non-incumbent operators would be unable to fully address the business segment. This would have a direct impact on the competitiveness of the market for fixed voice services but also have knock-on effects to fixed broadband and mobile markets as enterprise customers are increasingly looking to full service providers who can meet all their communications requirements.

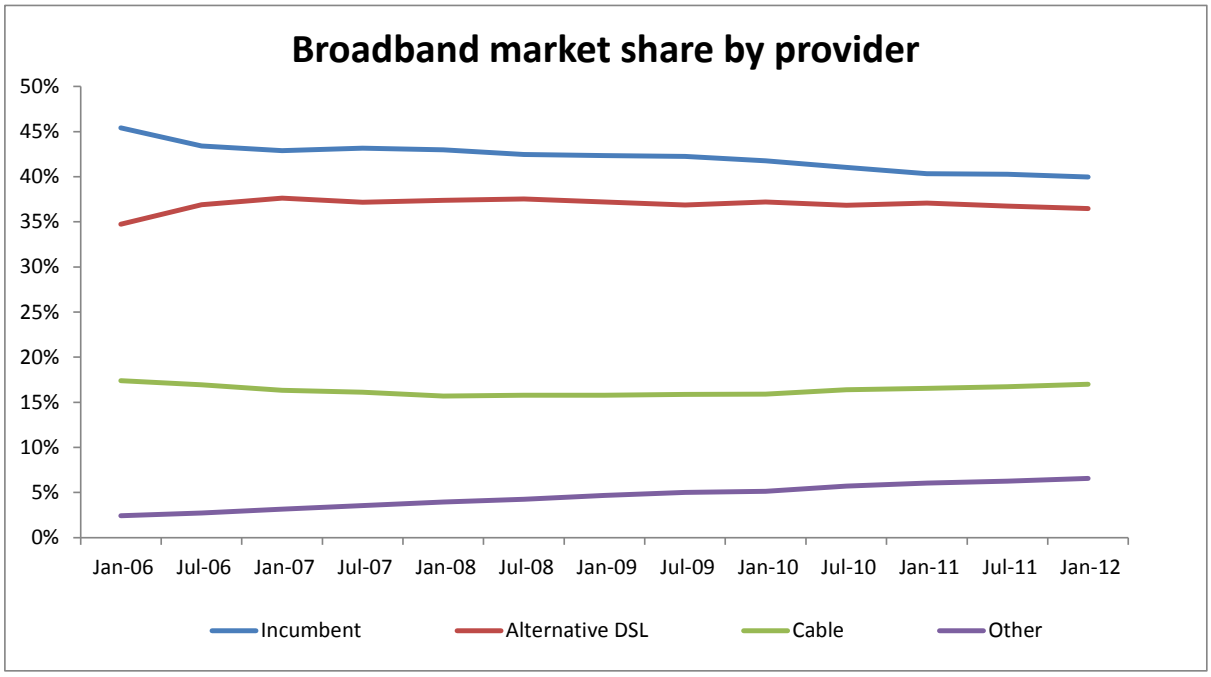
Given the scale and importance of wholesale call origination it should remain on the list of relevant markets. In some member states we would expect this market to become competitive in the near to medium term as alternative forms of wholesale access and the adoption of new technologies for voice become the norm. However, the timing of this is highly uncertain and the regulation of this market on an *ex ante* basis remains important for ensuring competition.

Recommendation: Maintain the wholesale call origination market on the list of relevant markets.

Wholesale access to fixed networks

The current list of markets separates wholesale physical access (market 4) and wholesale broadband access (market 5). Broadly speaking, unbundling-based remedies have fallen under market 4 and bitstream-based remedies have fallen under market 5. However, this distinction has become blurred as new technologies have resulted in a migration from physical unbundling to virtual unbundling which straddles the two markets.

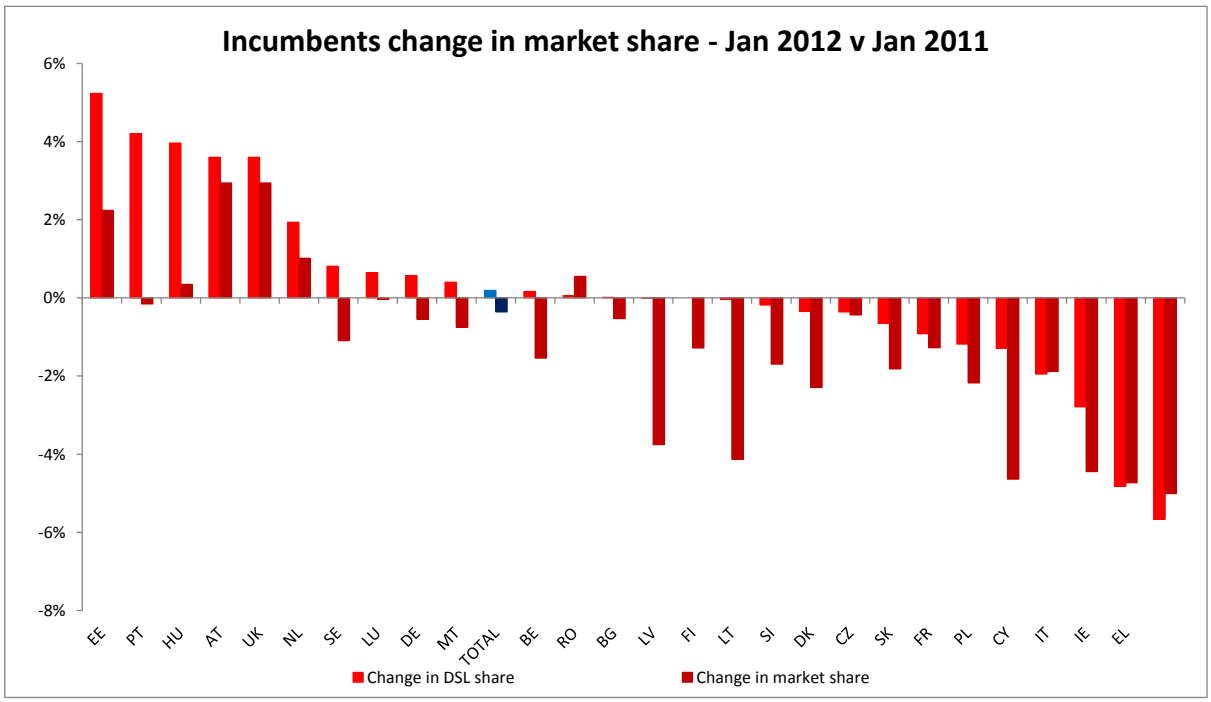
Analysis of the European Commission's data on broadband retail market shares shows a high degree of stability with incumbent operators enjoying in excess of 40% market share with alternative DSL operators serving just under 40% of the markets. Cable operators service around 16% of the market with other technologies – predominantly LAN services in Eastern Europe – making up the rest of the market.



Source: European Commission

The very slight downward trend in the incumbents' market shares indicates only limited success in breaking their stranglehold on the broadband market. With many alternative operators present in each of the member states, it remains a concern that an individual operator can enjoy a stable market share that is typically 3-5 times larger than its nearest competitor.

We also note the recent trend observed in a number of markets of incumbents regaining market share from alternative operators. The chart below shows that between January 2011 and January 2012 incumbents have increased their share of the DSL market in 11 member states. Incumbents have also increased their overall share of the market in 6 member states.



Source: European Commission

It is not within the scope of this paper to examine the reasons why incumbents are increasing market share in many member states – that is the job for NRAs as part of their market analyses. However, as noted above, incumbents already enjoy a share of the market that can be up to 5 times greater than the nearest rival. This is difficult to reconcile with fully competitive markets. Within the context of this consultation, it is essential that the recommendation on markets will lead to a wholesale environment that can yield better competitive outcomes.

Rather than defining separate markets for wholesale physical access (in the form of unbundling) and wholesale broadband access, the two markets should be combined into a single market of wholesale access to fixed networks. There is a broad range of wholesale access products which can be purchased at different levels in the value chain as shown in the table further below. As a general rule, wholesale access should be mandated to ensure sufficient operators are able to compete in the retail market. The starting assumption should be that the incumbent operator has to offer all wholesale services on a national basis (from those furthest into the access network, i.e. duct and pole access) until there is a level in which sufficient operators are present to allow competition at the next level. For example, if there are three operators (including the incumbent) using sub-loop unbundling (SLU), wholesale regulation on the incumbent can be relaxed only if it can be shown that infrastructure-based competition is yielding the expected outcomes at both a retail and wholesale level.

The expected outcome at a wholesale level is competition between the operators to ensure other access seekers are able to gain access on fair commercial terms – analogous to mobile networks and thin and thick MVNOs – whereby alternative operators will be able to gain access to

wholesale services with the level of infrastructure intensity that suits them[3]. In order for this approach to work alternative operators who purchase wholesale services from the incumbent must be allowed to provide wholesale services to other operators at the next level in the value chain. Whilst the chain of wholesale products will differ on a market-by-market basis, we expect the hierarchies for copper and fibre to be similar to those shown in the table below:

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Copper	Duct and pole access		LLU	Local bitstream	Regional and national bitstream	Resale
FTTC	Duct and pole access	SLU		VULA	Regional and national bitstream	Resale
Vectored copper/ FTTH PON	Duct and pole access		Wavelength unbundling	VULA	Regional and national bitstream	Resale
FTTH PTP	Duct and pole access	SLU	Unbundled fibre	Local bitstream	Regional and national bitstream	Resale

The approach set out above needs to be performed at the geographic level which is defined as part of the market analysis process. In some member states this will be at a national level. In other member states this will be at a sub-national level given the non-homogeneity of supply and demand conditions. In both cases, there can only be a relaxation of regulation at any of the levels when a competitive wholesale market is observed. The outcome of this approach is that **all** wholesale products that are technically feasible are available (subject to being demanded) on a national basis either as a result of regulation or competition. The designation of competitiveness and the absence of wholesale products (where demand exists) cannot coexist.

Where sub-national markets are defined, the demarcation point for the analysis will vary from country to country. In current generation terminology such geographic analysis could be done on an exchange-by-exchange basis. In next generation networks the demarcation point could either move out to a cabinet-by-cabinet basis, or if duct and pole access and SLU remain marginal products, could move in to a central office basis. In practice, analysing thousands of separate markets on cabinet-by-cabinet basis or even exchange-by-exchange basis will prove too time consuming and impractical. NRAs should define criteria that would allow for the analysis to be performed at a more aggregated level. NRAs will need to strike the right balance between practicality and robustness. The outcome of this approach is that even retail providers that have no infrastructure at all should have access to competitive resale products on a national basis.

[3] There are a number of additional wholesale products such as colocation space and handover points that are crucial for alternative operators. Additionally, alternative operators have different mixes of wholesale products depending on their specific needs. The proposed approach should result in pricing across the entire value chain being consistent with the outcome from competitive markets. However, NRAs will still need to be particularly mindful – within the context of applying remedies - to ensure alternative operators can replicate the offers of incumbent operators.

If NRAs conclude that there are sub-national markets (whereas previously only a national market had been analysed), we would still expect the full spectrum of wholesale products to be available on a national basis. This is because the removal of a key wholesale product is difficult to reconcile with competitive markets. However, this is the outcome that is currently observed in some cases where sub-national markets have been defined and bitstream products are no longer available. This leads to a risk of infrastructure-only operators, which will be particularly harmful for the prospects of a pan-European market, especially in the business segment[4]. It is therefore essential for NRAs to demonstrate competitive wholesale and retail markets before relaxing any regulatory obligations at either a national or sub-national level. In order to mitigate against the risk that key wholesale products are no longer provided in certain areas NRAs could require the incumbent to sign up to an undertaking that such products will continue to be provided on fair and reasonable terms as a condition for the market being found competitive.

Whilst the approach outlined above will lead to different remedies being applied in member states, this is necessary given the different nature of competition that is observed. Even in the absence of a single fixed access market, a divergence of remedies is inevitable given the divergence in technical solutions that are being applied (FTTH v FTTC, GPON v PON v PTP). The Commission needs to ensure that principles are applied consistently across a broad market which exists in every Member State, rather than trying to ensure that remedies are applied consistently across narrow markets which will only exist in a subset of Member States. For example, in some member states it will be possible to identify a separate market for enterprise connectivity (which includes current market 6 – terminating segments of leased lines[5]).

We believe that the approach outlined above will allow NRAs to take local circumstances into account and implement separate remedies in the enterprise connectivity market when justified from the analysis of the competitive conditions in the market as a whole and specifically its sub-markets. In some cases, e.g. in city centres, the business market will have similar supply conditions to the residential market with alternative operators able to choose between unbundling remedies and bitstream-type solutions provided by the incumbent (and other alternative operators). The appropriate wholesale remedy/ies will depend on the level at which competition is effective. In other cases, e.g. business parks it is likely that there will only be a single provider of connectivity into the business park and it will not be economically feasible for an alternative operator to replicate the necessary infrastructure. In these cases the appropriate remedy will be an active wholesale product to ensure the end customer is able to purchase services from a variety of retail operators. This approach avoids the need for the Commission to

[4] In order to be able to sell communications services to a pan-European multi-site business, it is essential for the service provider to be able to buy a range of wholesale services especially bitstream and resale. It is not possible to rely on unbundling/infrastructure remedies in all national and sub-national markets. If markets are deemed competitive at an infrastructure level and bitstream and resale are no longer available, pan-European businesses that purchase retail telecoms services will not be able to be able to benefit from the synergies of purchasing such services from a single provider.

[5] In the case of leased lines – especially those currently used for mobile backhaul – we expect the competitive market for active products that will arise from the physical infrastructure remedies (as explained later in this document) to take some time to materialise. In the intervening period there will be a need to maintain the regulated provision of existing leased line products. This can be achieved within the market for access to fixed networks.

define which of the fixed access sub-markets should be subject to ex ante regulation. Rather, the Commission should define a broad fixed access market which is either analysed at a national level or sub-national level. This(These) market(s) will be an amalgamation of a number of sub-markets which won't be present in all member states. Each NRA will be required to perform its market analyses to ensure no monopoly bottlenecks remain.

As explained above with respect to current market 1, in the near term the market for access to fixed networks should include the wholesale provision of fixed voice access as well as broadband access. This is because for the quality of voice service that alternative operators are able to provide using bitstream services and in some cases even using wholesale circuit-switched voice products cannot match the quality of the service that incumbent operators provide. At the same time, it is not economic for alternative operators to invest in their own circuit-switched infrastructure. Whilst a potential solution would be to enhance the quality of the bitstream product it is Vodafone's experience that many customers – especially business customers – are not prepared to switch to IP-based voice products. As such IP-based voice products are not an effective substitute for circuit switched voice services and a separate market requiring equivalent service quality should be defined until the distinction between voice access and data access disappears. The wholesale fixed voice access service must be provided at every exchange unless the incumbent ceases to offer such services. If the incumbent stops providing circuit-switched voice services there will no longer be a need for this sub-market and the market for access to fixed networks will cover both data and voice services.

Given the dynamic nature of these markets, NRAs should be given more flexibility regarding the period of review. In some cases, especially during the migration to new technologies and platforms, an annual review might be required.

In some cases the assessment of competition will be performed on an area-by-area basis rather than on a national basis. In the policy statement of Commissioner Kroes[6] she highlights the potential for inter-modal competition from cable and mobile networks. Within the framework we have defined above, we believe there is potential for competitive constraints from both cable and mobile networks but only in certain limited circumstances.

An operator would only be considered competitively active at a given level if it provides wholesale access to its services at that level. For cable networks, in the vast majority of cases they are closed networks only providing retail services. As such, closed cable networks should not be considered a sufficient constraint to justify the removal of wholesale access obligations on the incumbent operator. Likewise, when there are two operators relying on SLU and a cable operator, this would only be considered a sufficient level of competition to remove the requirement if there is a competitive market for VULA or bitstream services. The outcome of a single market for wholesale fixed access is that alternative operators will always be able to choose between deploying their own infrastructure and purchasing wholesale access at any level in the value chain at either a regulated price or competitive price.

[6] http://europa.eu/rapid/press-release_MEMO-12-554_en.htm

Regarding mobile operators, we do not believe that mobile broadband will act as a competitive constraint on fixed broadband in most areas. Data from Cisco's Virtual Networking Index[7] shows the extent to which they expect data will be carried on fixed and mobile networks.

IP Traffic, 2011-2016 (PB per month)							
	2011	2012	2013	2014	2015	2016	CAGR 2011-2016
Fixed Internet	23,288	32,990	40,587	50,888	64,349	81,347	28%
Managed IP	6,849	9,199	11,846	13,925	16,085	18,131	21%
Mobile data	597	1,252	2,379	4,215	6,896	10,804	78%

The majority of managed IP will be carried over fixed networks which leaves mobile data only accounting for 10% of total demanded data (despite being forecast to increase 18 times over this period). At this stage one has to conclude that mobile networks will be unable to handle enough of the total demanded data to place a real competitive constraint on fixed broadband on a national basis.

It is possible that in some areas – especially low demand areas where there is no prospect of fibre roll-out – mobile networks once upgraded to LTE will act as a competitive constraint on the provision of copper-based ADSL broadband. Vodafone's experience to date is that migration from ADSL to LTE only occurs in areas where the ADSL speed is less than 6 Mbps. This relationship will change over time as both speed and reliability on LTE networks is enhanced, but also as copper-based technologies evolve to allow higher speeds from existing infrastructure. NRAs will need to analyse the threshold at which LTE services are a competitive constraint on copper services. Where the NRA finds overlap between LTE and ADSL, the presence of mobile networks could be used to justify the removal of wholesale fixed access obligations where competition is demonstrably effective.

7 http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html

Recommendation: Merge markets 4 and 5 to a single market for the provision of fixed access with analysis and remedies at either a national or sub-national level depending on supply and demand conditions. A sub-market for wholesale voice access should be defined as long as circuit-switched voice services are provided.

Wholesale access to key physical infrastructure

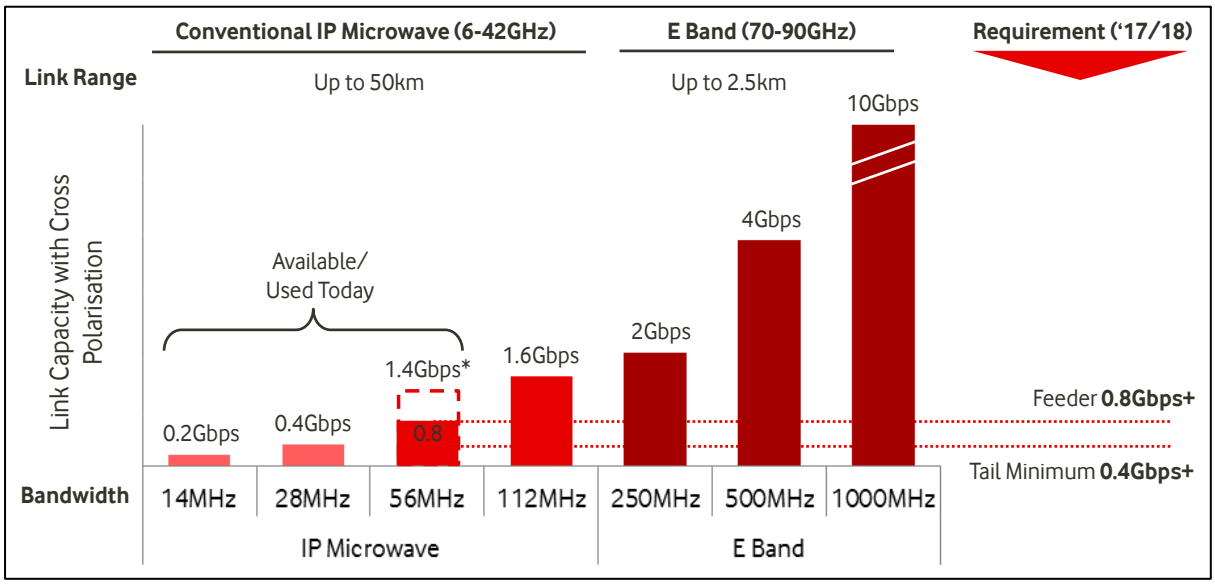
There is a market for physical infrastructure that is distinct from the general market for access to fixed networks. This market is for duct and dark fibre access on a national level which will be used predominantly by mobile operators to develop mobile backhaul solutions. This market is distinct from the market for access to fixed networks in that the retail markets that are ultimately served from this market are not the mainstream fixed retail markets. As such, the current practice by incumbents in some member states of limiting the use of the physical infrastructure to the provision of fixed services cannot be maintained as this will lead to competition problems in the retail market for mobile services as explained below. This market can be analysed as part of the market for access to fixed networks (as is the case in e.g. Spain) or as a separate market. In either case the NRA must reflect the use of the infrastructure across both fixed and mobile retail markets in the remedies that are applied. We believe this principle should be standard practice in the setting of remedies and operators with market power should not be allowed to unreasonably limit how their wholesale products are used.

Apart from mobile backhaul, in some cases this market can also be used to enhance the competitive provision of services to large enterprises. This market also differs from general fixed network access in terms of remedy in that only passive solutions are required. This will allow mobile operators to create their own technical specifications for backhaul. This is essential given the pace of technological change in mobile networks. Rather than having all mobile operators relying on the technical specifications set by the incumbent, duct and dark fibre access will allow any of the mobile operators to sell managed backhaul services. It is Vodafone's experience that innovation in backhaul services is increased when there are multiple providers. In the UK it was only the presence of Virgin Media in the backhaul market that resulted in a synchronous Ethernet backhaul solution being developed after three years of failed requests to BT. It is crucial for mobile operators to have the option to self-provide backhaul capacity. Without this option, mobile operators would be too reliant on nationwide leased line providers, and in most markets only the incumbent can provide such coverage.

As the data below shows, Vodafone has been increasing its share of self-provided backhaul in recent years.

	Access Self-build			
	09/10 Actual %	10/11 Actual %	11/12 Actual %	12/13 FCST %
Eu	78.2	79.7	83.3	84.6

The growth in self-provided backhaul has largely been achieved with microwave. Going forward, and for the purposes of this review period there is considerable uncertainty that the throughput capability of microwave-based backhaul will be sufficient to meet the capacity requirements of mobile networks. Based on the typical topology of Vodafone's networks, we already know that fibre will be required at aggregation sites which represent 20% of Vodafone's base station footprint. In addition, once 2Gbps throughput requirements at sites are commonplace, fibre will be required on suburban and rural sites which require >2km transmission lengths. As the diagram below shows, the current limits of microwave at 0.8 Gbps (excluding MIMO) will be reached at feeder sites by 2017/18 based on the current view of traffic growth.



The extent to which microwave can support Vodafone's other backhaul transmission requirement is also subject to the following uncertainties:

- the take-up and intensity of LTE services
- the availability and pricing of high frequency spectrum to support high quality microwave backhaul
- radio site architecture – if there is a move towards Cloud RAN architectures (central coordination across several base stations to reduce interference and deliver substantially higher data rates to end customers) there will be a requirement for backhaul throughput significantly in excess of the foreseen capabilities of microwave

Given the extent to which fibre backhaul is already required and the uncertainties outlined above, there is a clear case for ensuring that mobile operators have access to the passive infrastructure required for mobile backhaul – i.e. ducts and dark fibre - on a non-discriminatory basis. This will lead to three positive outcomes:

1. A level playing field for the sourcing of backhaul required for the delivery of high-speed services over mobile networks

2. A competitive market for the provision of managed capacity services including mobile backhaul and other connectivity services (this assumes that purchasers of duct access and dark fibre participate in the market for managed services)
3. Valuations for high-frequency spectrum that take into account the presence of backhaul alternatives (i.e. reasonably priced fibre). This ensures the spectrum is allocated to the most valuable use rather than a use that is artificially high due to supply constraints in adjacent markets.

Recommendation: Identify a new market for the provision of access to ducts and dark fibre.

Call termination markets

The markets for call termination on both fixed and mobile networks should remain on the list of relevant markets. It has been suggested that these two markets should be merged into a single call termination market. In order to determine whether there should be a single market for call termination or separate markets for call termination on fixed and mobile networks one has to consider the two key principles that relate to these markets. They are:

- Cost-based pricing should be implemented for both fixed and mobile call termination with the same costing methodology applied to both
- Cost should be based on efficient service provision – fixed networks and mobile networks are materially different in this regard and therefore a single termination rate cannot be applied across fixed and mobile networks

As the Commission has previously recognised in its recommendation on termination rates, it is the different treatment of fixed and mobile termination rates that yields a competitive distortion rather than differences in the rates. This is because whilst there is some competitive interaction between fixed and mobile operators for voice services, the main competitive interplay is still fixed operators against each other and mobile operators against each other. As such, in the absence of clear evidence of a high degree of substitution between fixed and mobile networks the markets for call termination are separate markets which benefit from a common methodological approach. This separation should be maintained in the list of relevant markets.

Recommendation: Maintain the two markets for call termination on fixed networks and call termination on mobile networks.

Other markets regulated on an ex ante basis in some member states

Apart from the markets covered by the current recommendation on relevant markets, there are also two markets that have been subject to *ex ante* regulation in some member states on the basis of the three criteria test. They are SMS termination and broadcasting transmission services. Vodafone believes that neither of these markets should be added to the list of relevant markets for the reasons set out below.

SMS termination

The features of the SMS termination market are different to call termination market in that inter-modal interconnection is negligible and the vast majority of interconnection is between mobile operators. This leads to the *a priori* expectation that mobile operators will not be able to exploit any market power. The presence of countervailing buyer power and competition law constraints means that the SMS termination market is not one that fulfils the criteria to be on the list of relevant markets. In addition, end users are increasingly finding substitutes for SMS messages such as instant messaging and email. The existing practice of NRAs assessing this market according to the three criteria test in conjunction with local circumstances should be maintained.

Broadcasting transmission services

This market is quite distinct from the other markets that are considered and does not display the same competitive interactions. It is for this reason that the market was removed from the list of relevant markets in the previous consultation and Vodafone sees no reason for this market to be reinstated.

Recommendation: None of the markets that in some member states have met the three criteria test and been regulated on an *ex ante* basis should be added to the list of relevant markets.

Other potential markets to be regulated on an ex ante basis

We do not believe that there are any further markets that should be added to the list. However, it should be noted that there is an increasing trend towards multi-play offers (typically voice, internet, TV). We believe the approach we have outlined above should ensure the replicability of triple-play offers. In order to ensure replicability it will be necessary to wholesale access to fibre is not denied. This can be ensured if NRAs analyse the market for access to fixed networks in the appropriate manner and identify the point at which lower speed networks no longer provide a constraint on higher speed networks. There is no need to define a separate market for triple-play offers, as long as the market is analysed appropriately.

There are further potential bottlenecks that could lead to a reduction in competition, most notably access to TV broadcasting infrastructure and premium content. At this point in time there is neither sufficient evidence nor a regulatory framework that would allow both of these potential bottlenecks to be subject to *ex ante* regulation. However, the Commission, NRAs and National Competition Authorities should closely monitor developments in this space and be ready to act quickly and decisively if there is any reduction in competition due to increasing popularity and importance of multi-play offers.

Conclusion on relevant markets

Vodafone proposes the following list of relevant markets:

1. Access to fixed networks (plus sub-markets to be determined by NRAs potentially including but not limited to):
    a. Wholesale access to voice services (transitory)
    b. Wholesale access
    c. Business connectivity
    d. Terminating segments of leased lines
2. Call origination on fixed networks
3. Call termination on fixed networks
4. Call termination on mobile networks
5. Access to physical infrastructure (or part of the access to fixed network market but with additional requirements on technology neutrality).

4. Response to consultation questions

Question 1: What are the technological developments in the electronic communications sector at the EU level as of 2007 that have an influence on how the markets should be defined in the revised Recommendation from an ex ante perspective?

Answer: The main technological developments have been the roll-out of fibre (in different varieties) in fixed networks and the expanding use of high-speed mobile technology.

Question 2: What are the changes in structure and functioning of the relevant markets (e.g. supply and demand side developments, bundles, convergence, geographic scope), which should be reflected in the revised Recommendation from an ex ante perspective?

Answer: The structure of markets on the supply side remains largely unchanged. In some member states new mobile network operators have entered markets. On the demand side bundling has increased although not to the extent that it needs to be reflected in the revised recommendation. Distinctions between mobile and fixed services – even when sold in a bundle or consumed on a single device – remain and therefore there is no need to reflect convergence in the recommendation. As noted above, competitive intensity in the provision of fixed services can manifest at a sub-national level and this should be reflected in the revised recommendation.

Question 3: Can you identify any market bottlenecks which in your view cannot be addressed by ex ante regulation via a revision of the Recommendation alone? How in your view can such market bottlenecks be addressed?

Answer: None noted.

Question 4: In your opinion, is the three criteria test, as defined in the Recommendation, an appropriate instrument in defining the relevant markets susceptible to ex ante regulation or would alternative means to identify relevant markets be more suitable?

Answer: Yes, the three criteria test remains the appropriate instrument.

Question 5: Should, in your view, criteria be added or removed from the list or should the criteria be formulated in a different manner? Should additional guidance be given to the existing criteria?

Answer: The criteria should remain the same. There is no evidence that the criteria are being interpreted differently across member states so there doesn't appear to be any need for further guidance.

Question 6: How, in your view, can legal certainty be best ensured in identifying the markets susceptible to ex ante regulation?

Answer: On the basis that the overall approach should not change there should be no impact on legal certainty.

Question 7: In your opinion, should the scope of any relevant market(s) identified in the Recommendation be changed? If yes, please explain why, referring to the relevant market(s) concerned.

Answer: Refer to main body of this document.

Question 8: If the answer to the previous question is yes, please specify the qualitative and quantitative impact of such changed scope on consumers (users), competition, and development of the internal market. Please provide separate reasoning for each market subject to a new scope.

Answer: As above.

Question 9: On the basis of the three criteria test carried out at EU level, should any of the markets listed in the Recommendation be removed from the list in the revised Recommendation? If yes, please provide comprehensive reasoning thereof.

Answer: Refer to main body of this document

Question 10: If the answer to the previous question is yes, please specify the qualitative and quantitative impact of such removal of markets on consumers (users), competition, and development of the internal market. Please provide separate reasoning for each market you propose to delete from the list.

Answer: As above.

Question 11: On the basis of the three criteria test carried out at EU level, should any of the markets regulated by NRAs on the basis of national circumstances (such as SMS termination or broadcasting transmission services) be added to the list in the revised Recommendation from an ex ante perspective? If yes, please provide comprehensive reasoning thereof.

Answer: Refer to main body of this document

Question 12: If the answer to the previous question is yes, please specify the qualitative and quantitative impact of adding those market(s) on consumers (users), competition, and development of the internal market. Please provide separate reasoning on the impacts for each market you propose to add to the list.

Answer: As above.

Question 13: On the basis of the three criteria test carried out at EU level, can any other markets be identified that should be added to the list in the revised Recommendation, from an ex ante perspective? If yes, please provide comprehensive reasoning thereof.

Answer: Refer to main body of this document

Question 14: If the answer to the previous question is yes, please specify the qualitative and quantitative impact of the relevant markets(s) you propose to add on consumers (users),

competition, and development of the internal market. Please provide separate reasoning on the impacts for each market you propose to add to the list.

Answer: As above.

Question 15: On the basis of the three criteria test carried out at EU level, can any transnational market(s) be identified in the revised Recommendation, from an ex ante perspective? If yes, please provide comprehensive reasoning thereof.

Answer: None noted.

Question 16: If the answer to the previous question is yes, please specify the qualitative and quantitative impact of the relevant market(s) you propose to introduce on consumers (users), competition, and development of the internal market. Please, provide separate reasoning on the impacts for each market you propose to introduce.

Answer: Not applicable.