Fixed Broadband Prices in Europe 2016

FINAL REPORT and EXECUTIVE SUMMARY

A study prepared for the European Commission DG Communications Networks, Content & Technology by:

empirica

TÜVRheinland
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Abstract

English

The current study provides comprehensive data on 2016 retail prices of fixed broadband offers for consumers in the EU28, Iceland, Norway, Japan, South Korea, Canada and the USA. The five largest Internet Service Providers (ISPs) in each country were included. Data was collected from ISP websites between 10th and 24th October 2016.

Offers were analysed for Single Play (standalone internet), for Double Play with fixed telephony, Double Play with television services, and for Triple Play. Offers for each of the four bundles were assigned to several download speed baskets ranging from 0.144 Mbps to more than 100 Mbps.

To support valid cross-national comparison of retail prices of fixed broadband offers in each bundle and basket, consistent price normalisation procedures were applied. These take full account of features such as one-off fees, volume limits, discounts, different contract durations and varying telephony time limits.

Applying the normalised prices in Euro, it was found that the least expensive countries for fixed broadband in the EU in 2016 were Lithuania, Sweden, Latvia, Romania and Finland. Prices differ considerably between the least and most expensive countries in the EU.

Though prices have fallen in general to a small degree since 2015, this is not true for all bundle and basket combinations.

- Retail prices for Single Play offers increased slightly in the 12-30 Mbps basket (+0.8%), while decreasing in the 30-100 Mbps (-2.9%) and 100+ Mbps (-0.4%) baskets.
- Retail prices for bundles which include fixed telephony actually rose on average over the year (+7.3%, 12-30 Mbps basket; +4.1%, 30-100 Mbps basket; +0.9%, 100+ Mbps basket)
- The largest decrease in retail prices was recorded for bundles including television services (-10.6%, 12-30 Mbps basket; 8.5%, 30-100 Mbps basket; -3.9%, 100 Mbps basket)
- Retail prices for Triple play offers decreased by -4.7% (12-30 Mbps basket) and -3.4% (30-100 Mbps basket); however, they increased by 0.5% in the 100+ Mbps basket.

Small changes below 1% have been shown to be insignificant.

Comparison of EU28 prices with prices in selected non-European countries in 2016 yielded the following picture:

- The EU is in close competition with Japan and South Korea for the lowest prices in all but the highest speed baskets; European citizens have to pay similar prices for offers of up to 100 Mbps, but significantly more for ultra-fast connections;
- Fixed internet offers are more expensive in the USA and Canada compared to the EU, particularly in the case of ultra-fast broadband (>100 Mbps).

Les offres étaient rangées par quatre forfaits (Single Play/Standalone et des forfaits avec téléphone fixe et/ou télévision ainsi que par la vitesse de connexion Internet (de 0,144 Mbps à 100+ Mbps).

Afin d’analyser systématiquement les données recueillies et de permettre une comparaison transnationale sur le coût de la connexion fixe à large bande pour les forfaits comme pour les vitesses, des procédures de normalisation ont été appliquées. Donc, des détails des forfaits différents, telles que des redevances unique, des réductions, des durées contractuelles différentes ou des différences de téléphonie, pouvant être pris en compte.

L’analyse de données a révélé les résultats suivants: En moyenne, les pays le moins cher de l’UE28 concernant la connexion fixe à large bande, ce sont la Lituanie, la Suède, la Lettonie, la Roumanie et la Finlande. Les prix varient considérablement, indiquant ainsi un large éventail de valeurs.

En outre, en comparaison avec le jeu de données de 2015, les prix des plusieurs offres ont baissé, tandis qu’ils ont augmenté des forfaits avec téléphone fixe. En tout cas, les prix n’ont pas diminué de manière significative comparées aux données de 2015.

- Les prix pour les offres Single Play ont augmenté légèrement dans le panier 12-30 Mbps (+0,8%) et diminué dans les paniers 30-100 Mbps (-2,9%) et 100+ Mbps (-0,4%)
- Prix pour des forfaits avec téléphone fixe ont en fait augmenté dans tous les paniers de vitesse (+7,3%, 12-30 Mbps; +4,1%, 30-100 Mbps; +0,9%, 100+ Mbps)
- Une baisse substantielle du prix a été observée pour des forfaits avec TV dans tous les paniers (-10,6%, 12-30 Mbps; 8,5%, 30-100 Mbps; -3,9%, 100 Mbps)
- Les prix pour les offres Triple Play ont diminué de -4,1% (panier 12-30 Mbps) et -3,4% (panier 30-100 Mbps). Par contre, ils ont augmenté dans le panier 100+ Mbps (+0,5%).

Enfin, comparé aux pays non-européen, la situation est demeurée inchangée depuis 2015:

- Large bande ultra-rapide (100+ Mbps) est le plus cher en États-Unis d’Amérique et le Canada;
0. Executive Summary

0.1 English

0.1.1 Introduction
The current study provides comprehensive data on 2016 retail prices of fixed broadband offers for consumers in the EU28, Iceland, Norway, Japan, South Korea, Canada and the USA. The five largest Internet Service Providers (ISPs) in each country were included. Data was collected from ISP websites between 10th and 24th October 2016.

Offers were analysed for Single Play (standalone internet), for Double Play with fixed telephony, Double Play with television services, and for Triple Play. Offers for each of the four bundles were assigned to several download speed baskets ranging from 0.144 Mbps to more than 100 Mbps.

To support valid cross-national comparison of retail prices of fixed broadband offers in each bundle and basket, consistent price normalisation procedures were applied. These take full account of features such as one-off fees, volume limits, discounts, different contract durations and varying telephony time limits.

0.1.2 Results: Average price per basket and bundle
Figure 1 shows the average across the EU of the lowest price found in each country for each of four service bundles and for the three speed baskets above 12 Mbps for which data was gathered. These EU average figures provide a reference point for international comparison and, to an extent, for comparison of country market features within the EU. The impact on prices of adding value through increased speed is clearly visible.
0.1.3 **Results: Least expensive countries in Europe**

Figure 2 shows the lowest price found anywhere in the EU for each service bundle and speed basket. As can be seen, Single Play standalone fixed internet of more than 12 Mbps can be obtained in at least one country\(^1\) from one of the top five providers at a normalised price of €11.42 per month (PPP). At the top end of the speed basket set and for both selected bundled services (Triple Play, > 100 Mbps), the cheapest price in Europe\(^2\) is €25.79 (PPP).

Applying the normalised prices in Euro, it was found that the least expensive countries for fixed broadband in the EU in 2016 were Lithuania, Sweden, Latvia, Romania and Finland. Prices differ considerably between the least and most expensive countries in the EU.

![Figure 2 - EU Absolute lowest prices for four service bundles and three speed baskets, VAT included](image)

<table>
<thead>
<tr>
<th>Standalone</th>
<th>Double play with telephony</th>
<th>Double play with TV</th>
<th>Triple play</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-30 Mbps</td>
<td>€11.42</td>
<td>€13.90</td>
<td>€18.40</td>
</tr>
<tr>
<td>30-100 Mbps</td>
<td>€11.42</td>
<td>€19.42</td>
<td>€20.56</td>
</tr>
<tr>
<td>100+ Mbps</td>
<td>€12.84</td>
<td>€19.42</td>
<td>€25.79</td>
</tr>
</tbody>
</table>

To present a fuller picture, but without introducing the distraction of small price differences, 4 clusters of countries were identified\(^3\) in each category of offer, that is, for each combination of service bundle and speed basket, based on the prices of the least expensive offer in the bundle/basket category in each country.

Figure 3 shows the results. An arrow **points upward (in green)** in a bundle/basket category for countries in the cluster with the least expensive offers for that category. An arrow **points downward (in red)** for countries in the most expensive cluster of offers in a bundle/basket category. **Yellow arrows point diagonally upward or diagonally downward** for clusters of intermediate price levels. No arrow signifies that there was no offer in 2016 in that offer category and country.

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\(^1\) This offer is available in Sweden only.

\(^2\) This offer is available in France only.

\(^3\) k-means clustering was used with k=4; observations (offer categories) are assigned to clusters so as to minimise the average squared Euclidean distance of observations to each cluster centroid.
The following general country groupings can be observed:

- Lithuania, Sweden, Latvia and Finland have the most attractive prices overall; they belong to the cluster of least expensive countries (upward green arrow) in every bundle/basket offer category, where there are offers on the market.
- Romania, Poland, Slovakia, France, Czech Republic, Bulgaria and Germany follow, belonging to the cluster of least expensive countries (upward green arrow) for at least half of the 12 bundle/basket offer categories. For most other offer categories, these
countries belong to the second least expensive cluster (diagonal upward arrow). An anomaly is the cheapest Bulgarian offer of 30-100 Mbps Double Play with TV; here Bulgaria is in the cluster of the most expensive countries.

- The next group, countries whose least expensive offers mostly fall in the mid-priced, yellow-arrow clusters of countries, is topped by Hungary, Italy and Estonia, and includes Denmark, Austria, Netherlands, Greece, UK, Slovenia, Luxembourg, Belgium, Croatia and Portugal and Malta.
- Offers falling in the most expensive, red-arrow cluster are found, as mentioned, in one case in Bulgaria, also in one case in Greece, and in Slovenia, Malta, Ireland, Spain and Cyprus.

0.1.4 Results: Development of prices

Though prices have fallen in general to a small degree since 2015, this is not true for all bundle and basket combinations.

- Retail prices for Single Play offers increased slightly in the 12-30 Mbps basket (+0.8%), while decreasing in the 30-100 Mbps (-2.9%) and 100+ Mbps (-0.4%) baskets.
- Retail prices for bundles which include fixed telephony actually rose on average over the year (+7.3%, 12-30 Mbps basket; +4.1%, 30-100 Mbps basket; +0.9%, 100+ Mbps basket)
- The largest decrease in retail prices was recorded for bundles including television services (-10.6%, 12-30 Mbps basket; 8.5%, 30-100 Mbps basket; -3.9%, 100 Mbps basket)
- Retail prices for Triple play offers decreased by -4.7% (12-30 Mbps basket) and -3.4% (30-100 Mbps basket); however, they increased by 0.5% in the 100+ Mbps basket.

Small changes below 1% have been shown to be insignificant.

0.1.5 Results: The EU compared with selected non-European countries

Comparison of EU28 prices with prices in selected non-European countries in 2016 yielded the following picture:

- The EU is in close competition with Japan and South Korea for the lowest prices in all but the highest speed baskets; European citizens have to pay similar prices for offers of up to 100 Mbps, but significantly more for ultra-fast connections;
- In South Korea, even the least expensive offers have advertised download speeds faster than 100 Mbps;
- Fixed internet offers are more expensive in the USA and Canada compared to the EU, particularly in the case of ultra-fast broadband (>100 Mbps).
0.2 Français

0.2.1 Introduction
Cette étude vise à analyser le coût de la connexion fixe à large bande pour les pays de l’UE28, Islande, Norvège, Japon, Corée du Sud, et les États-Unis d’Amérique. Pour obtenir des résultats représentatifs, les cinq plus grand Fournisseurs d’Accès Internet (FAI) étaient inclus dans l’échantillon. La collecte de données était effectué en ligne directement sur les sites web des FAIs du 10 au 24 Octobre 2016.

Les offres étaient rangées par quatre forfaits (Single Play/Standalone et des forfaits avec téléphone fixe et/ou télévision) ainsi que par la vitesse de connexion Internet (de 0,144 Mbps à 100+ Mbps).

Afin d’analyser systématiquement les données recueillies et de permettre une comparaison transnationale sur le coût de la connexion fixe à large bande pour les forfaits comme pour les vitesses, des procédures de normalisation ont été appliqué. Donc, des détails des forfaits différents, telles que des redevances unique, des réductions, des durées contractuelles différentes ou des différences de téléphonie, pouvant être pris en compte.

0.2.2 Résultats: Prix moyen par forfait et vitesse
Figure 4 montre les prix moyens le plus bas dans l’UE trouvé dans chaque pays pour chacun des quatre groupes de forfaits et pour les paniers à trois vitesses au-dessus de 12 Mbps pour lesquels les données ont été recueillies. Ces chiffres moyens constituent un point de référence pour la comparaison internationale et, dans une mesure, pour la comparaison des caractéristiques du marché national au sein de l’UE. L’impact sur les prix en ajoutant valeur par une vitesse augmentée est bien visible.

Figure 4 – Prix moyens les plus bas EU 28 pour quatre forfaits et vitesses, TVA inclus

<table>
<thead>
<tr>
<th>Vitesse</th>
<th>Standalone</th>
<th>Double play with telephony</th>
<th>Double play with TV</th>
<th>Triple play</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-30 Mbps</td>
<td>€21,33</td>
<td>€26,36</td>
<td>€30,45</td>
<td>€38,66</td>
</tr>
<tr>
<td>30-100 Mbps</td>
<td>€25,07</td>
<td>€30,62</td>
<td>€33,89</td>
<td>€42,02</td>
</tr>
<tr>
<td>100+ Mbps</td>
<td>€40,54</td>
<td>€48,64</td>
<td>€47,48</td>
<td>€57,20</td>
</tr>
</tbody>
</table>
0.2.3 Résultats: Pays avec les prix le plus bas

Figure 5 montre le prix le plus bas trouvé n’importe où dans l’UE28 pour chaque forfait et panier de vitesse. L’Internet fixe Single Play de plus de 12 Mbps peut être obtenu -dans au moins un pays- parmi l’un des cinq principaux fournisseurs à un prix normalisé de 11,42 €4 par mois (PPP). Dans le haut du gamme (100 Mbps, Triple Play), le prix le moins cher en Europe est de 25,79 €5 (PPP).

L’analyse de données a révélé les résultats suivants: En moyenne, les pays le moins cher de l’UE28 concernant la connexion fixe à large bande, ce sont la Lituanie, la Suède, la Lettonie, la Roumanie et la Finlande. Les prix varient considérablement, indiquant ainsi un large éventail de valeurs.

Pour une image plus complète, mais sans introduire distraction par des petits écarts de prix, 4 clusters6 de pays ont été identifiés dans chaque catégorie d’offre, c’est-à-dire pour chaque combinaison de forfait et de panier de vitesse, basé sur les prix de l’offre la moins chère des combinaisons forfaits/vitesse dans chaque pays.

Figure 6 montre les résultats. Une flèche points vers le haut (en vert) dans une combinaison forfait/vitesse pour les pays du cluster avec les offres les moins chères pour cette catégorie. Une flèche points vers le bas (en rouge) pour les pays dans le groupe d’offres les plus chers dans une combinaison de forfaits/vitesse. Les flèches jaunes pointent en diagonale vers le haut ou en diagonale vers le bas pour clusters de niveaux de prix intermédiaires. Aucune flèche signifie qu’il n’y avait pas d’offre en 2016 dans cette catégorie d’offre et dans ce pays.

4 Disponible en Suède
5 Disponible en France
6 Le clustering est réalisé au moyen de l’approche K-means, une méthode qui vise à répartir toutes les observations dans un nombre prédéfini de clusters en minimisant la moyenne du carré de la distance euclidienne entre les observations et le centre du cluster.
On observe quatre groupes de pays:

- La Lituanie, la Suède, la Lettonie et la Finlande ont les prix les plus attractifs dans l'ensemble; Ils appartiennent à la grappe des pays les moins chers (flèche verte vers le haut) dans chaque combinaison forfait/vitesse, s'il existe des offres sur le marché.
- La Roumanie, la Pologne, la Slovaquie, la France, la République tchèque, la Bulgarie et l'Allemagne suivent, appartenant au groupe des pays les moins chers (flèche verticale ascendante) pour au moins la moitié des 12 combinaisons forfait/vitesse. Pour la plupart
des autres catégories d'offres, ces pays appartiennent au deuxième cluster le moins cher (flèche diagonale vers le haut). Une anomalie est l'offre bulgare moins chère de 30-100 Mbps Double Play avec TV. Ici la Bulgarie est dans le groupe des pays les plus chers.

- Le prochain groupe, pays dont les offres les moins chères appartiennent principalement aux clusters à flèches jaunes, est mené par la Hongrie, l'Italie et l'Estonie, et comprend le Danemark, l'Autriche, les Pays-Bas, la Grèce, le Royaume-Uni, la Slovénie, le Luxembourg, Belgique, Croatie, Portugal et Malte.
- Les offres les plus chers (flèche rouge) sont trouvées, comme mentionné, dans un cas en Bulgarie, également dans un cas en Grèce, en Slovénie, à Malte, en Irlande, en Espagne et à Chypre.

0.2.4 Résultats: Évolution des prix
En outre, en comparaison avec le jeu de données de 2015, les prix des plusieurs offres ont baissé, tandis qu'ils ont augmenté pour des autres. En tout cas, les prix n'ont pas diminué de manière significative comparés aux données de 2015.

- Les prix pour les offres Single Play ont augmenté légèrement dans le panier 12-30 Mbps (+0,8%) et diminué dans les paniers 30-100 Mbps (-2,9%) et 100+ Mbps (-0,4%)
- Prix pour des forfaits avec téléphone fixe ont en fait augmenté dans tous les paniers de vitesse (+7,3%, 12-30 Mbps; +4,1%, 30-100 Mbps; +0,9%, 100+ Mbps)
- Une baisse substantielle du prix a été observée pour des forfaits avec TV dans tous les paniers (-10,6%, 12-30 Mbps; 8,5%, 30-100 Mbps; -3,9%, 100 Mbps)
- Les prix pour les offres Triple Play ont diminué de -4,1% (panier 12-30 Mbps) et -3,4% (panier 30-100 Mbps). Par contre, ils ont augmenté dans le panier 100+ Mbps (+0,5%).

0.2.5 Résultats: Comparaison avec des pays non-européens
Enfin, comparé aux pays non-européen, la situation est demeurée inchangé depuis 2015:

- Large bande ultra-rapide (100+ Mbps) est le plus cher en Etats-Unis d'Amérique et le Canada;
- En Corée du Sud, l'offre le moins cher à travers tous les forfaits et les vitesses est plus rapide que 100 Mbps;
- Les citoyens européens doivent payer un prix d'achat similaire aux ceux de Corée du Sud et Japon pour l'offre avec une vitesse jusqu'à 100 Mbps. Par contre, ils doivent payer significativement plus des connexions large bande ultra-rapide
A note on limitations of the study

Readers are advised to note some limitations of the information presented in this report:

1. The data on offers to supply fixed internet services in 2016 represents a snapshot of prices, limited to two weeks in October 2016.

2. All reasonable steps were taken to obtain a complete data set for each offer; however, some gaps in detail remain.\(^7\)

3. Following the consistent methodology agreed with the European Commission, only offers advertised and purchasable on provider websites were taken into account. In consequence, offers which may have been referred to in documents on the website but which were not available for sale on the site were not included in the analysis.

4. Offers from a maximum of five internet service providers (ISP) per country were taken into account. The ISPs selected were those with the largest market share, confirmed after consultation with the relevant national regulation authority (NRA).\(^8\) This method choice allows that there might have been some less expensive offers on the market in October 2016, but guarantees that these cannot have been taken up by more than a small proportion of all internet customers in a country.

5. Where an ISP sets different prices for the same offer so that prices vary by city or region, a sample of 5 - 15 locations was drawn and the sample mode included as the price of the offer.\(^9\)

6. The data represents only offers as advertised. As such it cannot be taken to represent what customers actually paid for their fixed broadband connection in 2016, nor can the advertised speeds reported be taken as a reliable guide to speeds actually experienced by customers.

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\(^7\) Gaps include in several cases missing download speeds, missing upload speeds and missing information on type of technology. Some price information had to be simplified.

\(^8\) Denmark is an exception here, where six ISPs were included. Dansk Kabel TV is not one of the five largest providers, but the sampling rules also require the inclusion of all incumbents.

\(^9\) Sample sizes were 5 - 10 in the USA, 10 - 15 in European countries.
1. Introduction

1.1 Broadband internet in the Digital Single Market

When starting his Presidency in 2014, Jean-Claude Juncker promised to make the EU a fully digital single market. Roughly a year later, the European Commission’s Digital Single Market strategy (DSM) was adopted.

The DSM is built on three Pillars:

1. Access: better access for consumers and businesses to digital goods and services across Europe;
2. Environment: creating the right conditions and a level playing field for digital networks and innovative services to flourish;
3. Economy & Society: maximising the growth potential of the digital economy.

According to the European Commission (EC), a Digital Single Market could contribute €415 billion per year to Europe’s economy, create jobs and transform the Union’s public services.

All digital services, applications and content depend on the availability of high-speed, secure infrastructures, requiring a strong, competitive and dynamic telecoms sector.

Broadband internet first became available for everyone in the European Union in 2013. Universal access to broadband represented a key achievement of the EC’s prior Digital Agenda for Europe. Fixed broadband with 3.5G/4G mobile technologies (HSPA and LTE) provided coverage of 97%; 100% broadband coverage was reached using additional techniques, particularly satellite.

Now that every European can purchase at least some kind of broadband internet connection, the next milestones of the Digital Agenda are to be achieved. These are:

- Next Generation Networks (30 Mbps or more) for all by 2020;
- 50% of households having 100 Mbps subscriptions or higher.

In September 2016, the EC set an additional target:

- By 2025, all households (cities as well as rural regions) should have access to technologies with download speeds of at least 100 Mbps, and the possibility to upgrade to Gbps connections.\(^\text{10}\)

Significant progress has already been made towards the Digital Agenda milestone for Next Generation Networks. Overall coverage of Next Generation Networks rose from 29% in 2010 to roughly 71% in 2015 to 76% in 2016, with EuroDOCSIS3.0 Cable having the highest coverage at 43%, followed by VDSL (38%) and FTTx (19%).\(^\text{11}\) EuroDOCSIS and VDSL have been able to expand in coverage more easily due to their being able to re-use existing cabling.


Next Generation Networks continue to be limited to urban areas. EU-wide, only 39% of homes were covered in 2016 (an increase by 14% percentage points since 2014), and there are significant differences by country.

Concerning the Digital Agenda milestone that 50% of households should have 100 Mbps subscriptions or higher, subscriptions are currently available to slightly less than half of EU homes, delivered through either FTTx or EuroDOCSIS 3.0 networks. The uptake of available subscriptions, however, remains significantly below 50% in most EU Member States. In the near future it can be expected that provision will continue to cover more and more areas, but actual uptake may require service innovation and, of course, that ISPs offer affordable subscription schemes to European citizens. This is the context for monitoring the price of high-speed, broadband internet access services.

1.2 Monitoring internet prices in Europe

This study took place as part of the annual cycle of European Commission (EC) monitoring of retail prices of broadband internet access, which has been in place since 2007. Results are used to provide

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12 The latest data (July 2016) show that three countries already reach or are close to reaching this ambitious goal: Romania (57,1%), Sweden (49,6%), and Latvia (48,0%). See the electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM).

13 Services for a broad consumer base have yet to be developed which make full use of the highest download speeds. Even streaming two 4k videos in parallel while doing some online shopping is possible in reasonable comfort with less than 50 Mbps. Market and policy attention should possibly now shift to setting targets for upload rates. Upload capacity is needed for social media and other services based on sharing information, particularly where these include live sound, pictures and video. Currently, adequate upload rates are typically available only with the highest download rates, making high download rates indirectly attractive.
policy feedback, including constructing indicators for both the Digital Scoreboard as well the Digital Economy and Society Index (DESI).\textsuperscript{14}

The focus in this study is on offers to residential customers of fixed broadband services. Fixed broadband services are supplied to homes via xDSL, cable modem, FTTx, satellite or fixed wireless systems.

Though fixed broadband internet access is sometimes provided as a stand-alone service, this basic service is often bundled with other services, from telephony to web space. Four specific bundles of services, each of which include fixed broadband internet access, were included in the study. The four specific, "fixed bundles" are all combinations of fixed internet access with or without telephony and television, referred to as Single Play (or as "standalone" internet), Double Play with fixed telephony, Double Play with television services, and Triple Play.

For each of the four fixed bundles, prices of offers were analysed in each of several download speed baskets, ranging from 0.144 Mbps to more than 100 Mbps. Offers at the lower limit, the ISDN Basic Rate Interface payload rate of 144 kbps\textsuperscript{15} are now rare. As is evident from the targets set in the Digital Agenda, interest in policy and the market has now moved up to significantly higher speeds of internet access. The results presentation in this report therefore focuses on offers in much higher speed baskets, from 12 Mbps upwards.

Mobile broadband products are the subject of a separate annual EC price monitoring exercise. Mobile services are included only when these were bundled with fixed broadband offers in such a way that consumers wanting a particular fixed bundle and speed basket from that provider could not avoid. Therefore, the price of products bundling mobile services of any kind with fixed broadband access were included in the 2016 dataset and calculations only where the same provider did not also offer the same fixed bundle, without the mobile services concerned, in the same speed basket.

Data on offers on the market were gathered throughout Europe and beyond in order to identify the least expensive offers in each bundle in a country.

Comprehensive data has been compiled on 2016 retail prices of fixed broadband offers by the largest Internet Service Providers (ISPs) in each country for consumers in the EU28, Iceland, Norway, Japan, South Korea, Canada and the USA. For intra-annual comparability and consistency, data was collected from ISP websites in a short period, between 10th and 24th October 2016.

All offers were included in the 2016 dataset for analysis which were necessary to identify the least expensive offer in each country. The least expensive offer was to be identified for each download speed basket in each of the four selected fixed service bundles in each country, provided there was at least one offer on the market.

\textsuperscript{14} Indicator 1d1 is the percentage of individual gross income spent for the least expensive Single Play fixed broadband subscriptions with speeds between 12 and 30 Mbps. Indicator 1d1 belongs to the Connectivity dimension of DESI, which has five principal dimensions in total.

\textsuperscript{15} The ISDN Basic Rate Interface provides 144 kbit/s over a twisted pair line, comprising two 64 kbit/s bearer "B" channels and a 16 kbit/s signalling "D" channel.
To support valid cross-national comparison of retail prices of fixed broadband offers in each bundle and basket, consistent price normalisation procedures were applied. These take full account of the impact on consumers of a range of marketing, sales, service and payment features such as one-off fees, discounts, different contract durations and varying telephony time limits.

Price normalisation did not involve the creation of fictitious or proxy offers. All offers considered are such which consumers could buy on the market. Consumer profiles agreed with the Commission were applied to normalise for actual service use where flat rates were not provided or would be often exceeded, causing greater cost. In line with this real customer view of the market, real offers which provide more than a customer profile requests - e.g. have a faster speed or more services - but are cheaper than offers which exactly match the customer profile, were accepted as the lowest price offer for that profile. Further detail is provided in section 3.2.4.

2. Residential broadband prices: key findings

2.1 2016 prices across the EU for fixed broadband offers

Figure 8 shows the average across the EU of the lowest price found in each country for each of four service bundles and for the three speed baskets above 12 Mbps for which data was gathered. These EU average figures provide a reference point for international comparison and, to an extent, for comparison of country market features within the EU. The impact on prices of adding value through increased speed is clearly visible - see section 2.5 for a discussion of these "speed premiums" - as is the increase in price from bundling television and fixed telephony services with standalone internet - see section 2.6 for detail on the "bundle premiums".

Figure 8 – EU28 lowest prices for four service bundles and three speed baskets, VAT included

<table>
<thead>
<tr>
<th>Speed Basket</th>
<th>Standalone</th>
<th>Double play with telephony</th>
<th>Double play with TV</th>
<th>Triple play</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-30 Mbps</td>
<td>€21.33</td>
<td>€26.36</td>
<td>€30.45</td>
<td>€38.66</td>
</tr>
<tr>
<td>30-100 Mbps</td>
<td>€25.07</td>
<td>€30.62</td>
<td>€33.89</td>
<td>€42.02</td>
</tr>
<tr>
<td>100+ Mbps</td>
<td>€40.54</td>
<td>€48.64</td>
<td>€47.48</td>
<td>€57.20</td>
</tr>
</tbody>
</table>
Figure 9 shows the lowest price found anywhere in the EU for each service bundle and speed basket. As can be seen, Single Play standalone fixed internet of more than 12 Mbps can be obtained in at least one country from one of the top five providers at a normalised price of €11.42 per month (PPP). At the top end of the speed basket set and for both selected bundled services (Triple Play, > 100 Mbps), the cheapest price in Europe is €25.79 (PPP).

Figure 9 - EU Absolute lowest prices for four service bundles and three speed baskets, VAT included

Figure 10, below, gives a first idea of how variable of prices for fixed broadband access are across Europe. For each country, the average was calculated across the lowest prices in each of the 12 offer categories reported - 4 service bundles, 3 speed baskets. Despite the fact that these averages include the fastest download speeds and all Triple Play offers, the average lowest prices in two countries, Lithuania and Sweden, lie under €20. Consumers in another 11 countries are looking at average prices from their most competitive largest suppliers which remain under €30. The majority of EU national markets exhibit averages under €40, but a minority of markets have much higher averages, so that the range of average prices in total is €46.

<table>
<thead>
<tr>
<th></th>
<th>Standalone</th>
<th>Double play with telephony</th>
<th>Double play with TV</th>
<th>Triple play</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-30 Mbps</td>
<td>€11,42</td>
<td>€13,90</td>
<td>€13,28</td>
<td>€18,40</td>
</tr>
<tr>
<td>30-100 Mbps</td>
<td>€11,42</td>
<td>€19,42</td>
<td>€13,28</td>
<td>€20,56</td>
</tr>
<tr>
<td>100+ Mbps</td>
<td>€12,84</td>
<td>€19,42</td>
<td>€22,24</td>
<td>€25,79</td>
</tr>
</tbody>
</table>

Figure 10 - EU Absolute lowest prices for four service bundles and three speed baskets, VAT included

<table>
<thead>
<tr>
<th></th>
<th>Standalone</th>
<th>Double play with telephony</th>
<th>Double play with TV</th>
<th>Triple play</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-30 Mbps</td>
<td>€11,42</td>
<td>€13,90</td>
<td>€13,28</td>
<td>€18,40</td>
</tr>
<tr>
<td>30-100 Mbps</td>
<td>€11,42</td>
<td>€19,42</td>
<td>€13,28</td>
<td>€20,56</td>
</tr>
<tr>
<td>100+ Mbps</td>
<td>€12,84</td>
<td>€19,42</td>
<td>€22,24</td>
<td>€25,79</td>
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</table>

Figure 10, below, gives a first idea of how variable of prices for fixed broadband access are across Europe. For each country, the average was calculated across the lowest prices in each of the 12 offer categories reported - 4 service bundles, 3 speed baskets. Despite the fact that these averages include the fastest download speeds and all Triple Play offers, the average lowest prices in two countries, Lithuania and Sweden, lie under €20. Consumers in another 11 countries are looking at average prices from their most competitive largest suppliers which remain under €30. The majority of EU national markets exhibit averages under €40, but a minority of markets have much higher averages, so that the range of average prices in total is €46.

16 This offer is available in Sweden only.
17 This offer is available in France only
Figure 5, below, shows results for the cheapest prices found for standalone internet providing speeds greater than 12 Mbps. If we allow that these speeds are "high speed internet", then the lowest price in Europe for high speed internet is €11.42, found in Sweden.

To present a fuller picture, but without introducing the distraction of small price differences, 4 clusters of countries were identified\(^{18}\) in each category of offer, that is, for each combination of service bundle and speed basket, based on the prices of the least expensive offer in the bundle/basket category in each country.

\(^{18}\) k-means clustering was used with k=4; observations (offer categories) are assigned to clusters so as to minimise the average squared Euclidean distance of observations to each cluster centroid.
Figure 12 shows the results. An arrow points upward (in green) in a bundle/basket category for countries in the cluster with the least expensive offers for that category. An arrow points downward (in red) for countries in the most expensive cluster of offers in a bundle/basket category. Yellow arrows point diagonally upward or diagonally downward for clusters of intermediate price levels. No arrow signifies that there was no offer in 2016 in that offer category and country.
Figure 12 - Price variation per offer category across the EU, country clusters

<table>
<thead>
<tr>
<th>Cluster Centres</th>
<th>Single play 12-30 Mbps</th>
<th>Single play 30-100 Mbps</th>
<th>Single play 100+ Mbps</th>
<th>Double play with TV 12-30 Mbps</th>
<th>Double play with TV 30-100 Mbps</th>
<th>Double play with TV 100+ Mbps</th>
<th>Double play with fixed telephony 12-30 Mbps</th>
<th>Double play with fixed telephony 30-100 Mbps</th>
<th>Double play with fixed telephony 100+ Mbps</th>
<th>Triple play 12-30 Mbps</th>
<th>Triple play 30-100 Mbps</th>
<th>Triple play 100+ Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithuania</td>
<td>€13.53</td>
<td>€14.68</td>
<td>€21.86</td>
<td>€19.02</td>
<td>€21.42</td>
<td>€27.32</td>
<td>€17.02</td>
<td>€19.23</td>
<td>€29.03</td>
<td>€24.81</td>
<td>€25.75</td>
<td>€32.84</td>
</tr>
<tr>
<td>Sweden</td>
<td>€21.50</td>
<td>€24.08</td>
<td>€40.43</td>
<td>€24.94</td>
<td>€27.74</td>
<td>€43.68</td>
<td>€26.91</td>
<td>€29.12</td>
<td>€48.75</td>
<td>€36.34</td>
<td>€38.05</td>
<td>€61.49</td>
</tr>
<tr>
<td>Finland</td>
<td>€32.19</td>
<td>€34.53</td>
<td>€57.22</td>
<td>€31.98</td>
<td>€34.47</td>
<td>€64.17</td>
<td>€40.99</td>
<td>€42.69</td>
<td>€70.00</td>
<td>€35.09</td>
<td>€35.23</td>
<td>€62.00</td>
</tr>
<tr>
<td>Latvia</td>
<td>€43.05</td>
<td>€45.66</td>
<td>€80.00</td>
<td>€43.24</td>
<td>€44.21</td>
<td>€116.50</td>
<td>€56.50</td>
<td>€58.00</td>
<td>€108.00</td>
<td>€75.00</td>
<td>€75.00</td>
<td>€117.00</td>
</tr>
</tbody>
</table>
| Green arrow – Least expensive cluster
| Yellow arrows – intermediate price level clusters
| Red arrow – most expensive cluster
The following general country groupings can be observed:

- Lithuania, Sweden, Latvia and Finland have the most attractive prices overall; they belong to the cluster of least expensive countries (upward green arrow) in every bundle/basket offer category, where there are offers on the market.

- Romania, Poland, Slovakia, France, Czech Republic, Bulgaria and Germany follow, belonging to the cluster of least expensive countries (upward green arrow) for at least half of the 12 bundle/basket offer categories. For most other offer categories, these countries belong to the second least expensive cluster (diagonal upward arrow). An anomaly is the cheapest Bulgarian offer of 30-100 Mbps Double Play with TV; here Bulgaria is in the cluster of the most expensive countries.

- The next group, countries whose least expensive offers mostly fall in the mid-priced, yellow-arrow clusters of countries, is topped by Hungary, Italy and Estonia, and includes Denmark, Austria, Netherlands, Greece, UK, Slovenia, Luxembourg, Belgium, Croatia and Portugal and Malta.

- Offers falling in the most expensive, red-arrow cluster are found, as mentioned, in one case in Bulgaria, also in one case in Greece, and in Slovenia, Malta, Ireland, Spain and Cyprus.
2.2 Price trends

Though broadband prices continued to decrease in most segments in 2016, Figure 13 shows that this is not true for all service bundles and speed baskets. For Double Play offers with TV, percentage reductions reach double digits for some download speeds. However, Double Play offers with fixed telephony have actually increased in price since 2015, particularly in the lower speed categories. Reductions in Single Play prices are strongest in the higher speed categories, and prices for Triple Play also decreased; here the highest percentage reductions are in the lower speed baskets presented.

![Figure 13 – Changes in least expensive broadband prices, EU level, 2015-2016](image)

<table>
<thead>
<tr>
<th>Speed Category</th>
<th>Single Play</th>
<th>Double Play Phone</th>
<th>Double Play TV</th>
<th>Triple Play</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-30 Mbps</td>
<td>0.76%</td>
<td>7.26%</td>
<td>-10.60%</td>
<td>-4.73%</td>
</tr>
<tr>
<td>30-100 Mbps</td>
<td>-2.94%</td>
<td>4.14%</td>
<td>-8.94%</td>
<td>-3.44%</td>
</tr>
<tr>
<td>100+ Mbps</td>
<td>-0.40%</td>
<td>0.87%</td>
<td>-3.91%</td>
<td>0.47%</td>
</tr>
</tbody>
</table>

2.3 Who is best in class in the EU?

The maps in the following sections show the prices in EU28 countries of the least expensive offer found on the market for each service bundle - Single Play standalone fixed internet, the two double-play offer categories and Triple Play - and, within a service bundle, for each download speed basket. The rank order of countries by price, in 7-quantiles (4 countries in each group), is indicated by a range of colours.¹⁹

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¹⁹ A q-quantile divides a set of observations, each located by value on one dimension and ordered by value, into q groups of equal size (or a probability distribution into groups of equal probability). For samples, any value for a q-quantile may be chosen between the lowest value of the higher-ranked group and the highest value of the neighbouring lower-ranked group. Applying 7-quantiles to the full sample of 28 Member States, there are four countries per group. Where the number of countries falls below 28 - there are not offers on the market for all bundle/basket offer categories - there may be only three countries in a group.
2.3.1 Single Play (Standalone internet) across Europe

Map 1 – Standalone, 12-30 Mbps

For Single Play (Standalone fixed internet), the map indicates that the best in class, with the least expensive offers across the EU28, are Sweden, Bulgaria, Romania and Hungary. The lowest price found is some €11; however the EU average (€22) is twice as high and the top price - despite being the least expensive in that country - is four times the lowest price found.
Single Play offers in the 30-100 Mbps speed basket shows a very similar pattern to the next lower download speed basket. The best in class group of countries is only slightly different: Sweden, Hungary, Romania, and Lithuania.
Map 3 – Standalone, 100+ Mbps

The picture for Single Play standalone internet in the top download speed basket shows some changes in pattern. Here, best in class are Romania, Hungary and the Czech Republic.
2.3.2 Double Play with TV across Europe

Map 4 – Double Play (TV) 12-30 Mbps

Best in class for Double Play with TV at 12-30 Mbps download speed are Lithuania, Latvia, Sweden, and Bulgaria.
As in the 12-30 Mbps speed basket, Sweden and Lithuania are best in class for Double Play (TV) offers. They are joined by Finland and Estonia, replacing Latvia and Bulgaria.
For Double Play (TV) in the top speed basket, significant changes are visible compared with the next lower download speed basket. Nevertheless Lithuania remains best in class, the only country to be best in class across all three speed baskets reported here. For these, highest speed offers, Lithuania is joined by Poland, France, and the Czech Republic in topping the ranking of the least expensive Double Play offers with TV.
2.3.3 Double Play with fixed telephony across Europe

Best in class for Double Play offers with fixed telephony in the 12-30 Mbps speed category are Bulgaria, Slovakia, Latvia and Denmark. Denmark appears for the first time in the best of class group. The least expensive offer in Europe for this offer category is about half the European average (€27).
The EU average of lowest prices per country for Double Play with fixed telephony in the 30-100 Mbps download speed range is €31. Best in class in this bundle/basket offer category are Lithuania, Poland, Slovakia and Romania. The best price in Europe €19 lies at some 2/3 of the European average.
For the top download speed category, Double Play with fixed telephony, the range in European lowest prices is from €19 to €117, the largest range across all bundle/basket offer categories. Best in class are Romania, Poland, France, and Lithuania.
2.3.4 Triple Play across Europe

For the first time, Italy joins the best in class in Europe. In the least expensive price cluster for Triple Play at an advertised download speed in the 12-30 Mbps, Italy is accompanied by Bulgaria, Lithuania, and Sweden. The European average lies at twice the least expensive offer across the EU.
Best in class for Triple Play 30-100 Mbps are Lithuania, Sweden, France, and Latvia. In France, providers offer higher speeds at better conditions than in the lower speed ranges.
Map 12 – Triple Play, 100+ Mbps

Best in class for the top advertised download speed category 100+ Mbps and the Triple Play service bundle are France, Lithuania, Slovakia, and the Czech Republic.

2.3.5 Findings from the map visualisation

Looking at all least expensive offers for every service bundle and speed basket offer category, a few countries offer the cheapest prices across all offer categories. These are Latvia, Lithuania and Sweden. Finland can also be described this way, however, some offer categories are not found in the market there.
From the map visualisation, a tendency for prices in the European fixed broadband market to fall towards Eastern Member States is visible; however, there are many exceptions. A number of other observations can be made from the analyses above:

- Consumers in Scandinavian countries generally have advantageous prices for most types of fixed broadband access; their countries usually appear in the second or third cheapest price cluster across all service bundles and speed baskets.
- France, despite offers for standalone internet being around average for the EU, provides consumers very low prices for Double Play and Triple Play bundles, particularly for the speed ranges 30-100 Mbps and 100+ Mbps.
- Consumers in Romania and Hungary enjoy the lowest price offers for Single Play (standalone internet) across all speed baskets. Furthermore, Romania is among the least expensive countries regarding Double Play with fixed telephony for the highest advertised download speeds, that is the speed basket 30-100 Mbps and higher.
- Compared to EU neighbours, Italy’s least expensive offers are the 12-30 Mbps Double Play with fixed telephony as well as the Triple Play service bundle.

2.4 The bigger picture: the EU in the world

2.4.1 Comparing the EU with the rest of the world in 2016
To give an indication of how prices in the EU compare with the rest of the world, a full set of data on fixed broadband internet offers was collected for each of four non-European countries, two Asian (Japan and South Korea) and two North-American (Canada and the USA). For the USA, three representative states were selected: New York State (Middle-Atlantic Division), Colorado (Mountain Division) and California (Pacific Division).

Figure 14 below shows how mean prices in the EU28 relate to those in the selected non-European countries.
Figure 14 - EU28 least expensive prices compared to other countries in the world (expressed in EUR/PPP, VAT included)\textsuperscript{20}

\textbf{12 - 30 Mbps}

\begin{center}
\begin{tabular}{|c|c|c|c|}
\hline
 & Standalone & Double play with Tel & Double play with TV & Triple play \\
\hline
EU28 & 21.33 & 26.38 & 30.17 & 38.52 \\
Japan & 18.57 & 28.72 & 26.56 & 38.14 \\
South Korea & 18.41 & 31.01 & 37.80 & 39.73 \\
USA & 33.95 & 50.30 & 52.22 & 75.52 \\
Canada & 33.74 & 48.41 & 53.00 & 66.00 \\
\hline
\end{tabular}
\end{center}

\textbf{30 - 100 Mbps}

\begin{center}
\begin{tabular}{|c|c|c|c|}
\hline
 & Standalone & Double play with Tel & Double play with TV & Triple play \\
\hline
EU28 & 25.07 & 30.43 & 33.75 & 42.41 \\
Japan & 18.57 & 28.72 & 26.56 & 38.14 \\
South Korea & 18.41 & 31.01 & 37.80 & 39.72 \\
USA & 34.99 & 60.31 & 61.92 & 80.57 \\
Canada & 44.59 & 54.00 & 66.00 & 93.00 \\
\hline
\end{tabular}
\end{center}

\textsuperscript{20} Prices given for the USA are calculated as the average of the least expensive offers found in each of the states California, Colorado and New York.
For the download speed basket 12-30 Mbps, the EU vies with Japan and in some cases Korea showing the least expensive prices in one or more of the four service bundles. The lowest price for Double Play with fixed telephony in the EU28 is also the lowest compared to all the countries analysed. The EU, Japan and South Korea have relatively similar prices when compared with Canada and, in particular, the USA.

Comparing the EU28 with other countries in the world, the pattern in the 30-100 Mbps speed basket is similar to the 12-30 Mbps basket. Japan is the least expensive country for three of four bundles; only Single Play is slightly less expensive in South Korea. Here, the EU28 just fail to present the lowest price for Double Play with fixed telephony. Again, the EU, Japan, and South Korea stay at more or less close compared to Canada and the USA. Alternatively, Canada is the most expensive country in three of four bundles. However, USA shows the most expensive Double Play with fixed telephony - despite considering the lowest price offers in three States there.

With regard to the 100+ Mbps basket of advertised download speeds, Japan and South Korea are decisively the least expensive markets, across all service bundles. South Korea has the least expensive offer for Single Play, Japan for Double Play including TV services. For the top download speed basket, the EU lies in mid-field between the low-cost Asian and the high-priced North American countries.

### 2.4.2 Changes in the EU position since 2015

The comparison of retail prices for fixed broadband offers between EU Member States and third countries for 2016 can be compared to the previous year, 2015. Findings of the 2015 study included the following:

- Ultra-fast broadband was most expensive in the USA and Canada,
- In South Korea, no broadband offer was available in baskets below 30 Mbps
- European citizens, compared to Japan and South Korea, pay similar prices for connections up to 100 Mbps, but have to pay significantly more for faster access.

These findings are unchanged in 2016:
• Ultra-fast broadband offers (100+ Mbps) were still most expensive in the USA and Canada.
• The least expensive offer for South Korea across all bundles was faster than 100 Mbps (cf. chapter 2.4).
• Compared to Japan and South Korea, European citizens have to pay similar prices for offers of up to 100 Mbps, but significantly more for ultra-fast connections.

2.5 Speed premiums

Given the greater expense of infrastructure to carry higher data speeds, prices for providing higher advertised download speeds can be expected to be higher than for offers providing lower speeds. A speed premium has been calculated for 2016 for each country as the price difference between offers in neighbouring speed baskets. The prices applied for a speed basket is that of the least expensive offer for the respective basket/bundle combination in the country. A speed premium is the amount a consumer has to pay for upgrading, say a Double Play bundle including TV services in the 12-30 Mbps range to a service in the 30-100 Mbps basket, assuming the worst case, that the consumer's original service was the cheapest on the market for the 12-30 Mbps speed basket.

Figure 16 shows the speed premiums per country and per service bundle for the basket transition (upgrade) 12-30 to 30-100 Mbps, and Figure 11 further below the speed premiums for the next higher basket transition. The average speed premiums across the EU for each service bundle are shown on the right in those figures, and are presented in overview in Figure 15.

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21 Similarly calculated price differences have been referred to previously as "high speed premiums". Using this term confuses the idea of a high (download) speed with the price comparison at hand. The comparison of prices for the speed premium is of two speed baskets, one higher than the other, but in many cases, both properly referred to as high speed. (High) speed premiums do not represent the price for high speed internet but the additional price for (more) speed.

22 An asterisk indicates that no offer was found on the market in the particular bundle/basket offer category in the respective country.
For several service bundles in several countries, offers in a lower download speed basket were actually more expensive than the cheapest offer in the next higher speed basket. In such cases the same offer is the cheapest for consumers looking for a service in either speed basket. When the same offer is the cheapest in both speed baskets, the speed premium is considered to be zero.\(^\text{23}\)

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\(^{23}\) This is represented by an empty column in the figure, e.g. for all service bundles in Cyprus.
On EU average, customers pay less than €5 extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer, regardless of the bundle type. The high-speed premium ranges from €3.36 for a Standalone or Single Play to €4.25 for Double Play with TV.

The EU average includes many cases of zero premium, including six countries with all service bundles at zero premium. It is therefore unsurprising that, where a premium has to be paid, these are often significantly higher than the average. In Bulgaria, Denmark, and Greece, the market exhibits particularly high premiums, in one case exceeding six times the European average.

Figure 17 – Speed premiums from 30-100 Mbps to 100+ Mbps by country

Speed premiums shown in Figure 17 for the transition (upgrade) between the speed baskets 30-100 Mbps and more than 100 Mbps are significantly different from those for the lower speed transition (between 12-30 and 30-100 Mbps, Figure 10). The EU average for this basket transition varies across service bundles from €13.60 for Double Play offers including TV services to €18.02 for Double Play offers with bundled fixed telephony.

There are fewer cases of zero premium overall in this basket transition than in the lower speed transition. Only one country, France, has zero premiums across all service bundles. In France, the least expensive 30-100 Mbps offer is a Triple Play offer with an advertised download speed belonging to the 100+ Mbps basket.

Consumers in Cyprus, Malta, and, to a lesser extent, in the Netherlands, Portugal, and the UK face high speed premiums for this transition, with consumers having to pay significantly above the European average.

2.6 Bundle premiums

The bundle premiums calculated and reported here represent the increase in price that consumers face for upgrading a standalone internet, Single Play offer to one including fixed telephony and/or TV services, without a change in the download speed basket of the overall service. For example, the bundle premium for Double Play with fixed telephony represents how much extra a consumer pays for adding fixed telephony to a standalone fixed broadband offer by selecting the best offer on the
market (from the largest providers), assuming the worst case that the original service was the cheapest on the market.

To give a first overview, EU averages for all the bundle premiums are shown in Figure 18.

**Figure 18 – EU28 average bundle premiums by speed basket and added service(s)**

2.6.1 Adding fixed telephony

Figure 19 shows the bundle premium for adding fixed telephony to standalone fixed internet.
On EU average, adding fixed telephony to a Single Play offer costs about €5 for the 12-30 Mbps and 30-100 Mbps baskets and is significantly more expensive in the high-speed basket of 100+ Mbps (€8.10).

In Austria, Germany, and Spain, the least expensive offer for all speed baskets already includes telephony. In Denmark, Greece, Italy, the Netherlands, and Portugal this is the case for the 12-30 Mbps and 30-100 Mbps baskets. For the other countries, however, bundle premiums for adding telephony vary considerably.

2.6.2 Adding television
Figure 20 shows the bundle premium by country for adding television services to a standalone broadband service.

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24 An asterisk indicates that there is no offer on the market in the respective service bundle and speed basket and country. An empty column indicates that the least expensive offer in this country already is the respective bundle.
On EU average, adding television services to a Single Play offer is less expensive the higher the speed range: Least expensive with 100+ Mbps connections (€6.94), followed by 30-100 Mbps (€8.82) and 12-30 Mbps (€9.12).

In France and Slovenia, TV already is part of the least expensive offer in all baskets, while it is included in the least expensive offer in the 12-30 Mbps and 30-100 Mbps basket in Lithuania. However, the bundle premium in Lithuania is just €0.17 for the 100+ Mbps basket.

**2.6.3 Adding fixed telephony and television**

Figure 21 shows bundle premiums for adding both fixed telephony and television services to a Single Play offer.

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25 In France, it is a Triple Play offer.
On EU average, adding both fixed telephony and TV services at the same time to switch from a Single Play to Triple Play is unsurprisingly the most expensive upgrade with the highest bundle premiums. The premiums do not vary greatly between speed baskets, with the EU average ranging from €16.66 (12-30 Mbps) to €17.33 (100+ Mbps).

In France, the least expensive offer for the 30-100 Mbps and 100+ Mbps basket is a Triple Play. In Ireland, the premium for adding telephony and television in the 12-30 Mbps basket is particularly high; however the TV offer is the least expensive offer available.
3. Methodology

3.1 Introduction
Ensuring the validity of the international comparisons of retail broadband prices presented in this report, covering a range of complex products and comparisons across many countries, requires a clear set of criteria for inclusion of offers and a procedure for the normalisation of prices to render them comparable. Details of the methodology applied are provided below. It should be noted that, compared to previous years, some improvements have been made in inclusion criteria and normalisation techniques. It has been possible to adjust data sets of previous years to maintain comparability.

3.2 Data collection and market coverage

3.2.1 Scope and overall approach
The study covers the following countries:

- The 28 Member States of the EU;
- Norway and Iceland;
- Japan, South Korea and Canada;
- Three states of the USA: California, Colorado and New York

The methodology for collecting data on broadband prices in each country includes sampling of ISPs, sampling of their products, sampling of prices over time (price reference period) modes of access to product information, and definition of the categories and codings to be applied.

All offer data was collected from online sources hosted by the ISP offering the service concerned. Only offers which were purchasable on the website of the respective ISP were included into the sample.

The data was collected within two weeks in October 2016. This represents the price reference period for 2016 prices. Previous monitoring took place at a similar time of year, as, is expected, will subsequent annual surveys, supporting easy interpretation of inter-annual price comparisons.

3.2.2 Internet service provider (ISP) and product sample
The study set out to achieve good coverage of the market in all countries, with clear rules for ISP and product inclusion to avoid distortions of comparisons.

The ISP sample was drawn from a list of ISPs ranked by market share in each country. ISPs were drawn from the list up to a market coverage at least 80% (90% in each of the EU28, Norway and Iceland) and up to a maximum of five ISPs per country: In addition, all incumbent operators were included, even where these were no longer in the top five in terms of market share. Also, for countries where one incumbent ISP had a sufficient market share alone and where the next largest ISP was a new entrant, the new entrant ISP was included in the ISP sample.

National Regulatory Authorities (NRA) were given the opportunity to verify the sample drawn for their Member State (see Annex 2).

For each of the ISPs selected, all the products offered to residential consumers were identified which consisted of or contained fixed broadband internet access, whether stand-alone or combined with any type of value-adding service or feature.
The value-adding provision of fixed voice telephony and/or television were singled out for full sampling and analysis. The resulting four selected service bundles are:

- fixed broadband internet access, either provided alone (Single Play) or combined with
- either fixed voice telephony or television (Double Play) or
- both fixed telephony and television (Triple Play).

As described further below, information was captured on other value-adding services bundled with fixed internet access including mobile voice telephony, mobile broadband internet access, pay-per-view TV, subscribed-to content, web-space, mail-boxes, etc. However, bundles with these features were not sampled in their own right.

In principle, all products were included from all selected ISPs in all four selected service bundles and for all advertised broadband download speeds falling under the EC definition of broadband.

Where the same product - a product in the same selected service bundle and providing the same download speed - was offered in different variants, and where it was clear which of the variants was the least expensive - usually that with the least value-adding features - then only the least expensive variant was included in the sample. This inclusion rule meant in particular that offers including mobile voice telephony or mobile broadband access were included only where the respective provider did not offer an equivalent product without the mobile service in question.

### 3.2.3 Recorded offer characteristics / indicators

For each retail broadband product in the sample, information on each of the following data items was collected in all cases meeting accessibility criteria set:

<table>
<thead>
<tr>
<th>Characteristic of offered service / indicator</th>
<th>Categories, units and remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Country data set - see notes.</td>
</tr>
<tr>
<td>ISP</td>
<td>(listed item - unique ISP name)</td>
</tr>
<tr>
<td>Name</td>
<td>(free text - name of offer)</td>
</tr>
<tr>
<td>Geographical coverage</td>
<td>Nation, region, some cities, one city, other</td>
</tr>
<tr>
<td>Type of service</td>
<td>Fixed broadband internet access standalone or with fixed telephony and/or television.</td>
</tr>
<tr>
<td>Download speed</td>
<td>(integer) Mbps</td>
</tr>
<tr>
<td>Upload speed</td>
<td>(integer) Mbps</td>
</tr>
<tr>
<td>Capped volume</td>
<td>(integer) GB.</td>
</tr>
<tr>
<td>Capped monthly time</td>
<td>(integer) Hours. Remarks: Zero if not metered</td>
</tr>
<tr>
<td>Cap breach mode</td>
<td>Continued reduced service, disconnect, automatic surcharge / overage</td>
</tr>
<tr>
<td>Characteristic of offered service / indicator</td>
<td>Categories, units and remarks</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Reduced speed after breach</td>
<td>(integer) Mbps Default: zero</td>
</tr>
<tr>
<td>Volume over cap</td>
<td>(integer) price in local currency per GB over cap volume (overage) at normal service quality.</td>
</tr>
<tr>
<td>Maximum volume surcharge</td>
<td>(integer) local currency.</td>
</tr>
<tr>
<td>Time over cap</td>
<td>(integer) price in local currency per hour of usage beyond the capped amount at normal service quality.</td>
</tr>
<tr>
<td>Maximum time surcharge</td>
<td>(integer) local currency.</td>
</tr>
<tr>
<td>Contract duration</td>
<td>(integer) months.</td>
</tr>
<tr>
<td>Termination charge</td>
<td>(integer) local currency.</td>
</tr>
<tr>
<td>Recurring charges</td>
<td>(integer) local currency per month. See notes.</td>
</tr>
<tr>
<td>Non-recurring charges</td>
<td>(integer) local currency.</td>
</tr>
<tr>
<td>Extra up-front charges</td>
<td>(integer) local currency.</td>
</tr>
<tr>
<td>Time-based discounts</td>
<td>(integer) local currency per month.</td>
</tr>
<tr>
<td>Up-front discounts</td>
<td>(integer) local currency.</td>
</tr>
<tr>
<td>Telephone line rental</td>
<td>(integer) local currency per month.</td>
</tr>
<tr>
<td>Cable TV subscription fee</td>
<td>(integer) local currency per month.</td>
</tr>
<tr>
<td>Bundled domains</td>
<td>(integer) number of domains.</td>
</tr>
<tr>
<td>Bundled web space</td>
<td>(integer) GB web space.</td>
</tr>
<tr>
<td>Bundled cloud space</td>
<td>(integer) GB cloud space.</td>
</tr>
<tr>
<td>Bundled protection</td>
<td>Antivirus, antispam, no protection.</td>
</tr>
<tr>
<td>Bundled mailboxes</td>
<td>(integer) number of mailboxes.</td>
</tr>
<tr>
<td>Bundled mobile telephony</td>
<td>Telephony service data set - see notes.</td>
</tr>
<tr>
<td>Bundled fixed telephony</td>
<td>Telephony service data set - see notes.</td>
</tr>
<tr>
<td>Bundled television</td>
<td>TV data set - see notes.</td>
</tr>
<tr>
<td>Bundled mobile data</td>
<td>Internet data set - see notes.</td>
</tr>
<tr>
<td>Access technology</td>
<td>xDSL, cable, FTTx, Ethernet, plug and play, satellite, other</td>
</tr>
</tbody>
</table>
Recurring charges include phone line rental and cable TV fee and any other charge which the customer necessarily incurs to receive the offered service. The recorded recurring charge is a monthly charge. Regular charges for periods other than a month are converted proportionately to a recurring charge for one month. Irregular charges are treated as a mixture of recurring charge and non-recurring charge.

Where prices differ by payment method, the most easily and publicly accessible price is recorded, regardless of the payment or billing method specified.

Discounts were recorded which applied to all customers, and applied on the first day of the Price Reference Period.

The country data set comprises: Country symbol; EU, non-EU; currency; (integer) Euro exchange rate; VAT rate (integer) percent

The TV data set comprises: number of channels (categories of); download content or other value add, no value add.

The internet data set comprises: (integer) Mbps download speed; (integer) GB volume cap; (integer) hours time cap. Remark: provided all

The telephony service data set comprises: geographic coverage of international calls; (integer) minutes time allowance to mobile; (integer) local currency cost of additional minute to mobile; (integer) minutes time allowance to fixed; (integer) local currency cost of additional minute to fixed.

Value-adding features are recorded only if no additional charge is made for their provision. Any further significant commercial advantages to consumers not listed above were also captured.

Electronic copies of the web pages (screenshots) and documents from which tariff information was collected were kept and used in quality assurance processes during data capture.

### 3.2.4 Download speed baskets

The absolute download speed as advertised was recorded for each offer. For analysis, offers were classified in baskets of advertised download speed as shown in Figure 23.

![Figure 23 – Download speed baskets](image)
As shown, each basket includes the upper bound of the speed interval given but not the lower bound, except in the lowest category, which includes 144 kbps. This should be borne in mind when reading results referring to a basket not by number but e.g. as "8-12 Mbps".

### 3.3 Price normalisation and analysis

#### 3.3.1 Standard broadband internet service price BISP

Normalisation of advertised prices is necessary to provide comparability across offers which have different price components, and/or usage rules with relevance to the cost incurred. Normalisation was predominantly necessary in cases where services included volume or time capping. Applying the normalisation techniques and parameters defined here, a standard monthly broadband internet service price (BISP) was determined for each offer. This is designed to be equivalent to the actual cost to a customer using the offered service who complied with a specified usage profile. The BISP takes fully into account the impact on consumers of

- any non-recurring / one-off charges,
- the recurring / monthly and usage-dependent charges and
- applicable discounts or surcharges to either type of charge.

The BISP is a monthly cost to the consumer on average over the full standard contract duration.

A standard contract duration (SCD) of 36 months was set. Any charges for renewing a shorter contract or overrun of a contract (series of contracts) of fixed duration were taken into account as non-recurring charges at a particular time, and discounting techniques applied to determine a BISP component.

All charges a customer cannot avoid including, for instance, contributions to Universal Service provision or TV contributions for settling author rights and local taxes or fees were taken fully into account.

The total BISP includes components to reflect all non-recurring charges. Non-recurring or one-off charges - e.g. installation or equipment purchase - were converted to BISP components at constant net present value using the standard contract duration and an appropriate discount rate. Given the economic climate of 2016, a discount rate of zero was applied.

Discounts - typically one-off up-front or a reduced monthly charge for a limited period were taken fully into account, creating a (negative) BISP component, using depreciation techniques where necessary. The method of taking discounts into account which were valid for all customers on the first day of the price reference period ensured proper reflection of the cost of the service to an average customer, purchasing then, and retaining the service for the standard contract duration. Therefore discounts applicable only to certain types of customers such as students, disabled people or any groups, were not included. Discounts for ordering online were applied in full. A recurring
discount provided for a limited period was discounted to a net present value and spread over the standard contract duration.

Where an ISP gave the option to either buy or rent required equipment, the less expensive variant (usually buy not rent) was included.

3.3.2 Application of usage / user profiles
Metered offers provide broadband internet access for a fixed monthly price up to a certain usage level, which may be expressed in time or volume. Once the usage limit is exceeded, additional charges apply.

These thresholds were compared with a standard user profile, and where usage in the profile exceeded the particular usage limit, the surcharge was calculated and added as a BISP component. The agreed user profiles shown in Figure 24 specify how usage volume is believed to be linked to the offer speed basket. A monthly usage time of 20 hours of internet connection was assumed. Where service conditions limited any additional charge, this limit was also taken into account. The resulting price normalisation establishes comparability in particular of otherwise identical metered and unmetered offers.

Figure 24 – User profiles for internet usage volume, by speed basket

<table>
<thead>
<tr>
<th>Baskets</th>
<th>Volume of data (GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basket 1:</td>
<td>1</td>
</tr>
<tr>
<td>Basket 2:</td>
<td>2</td>
</tr>
<tr>
<td>Basket 3:</td>
<td>5</td>
</tr>
<tr>
<td>Basket 4:</td>
<td>5</td>
</tr>
<tr>
<td>Basket 5:</td>
<td>10</td>
</tr>
<tr>
<td>Basket 6:</td>
<td>10</td>
</tr>
<tr>
<td>Basket 7:</td>
<td>30</td>
</tr>
<tr>
<td>Basket 8:</td>
<td>30</td>
</tr>
</tbody>
</table>

Offers in which use of television was restricted in time or in volume or where less than 5 free channels were offered as television were treated as no television service.

Offers which imposed volume limits but without the customer being able to request (and pay for) continued provision at the same quality, were only included if the ISP continued to offer access, at reduced speed, and the prominently displayed reduced speed exceeded 0.144 Mbps. For profiles which breached the volume limit, the offer was reclassified in the speed basket appropriate to the speed after limit breach.

Normalisation was applied where the volume limit of an offer was below the user profile value and exceeding the limit led not to service degradation but to additional charges. In such cases the cost of the profile volume was adjusted based on prices advertised for exceeding the volume threshold, whether or not the charges were applied automatically or only on request.
Prices for services including fixed telephony were normalised by applying a single user profile comprising 14 and 6 calls to fixed and mobile lines respectively, with calls of 5 minutes average duration.

### 3.3.3 Euro prices and least expensive offer

As described above, the standard monthly broadband internet service price (BISP) was determined for each offer in local currency using advertised prices. A discount rate of zero was applied over a 36 month standard contract duration to take account of non-recurring charges and discounts. Volume and time limits for internet use and fixed telephony use were compensated for by applying usage levels defined in standard usage profiles to calculate the additional monthly cost to a consumer with that usage level.

Of all offers in the product sample for a country, the least expensive (lowest BISP) was selected for each service bundle and speed basket. Occasionally, a higher quality offer - one with a higher download speed or additional services - was found to be less expensive than all offers in a particular service bundle and speed basket. In such cases the higher quality offer was taken as the least expensive offer. If this led to a higher quality offer including fixed telephony being included in a service bundle without fixed telephony, then any surcharge BISP on that offer for telephony service normalisation was removed.

For international comparability, purchase-price parity (PPP) conversion rates were applied. PPP values were taken from Eurostat\(^{26}\). For countries not in the scope of Eurostat’s publications, data from the OECD was used\(^{27}\). Values in USD PPP were converted to EUR using the USD-EUR exchange rate on 20\(^{th}\) October, 2016.

Valid trend analysis requires standardisation of methods over time. The rules for ISP sampling, for selection of the least expensive offers and for price normalisation have been improved compared to previous years. For trend analysis, EC broadband internet price data from 2013 onward were reanalysed, using the criteria and methods described here.

### 3.3.4 Restatement of historical data

Historical data from 2013 to 2015 was normalised using the methodology above in order to ensure comparability. Data may thus slightly deviate from previous published data.

### 3.4 Quality assurance

#### 3.4.1 Results sample validation

During the data collection, TÜV received a dataset of randomly selected samples of 10% of the gathered data per country. At least one offer per country was provided. Moreover, TÜV received the necessary screenshots, website dumps and PDFs, thus enabling independent verification of the values entered. Finally, where required, language support was provided to TÜV.

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\(^{26}\) See [http://ec.europa.eu/eurostat/web/purchasing-power-parities/overview](http://ec.europa.eu/eurostat/web/purchasing-power-parities/overview) for more details.

3.4.2 Audit trail
The resolution of faults detected automatically and queries generated in sampled validation were logged. This procedure provided a comprehensive audit trail tracking study accuracy. A statistic of corrections was generated and used to review procedures and instruction of data gathering staff to further optimise quality.

3.4.3 Supervision by National Regulatory Authorities
National Regulatory Authorities for electronic communications (NRAs) were informed about the study and given the opportunity to review in a timely manner:

- the selection of ISPs,
- the broadband retail offers including documentation,
- the analysis of the offers and
- other information the Commission requested to be provided.

By providing information and documentation on their market to each NRA, and offering to address issues raised, this has been proven to be a very strong feedback loop, capable of correcting any possible misrepresentation of a national market.
4. ANNEX I - List of Internet Service Providers (ISPs) included in the study sample

As mentioned in the methodology section, the number of ISPs to be surveyed was reduced to up to five per country.

ISPs not longer in the sample are marked orange. ISPs in pale red were subject to changes in names, partly due to mergers.

<table>
<thead>
<tr>
<th>Country</th>
<th>ISP</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Kabelplus</td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>LIWEST</td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>Tele2 Austria</td>
<td></td>
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<tr>
<td>AT</td>
<td>UPC Austria</td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>A1 Telekom Austria</td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>Salzburg AG</td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td>Proximus</td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td>Telenet</td>
<td></td>
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<tr>
<td>BE</td>
<td>Voo</td>
<td></td>
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<tr>
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<td>Vivacom</td>
<td></td>
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<td>Blizoo</td>
<td></td>
</tr>
<tr>
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<td>Bulsatcom</td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>Mobiltel</td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>Max Telecom</td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>Escom</td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>Skat TV</td>
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<td>Net 1</td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>Networx</td>
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<tr>
<td>CA</td>
<td>Bell Canada</td>
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<tr>
<td>CA</td>
<td>Shaw Communications</td>
<td></td>
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<tr>
<td>CA</td>
<td>Rogers Communications</td>
<td></td>
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<tr>
<td>CA</td>
<td>Videotron</td>
<td></td>
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<td>CA</td>
<td>Telus</td>
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<td>Quickline</td>
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<td>Sunrise Communications</td>
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<td>CL</td>
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<td>Verizon</td>
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<tr>
<td>CL</td>
<td>Bright House</td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>Cox Communications</td>
<td></td>
</tr>
<tr>
<td>CL</td>
<td>Charter Communications</td>
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</tr>
<tr>
<td>CL</td>
<td>Time Warner Cable</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>CenturyLink (Qwest)</td>
<td></td>
</tr>
<tr>
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<td>Comcast</td>
<td></td>
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<tr>
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<tr>
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<td>Primetel</td>
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<tr>
<td>CZ</td>
<td>o2 Czech Republic</td>
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<td>EE</td>
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| UPC Slovakia |
| Slovanet |
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| Orange Slovensko |
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COUNTRY PROFILES

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KabelPlus
LIWEST
Tele2 Austria
UPC Austria

Recent evolution in broadband prices

Broadband Prices for 2016 are rather close to what was observed in 2015 for offers between 12 and 30 Mbps. Over the last four years, the price of least expensive offers in the speed range 30-100 Mbps has not changed much for all types of offers. For the other speed categories, the price of the cheapest offers fluctuated a little between 2013 and 2016.
PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

BUNDLE PREMIUM
Overall, in Austria the least expensive Standalone or Double Play offers in all speed baskets already include fixed telephony, whereas on EU average, adding fixed telephony costs between 5 EUR (12-30 Mbps) and 8.1 EUR (>100 Mbps). Adding TV services costs between 7.8 and 13 EUR depending on the speed range. This is more expensive compared to the EU average (i.e., 24% and 87% more in the two higher speed baskets of 30-100 Mbps and >100 Mbps) with the exception of the 12-30 Mbps basket, where adding TV services is about 15% less expensive. Likewise, adding both fixed telephony and TV services at the same time is more expensive in Austria compared to the EU average. While in Austria adding both services costs between 18.2 and 21.8 EUR depending on the speed range, on EU average, a customer pays about 17 EUR more to get a Triple Play premium, regardless of the speed basket.

VERY HIGH SPEED PREMIUM
In Austria, customers pay between 7.8 and 10.9 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. This is more than twice as high than on EU average, where consumers pay between 3.4 and 4.3 EUR extra to upgrade for a 30-100 Mbps offer. In contrast, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much lower than on EU average. While in Austria, consumers pay between 7.8 and 10.9 EUR extra, on EU average, the premium ranges between 13.6 and 18 EUR, which is about 65% to 74% more.

COMPUTATION AND TECHNOLOGY
ISPs COMPETITION
Regarding the Standalones and Double Play bundles in the lower speed categories, A1 Telekom Austria seems to be a reasonable choice. However, within the speed baskets of 12-30 Mbps and 30-100 Mbps, this ISP is among the more expensive ones. Except for the 4-8 Mbps basket, UPC Austria is one of the least expensive ISPs for any Double and Triple Play bundle regardless of the speed basket. For both the speed baskets of 12-30 Mbps and 30-100 Mbps, Kabel Plus provides averagely priced Standalones. Yet, in the 100+ Mbps basket, Kabel Plus provides the least expensive offer. Otherwise situated among the rather expensive providers for Double and Triple Play bundles, it is the only ISP with offers found in the 8-12 Mbps speed basket.

CHEAPEST TECHNOLOGY
In Austria, there is no single technology that systematically appears to be the cheapest one.

Tele 2 Austria and LIWEST have the least expensive Triple Play and Standalone offers for baskets within the speed ranges of 12-30 Mbps and 100+ Mbps.

NOTES
ISP marked with an 'i' are incumbents in the respective country.
Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Broadband Prices for 2016 are rather close to what was observed in 2015 for offers between 12 and 30 Mbps; the price of the least expensive offers in the speed range 30-100 Mbps has not changed much for all types of offers. Speeds of 100 Mbps were getting cheaper.
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGN premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**

In Belgium, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs 5.4 EUR in the two smaller speed baskets, which is similar to the respective EU averages being 5 to 5.6 EUR. However, in the highest speed basket of more than 100 Mbps, adding fixed telephony is significantly more expensive than on EU average (20.2 EUR vs. 8.1 EUR, i.e., 149% more). Adding TV services to a Standalone or Double Play bundle including fixed telephony costs between 5.2 and 15.6 EUR depending on the speed basket. This is about 72% more expensive than the EU averages regarding the smaller baskets of 12-30 and 30-100 Mbps, and 25% less expensive for the >100 Mbps basket. Finally, adding both services at the same time costs 20.1 EUR in the >100 Mbps speed basket, and 33.8 EUR in those of lower speed ranges (12-30 Mbps and 30-100 Mbps), being clearly more expensive compared to the EU average. Regarding the speed baskets of lower speed ranges, prices are twice as high as on EU average.

**Very High Speed Premium**

In Belgium, the least expensive offer in the smallest basket already exceeds 30 Mbps. On EU average, the premium between 12-30 Mbps offers and those of 30-100 Mbps is between 3.4 and 4.3 EUR. In Belgium, customers pay between 6 and 34.4 EUR extra for a >100 Mbps broadband offer compared to a 30-100 Mbps offer depending on the bundle type. This is significantly less expensive for the Double Play offer with TV (-32%) as well as for the Triple Play offer (-61%) compared to the EU average. However, referring to the Standalone and the Double Play offer with fixed telephony, it is much more expensive than on EU average (27% to 91%).

**Notes**

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

Broadband Prices for 2016 are rather close to what was observed in 2015 for offers between 12 and 30 Mbps, the price of the least expensive offers in the speed range 30-100 Mbps changed for offers with telephony, mostly due to normalisation effects; offers without telephony remained at their low price level. There is no clear trend in the 100+ Mbps speed basket.
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**

In Bulgaria, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs between 1.8 EUR and 29.6 EUR in the two smaller speed baskets (12-30 Mbps and 30-100 Mbps). For the 12-30 Mbps basket, this is less expensive compared with the EU average of 5 EUR (-64%), but much more expensive for the 30-100 Mbps basket (429%). Adding TV services costs between 5.4 (12-30 Mbps) and 7.7 EUR (30-100 Mbps). This is between 13% and 40% less expensive compared with the EU average. Last, adding both fixed telephony and TV services at the same time costs between 6.3 and 29.6 EUR. This is 74% more expensive for the 30-100 Mbps basket than on EU average, and 63% less expensive in the basket of 12-30 Mbps. In general, on EU average, prices for adding both services at the same time do not differ a lot between the bundles ranging all about 17 EUR. With regard to the 30-100 Mbps and >100 Mbps basket, the Triple Play bundles already including fixed telephony and TV services are the least expensive offers.

**Very High Speed Premium**

In Bulgaria, customers pay between 2.2 and 30 EUR extra for a 30-100 Mbps broadband offer compared with a 12-30 Mbps offer depending on the bundle type. With regard to the Standalone and Double Play including TV services, this is similar to the EU averages ranging between 3.4 and 4.3 EUR depending on the bundle. However, regarding the Double Play bundle with telephony or the Triple Play bundle, this is up to 782% more (cf., Double Play with TV). Likewise, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much higher than on EU average (+104% for the Standalone offer, and +456% for the Double Play bundle with TV).

**Competition and Technology**

**ISPs Competition**

For the speed basket of 12-30 Mbps, Vivacom is generally the least expensive provider regarding Standalones, Double Play bundles including fixed telephony as well as Triple Play bundles. The least expensive offer for Double Play bundles including TV services is provided by Mobiltel. In general, broadband offers with speed ranges of more than 30 Mbps are less expensive at Mobiltel, except for Standalones, where Bulsatcom provides the least expensive option. Overall, offers with speeds of 100+ Mbps were found only at Mobiltel.

**Cheapest Technology**

For speed baskets up to 100 Mbps, mostly, FTTx - representing about 65% of the gathered data - seems to be the least expensive technology. However, with regard to the Double Play bundle including TV services as well as for speed baskets exceeding 100 Mbps, Cable appears to be the cheapest technology on the market.

**Notes**

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
ISPs in sample
T-Hrvatski Telekom
OT Optima Telekom
Ikon
Vipnet (including B.net)

2016 prices are decreasing or being rather stable compared with 2015 for the faster bandwidths. In the 12-30 Mbps basket, slight increases were surveyed for Standalone and Double Play TV offers.
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**

In Croatia, adding fixed telephony to the least expensive Standalone or Double Play offers costs between 2.9 (30-100 Mbps) and 7.8 EUR (>100 Mbps). Overall, this is between 4 and 48% less expensive than on EU average, except for the 12-30 Mbps offer, where consumers pay slightly more (6.9 EUR instead of 5 EUR on EU average, +38%). Adding TV services costs between 12.7 and 23.8 EUR depending on the speed range. This is up to 245% more than the EU average (cf., the >100 Mbps basket). Similarly, adding both services at the same time is generally more expensive in Croatia than on EU average. While in Croatia adding both services costs between 21.7 and 31.8 EUR depending on the speed range, on EU average, a customer pays only about 17 EUR more to get a Triple Play premium, regardless of the speed basket.

**Very High Speed Premium**

In Croatia, the premium between 12-30 Mbps offers and those between 30-100 Mbps is between 3.5 and 4.2 EUR showing similar values to the EU averages. However, since direct comparisons can only be applied to the Standalone and Double Play offers with TV, it can be seen that an upgrade within a Standalone offer is slightly more expensive, whereas an upgrade within a Double Play offer including TV services is slightly less expensive compared to the EU average. Both in Croatia as well as on EU average, the premium between 30-100 Mbps offers and those of more than 100 Mbps is significantly higher than the premiums in the lower speed baskets. In Croatia, consumers pay between 12.9 and 24 EUR extra depending on the bundle type: on EU average, the premium ranges between 13.6 and 18 EUR.

**Competition and Technology**

**ISPs Competition**

Compared to all the other ISPs surveyed on the Croatian market, Vipnet systematically provides low-priced offers for Standalones of all speed ranges and is also the cheapest provider for Double Play with Telephony in the speed basket 100+ Mbps. Iskon provides the cheapest bundle offers with speeds of up to 100 Mbps. T-Hrvatski Telekom, frequently the most expensive operator on the market, is the only provider with recorded offers for Triple Play in the speed basket 100+ Mbps. And, after Vipnet, it is the more expensive solution for Double Play with Telephony. OT Optima Telekom shows to be the second best option for Standalones and Double Play with TV.

**Cheapest Technology**

Apart from the Triple Play 100+ Mbps, for which FTTx is the only available technology, xDSL appears to be the least expensive option on the broadband market.

**Notes**

ISP marked with an ‘ are incumbents in the respective country.

Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Prices for 30-100 Mbps offers in Cyprus have decreased every year since 2013. Triple Play offers in this basket are now only slightly above the EU average in 2016. Between 2015 and 2016, prices in the other two baskets remained rather stable on very high levels.
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**
In Cyprus, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs 11.4 EUR in both the 12-30 Mbps and the 30-100 Mbps basket, and 4 EUR in the basket with speed ranges of more than 100 Mbps. This is more than 100% more expensive than on EU average, when looking at the two lower baskets. However, regarding the >100 Mbps basket, adding fixed telephony is about 50% less expensive compared to the EU average. Adding TV services costs 5.7 EUR in the two lower speed ranges of 12-30 and 30-100 Mbps being less expensive than on EU average, where prices range between 6.9 and 9.1 EUR depending on the speed basket. Finally, in Cyprus, adding both services at the same time costs only 4 EUR in the >100 Mbps basket, and 11.4 EUR in the remaining baskets (30-100 Mbps and >100 Mbps). This is generally less expensive compared to the EU average, where consumers pay about 17 EUR across all speed baskets (up to -76%).

**Very High Speed Premium**
In Cyprus, the least expensive offers in the smallest basket already exceed 30 Mbps across all bundles. On EU average, the premium between 12-30 Mbps offers and those of 30-100 Mbps lies between 3.4 and 4.3 EUR. Moreover, in Cyprus, consumers pay between 71.8 and 79.2 EUR extra for a >100 Mbps broadband offer compared to a 30-100 Mbps offer depending on the bundle type. This is significantly more expensive compared to the EU average (up to +414%), where consumers pay only between 13.6 and 18 EUR.

**Notes**
ISP marked with an "i" are incumbents in the respective country.
Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.
Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.

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**ISP's Competition**
Looking at the Cypriot broadband market, it is evident that the two main operators, the incumbent Cytanet (national coverage) and Primetel (only covering some cities), account for nearly all low-priced offers across all bundle types and speed baskets. Cytanet, which is the least expensive and one of the only providers for Standalone offers, seems to be the second best option for Double Play bundles including fixed telephony, right after Primetel with a price difference of about 4€. However, regarding Triple Play offers within the speed ranges up to 30 Mbps, the least expensive offer was found at Primetel. Cablenet (only covering some cities) is the only choice for Double Play bundles including TV services and the least expensive one for Triple Play bundles with a speed range of more than 30 Mbps.

**Cheapest Technology**
Cable technology, provided by Cablenet only, is clearly the least expensive option for costumers coming with a speed range of 30-100 Mbps and 100+ Mbps and at the same time being less expensive than the lower speed baskets. However, regarding the remaining speed baskets, consumers have to rely on the generally more expensive xDSL.
Comparing 2016 prices with those from 2015 gives no clear picture: While prices for all Single Play offers have slightly increased, prices for Double Play TV offers have decreased. This decrease is clear from 2013 onwards. The cheapest offer in all bundles is from the 100 Mbps basket. This basket was getting cheaper every year - except, again, for Single Play.
Breakdowns

Price Breakdown
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

Bundle Premium
In the Czech Republic, adding fixed telephony costs 10.6 EUR across all speed baskets, which is about twice as high compared to the EU average looking at both the speed basket of 12-30 Mbps and the one ranging between 30-100 Mbps. With reference to the >100 Mbps basket, the price difference is smaller with 10.6 EUR in the Czech Republic vs. 8.1 EUR on EU average. Adding TV services costs between 1.4 and 6.9 EUR depending on the speed range. This is significantly less expensive for the smaller speed baskets (up to -84%) than on EU average, but quite similar with regard to the >100 Mbps basket.

Very high speed premium
In the Czech Republic, the least expensive offers in the 12-30 Mbps basket already exceed 30 Mbps across all bundles. On EU average, consumers pay between 3.4 and 4.3 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. Likewise, in all bundles – except for the Double Play bundle with TV services – the least expensive offers in the 30-100 Mbps basket already exceed 100 Mbps. On EU average, the premium between 30-100 Mbps offers and those of more than 100 Mbps ranges between 13.6 and 18 EUR. Looking more closely at the Double Play offer including TV services, consumers pay more than twice as much extra on EU average (+147%) than in the Czech Republic.

Cheapest Technology
In the Czech Republic, xDSL represents the least expensive option for a Standalone 1-2 Mbps offer; however, regarding the remaining speed baskets and bundle types, FTTx represents the least expensive technology.

Notes
ISP marked with an 'i' are incumbents in the respective country.
Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Prices for 100+ Mbps offers have been steadily decreasing since 2014 in all bundles. In the 12-30 Mbps range, bundles were getting cheaper - only Standalone saw a slight increase. No trend is obvious in the offers between 30 and 100 Mbps: Prices for Single Play and Double Play Phone were decreasing, while those including TV were increasing.
PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

BUNDLE PREMIUM
In Denmark, the least expensive Standalone and Double Play bundles including telephony in the speed baskets of 12-30 and 30-100 Mbps already include fixed telephony; adding fixed telephony in the >100 Mbps costs 4.9 EUR, which is 40% less expensive than the EU average (8.1 EUR). Furthermore, on EU average, adding fixed telephony in the two smaller baskets costs about 5 to 5.6 EUR. Adding TV services costs between 11.6 (12-30 Mbps) and 26.6 EUR (30-100 Mbps), which is up to 202% more expensive than on EU average. For the >100 Mbps speed basket, no Double Play offer including TV services as well as no Triple Play bundle could be found.

VERY HIGH SPEED PREMIUM
In Denmark, customers pay 3.1 EUR extra to upgrade from a 12-30 Mbps to a 30-100 Mbps offer in both the Standalone and Double Play bundle including fixed telephony; this is about the same consumers pay on EU average. Yet, referring to the Double Play offer including TV services, consumers pay 18.1 EUR extra, whereas, on EU average, the extra cost is only about 4.3 EUR (i.e., -76%). Moreover, the premium between 30-100 Mbps offers and those of more than 100 Mbps is less expensive compared to the EU average in both the Standalone and the Double Play bundle including fixed telephony. While in Denmark, consumers pay between 10.5 and 15.4 EUR extra, on EU average, the premium is between 15.5 (Standalone) and 18 EUR (Double Play with fixed telephony). The least expensive offer in the Double Play bundle with TV services in the speed basket of 30-100 Mbps already exceeds 100 Mbps, while on EU average, the premium is between 13.6 and 15.2 EUR.

CHEAPEST TECHNOLOGY
The best offers in the 100+ Mbps basket and Double Play bundles including fixed telephony are Cable supported. However, xDSL is the only option for Double Play bundles including TV services. Regarding Standalones, xDSL provides the least expensive low speed range offers, while FTTx supports mid ranged offers and Cable stands out as the least expensive solution for speed ranges of more than 30 Mbps.

NOTES
ISP marked with an ¹ are incumbents in the respective country.
Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.
Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

Compared with 2015, prices for offers including telephony (Double Play Phone and Triple Play) have increased within all speed baskets. In contrast, prices remained stable for the other two bundles (Single Play and Double Play TV) within the 12-30 Mbps and 30-100 Mbps speed baskets; offers with more than 100 Mbps in those bundles were significantly less expensive than last year.

STATISTICAL DATA

ISPs in sample
- Starman
- Telekom (Elion)
- STV
- Fill OÜ

Prices in Estonia compared with EU average

<table>
<thead>
<tr>
<th>Speed Basket</th>
<th>Single Play</th>
<th>Double Play Phone</th>
<th>Double Play TV</th>
<th>Triple Play</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-30 Mbps</td>
<td>-34%</td>
<td>-9%</td>
<td>-35%</td>
<td>-5%</td>
</tr>
<tr>
<td>30-100 Mbps</td>
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<td>-42%</td>
<td>-9%</td>
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<tr>
<td>100+ Mbps</td>
<td>-20%</td>
<td>5%</td>
<td>-20%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Take up of broadband speeds - Estonia

<table>
<thead>
<tr>
<th>Speed</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 144 kbps</td>
<td>0%</td>
<td>3.6%</td>
<td>5.1%</td>
<td>5.5%</td>
</tr>
<tr>
<td>144 kbps - 2 Mbps</td>
<td>1.1%</td>
<td>3.1%</td>
<td>3.9%</td>
<td>3.4%</td>
</tr>
<tr>
<td>2 Mbps - 4 Mbps</td>
<td>10%</td>
<td>8.2%</td>
<td>10.7%</td>
<td>9.6%</td>
</tr>
<tr>
<td>5 Mbps - 10 Mbps</td>
<td>20%</td>
<td>22%</td>
<td>15.4%</td>
<td>15.5%</td>
</tr>
</tbody>
</table>
PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

BUNDLE PREMIUM
Overall, in Estonia, adding fixed telephony is significantly more expensive than on EU average. In particular, with regard to the 30-100 Mbps basket, the price difference between 5.6 EUR on EU average vs. 19.6 EUR in Estonia is striking (+250%). In contrast, in Estonia, adding TV services is generally less expensive compared with the EU average, with 5.6 EUR across all speed baskets vs. 6.9 to 9.1 EUR on EU average depending on the speed basket. Furthermore, adding both fixed telephony and TV services at the same time is more expensive in Estonia compared with the EU average. While in Estonia adding both services costs between 22.9 (12-30 Mbps) and 33.7 EUR (>100 Mbps), on EU average consumers pay only about 17 EUR to get a Triple Play premium, regardless of the speed basket.

VERY HIGH SPEED PREMIUM
In Estonia, customers pay only 1.4 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer with regard to a Triple Play bundle; this is 62% less than the EU average. However, a respective upgrade within a Double Play offer including fixed telephony costs 9.8 EUR, which is 188% more expensive than on EU average. Regarding the Standalone and the Double Play bundle including TV services, the least expensive offers in the 12-30 Mbps baskets already exceed 30 Mbps. In general, respective upgrades on EU average do not differ much between the bundles, with a price range of 3.4 to 4.3 EUR. The premium between 30-100 Mbps offers and those of more than 100 Mbps is 18.3 EUR for both the Standalone and the Double Play bundle including TV services, which is 18-35% higher than the respective EU average values ranging between 13.6 and 15.5 EUR. Regarding the Triple Play, the premium between 30-100 Mbps offers and those of more than 100 Mbps is 27.7 EUR being 82% more expensive compared to the EU average. Only the Double Play bundle including fixed telephony is slightly less expensive than on EU average (17.3 vs. 18 EUR).

CHEAPEST TECHNOLOGY
In Estonia, regardless of the bundle type and speed basket, FTTx represents the only technology offered.

ISP marked with an ‘i’ are incumbents in the respective country.
Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.
Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

After observing fixed broadband price increases in Finland between 2014 and 2015, prices from 2016 have decreased for all but one bundle/speed basket combination: The price for Single Play in the 12-30 Mbps basket has remained stable.
**PRICE BREAKDOWN**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**BUNDLE PREMIUM**

In Finland, the least expensive Standalone or Single play offers across all baskets already include fixed telephony, whereas on EU average, adding both fixed telephony costs between 5 and 8.1 EUR. Adding TV services costs between 1.7 and 2.7 EUR depending on the speed basket being 60 to 81% less expensive than on EU average. Across all speed ranges, no Double Play bundle including fixed telephony as well as no Triple Play bundle data could be found. Moreover, in the speed range of 12-30 Mbps, no Double Play bundle including TV services was available.

**VERY HIGH SPEED PREMIUM**

In Finland, regarding the Standalone offer, consumers pay 1.7 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer, which is 50% cheaper than on EU average. Furthermore, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much lower than on EU average. While in Finland consumers pay between 6.7 (Standalone) and 9.3 EUR (Double Play with TV services) extra, on EU average, the respective premium ranges between 13.6 and 15.5 EUR. Finally, as noted above, no Double Play bundle including fixed telephony as well as no Triple Play bundle data could be found for any of the speed baskets. Besides, in the speed range of 12-30 Mbps, no Double Play bundle including TV services was available.

**CHEAPEST TECHNOLOGY**

Overall, broadband offers with speed ranges from 2 to 12 Mbps are less expensive with Cable and xDSL technology. In contrast, FTTx represents the least expensive solution for all higher speed baskets, regardless of the bundle type.

**ISPS COMPETITION**

Regarding Standalone offers ranging from 2 to 4 Mbps as well as any offers with speed ranges from 8 to 100 Mbps, the Finnet group, with its subsidiaries Anvia, SSP and Tampereen Puhelin, represents a reasonable choice. However, Double Play bundles including TV services in the 4-8 Mbps and 12-30 Mbps speed baskets were only found at Sonera. Overall, DNA provides reasonable offers in the higher speed ranges of more than 100 Mbps for both Standalones and Double Play bundles including TV services; the last one being less expensive than the Finnet group offer in the next lower speed range.

**NOTES**

ISP marked with an ‘i’ are incumbents in the respective country.

Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

Prices for all baskets have increased between 6% (100+ Mbps, all bundles) and 36% (Single Play 30-100 Mbps) compared with 2015. The cheapest offer in all but the Single Play 12-30 Mbps bundle is a Triple Play from the 100+ Mbps speed basket.
PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

BUNDLE PREMIUM
In France, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs 2.8 EUR in the 12-30 Mbps basket, being 44% less expensive than on EU average, where consumers pay 5 EUR. In the same speed basket, adding both fixed telephony and TV services costs 2.8 EUR, too - the same price as adding fixed telephony only. Again, this is significantly less expensive than on EU average (-83%). With regard to the 30-100 Mbps and >100 Mbps basket, the Triple Play bundles already including fixed telephony and TV services are the least expensive offers, which is why no premium is shown in the graphic on the left. On average, EU28 consumers pay about 17 EUR to add fixed telephony and TV services at the same time.

VERY HIGH SPEED PREMIUM
In France, consumers pay 2.8 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer, which is less expensive than on EU average (between -21 and -53%). Double Play offers including telephony and Triple Play offers in this speed basket already are from the next higher speed basket, which is why no premium is depicted in the graphic above.

CHEAPEST TECHNOLOGY
In the speed baskets smaller than 100 Mbps - regardless of the bundle type, xDSL represents the least expensive technology. For speed baskets of 100+ Mbps, FTTx is the cheapest technology.

COMPETITION AND TECHNOLOGY
ISP' competition
Free provides the least expensive broadband offer for the 12-30 Mbps speed basket, followed by Bouygues Télécom and SFR. The Triple Play is systematically least expensive with Bouygues Télécom, which appears multiple times among the least expensive offers. Another reasonable choice seems to be SFR. Overall, the incumbent Orange France represents the most expensive ISP, regardless of the bundle type or speed basket.

Notes
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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP. February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.
Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
In 2016, prices for all bundle and speed basket combinations have decreased compared with 2015, with the highest decreases in the 100+ Mbps basket (from -12% for the cheapest Single Play offer up to -61% for Double Play TV).
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Overall, the least expensive Standalone or Double Play offers across all speed baskets in Germany already include fixed telephony, whereas on EU average, adding fixed telephony costs between 5 EUR (12-30 Mbps) and 8.1 EUR (>100 Mbps). Adding TV services costs between 3.3 and 7.9 EUR depending on the speed range. This is predominantly less expensive compared to the EU average (i.e., -16 to -62% less in the speed baskets of 12-30 Mbps and 30-100 Mbps). However, in the >100 Mbps basket, adding TV services is about 15% more expensive. Finally, adding fixed telephony and TV services at the same time is less expensive in Germany than the EU average, regardless of the speed basket. While in Germany adding both services costs between 9 and 13.6 EUR depending on the speed range, on EU average, a customer pays about 17 EUR more across all speed baskets to get a Triple Play premium.

**Very High Speed Premium**

In Germany, customers pay between 4.3 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer for both the Standalone and the Double Play offer including fixed telephony. This is slightly more than on EU average, where consumers pay about 3.4 EUR extra to upgrade for a 30-100 Mbps offer. Regarding the Double Play offer including TV services as well as the Triple Play bundle, the least expensive offers within the 12-30 Mbps speed basket already exceed 30 Mbps. On the whole, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much lower in Germany than on EU average. While in Germany, consumers pay between 3.8 to 8.3 EUR extra depending on the speed basket, on EU average, the premium ranges between 13.6 and 18 EUR, which is about 63% (cf., Double Play offer including fixed telephony) to 373% (cf., Double Play offer including TV services) more.

**Notes**

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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Compared with 2015, fixed Broadband prices for offers including TV options have increased 38% in the 30-100 Mbps speed basket. For the other combinations, prices have remained rather stable. The fluctuations vary from -5% (Single Play, Double Play Phone 12-30 Mbps) to +2% (Single Play, Double Play Phone 30-100 Mbps).
PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

BUNDLE PREMIUM
In Greece, no offers in the >100 Mbps basket could be found. In both the 12-30 Mbps as well as the 30-100 Mbps speed basket, the least expensive offers already include fixed telephony. Hence, adding only TV services costs the same as adding fixed telephony and TV services at the same time, which is generally more expensive than the respective EU averages. Adding both services at the same time costs 16.5 (12-30 Mbps) to 30.49 EUR (30-100 Mbps) in Greece, while on EU average, consumers pay about 17 EUR across all speed baskets (up to -44%).

VERY HIGH SPEED PREMIUM
In Greece, consumers pay between 8.8 and 22.9 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. This is up to 519% more than on EU average, where consumers pay about 3.4 to 4.3 EUR extra to upgrade for a 30-100 Mbps offer, which does not differ much between the bundle types. Since no >100 Mbps offers were found, no premium data between 30-100 Mbps offers and those of more than 100 Mbps is available.

CHEAPEST TECHNOLOGY
Overall, in Greece, xDSL is the least expensive technology across all speed baskets and bundle types.

ISP’s COMPETITION
Only two ISPs were found providing Standalone offers: Wind and CYTA; with the first provider being slightly less expensive than the second one. In contrast, for Double Play bundles including fixed telephony, CYTA provides the least expensive offers in all baskets with speed ranges of more than 12 Mbps. OTE is the only provider with recorded offers in the speed range between 2 and 4 Mbps. Triple Play bundles within a speed range of 12-30 Mbps are provided the least expensive by Forthnet. The least expensive Triple Play 30-100 Mbps bundle is available 30% less expensive at Hellas On Line than at its competitors.

NOTES
ISP marked with an * are incumbents in the respective country.
Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP: February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.
Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

Fixed Broadband prices for 2016 are rather close to what was observed in 2015 for three of the bundles. The only exception is the Double Play Phone bundle, in which prices for two baskets have doubled (12-30 Mbps) or increased by roughly 20% (30-100 Mbps); prices for 100+ Mbps in this bundle have decreased around 5%.
### Price Breakdown

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

### Bundle Premium

Overall, in Hungary, adding fixed telephony to the least expensive Standalone or Double Play offer is significantly more expensive than on EU average. While consumers in Hungary pay about 19 EUR across all speed baskets, on EU average, adding fixed telephony costs between 5 and 8.1 EUR, i.e., up to 74% less. Similarly, adding TV services is consistently more expensive with 14.6 EUR across all speed baskets, compared to a premium range of 6.9 to 9.1 EUR on EU average (i.e., up to -53%). Finally, adding both fixed telephony and TV services at the same time is about 15% more expensive in Hungary than the EU average. In Hungary, adding both services costs 19.7 EUR across all speed baskets, while on EU average, a customer pays about 17 EUR more to get a Triple Play premium.

### Very High Speed Premium

In Hungary, customers pay between 0.7 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer including fixed telephony. This is 79% less than on EU average, where consumers pay between 3.4 EUR extra to upgrade for a 30-100 Mbps offer. For the remaining bundles, the least expensive offers in the 12-30 Mbps speed baskets already exceed 30 Mbps, which is why no further premium data is available. Finally, the premium between 30-100 Mbps offers and those of more than 100 Mbps is significantly lower than on EU average. While in Hungary, consumers pay between 5.9 EUR extra across all bundle types, on EU average, the premium ranges between 13.6 and 18 EUR, which is about 130 to 205% more.

### Cheapest Technology

xDSL represents the least expensive technology for the lower speed baskets. Yet, for the higher speed ranges, Cable is the least expensive technology across all bundle types.

### Competition and Technology

### ISP’s Competition

Compared to the other ISPs included in the data analysis, Digi Kabel generally provides the least expensive offers for the Standalone and Triple Play bundles within speed ranges from 30 up to more than 100 Mbps, being often significantly cheaper than offers in the lowest speed baskets. Providing the least expensive Double Play bundles (about 50% less expensive compared to the next offer available), Magyar Telekom (T-Home) otherwise represents one of the more expensive operators, together with Invitel. The least expensive ISP for the low-speed category of 8-12 Mbps is Tarr, regardless the bundle type.

### Notes

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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
No clear price trends could be observed in Ireland: Prices for Single Play offers have increased in the two higher speed baskets and decreased in the 12-30 Mbps basket. However, prices for Double Play Phone offers have increased in the 12-30 Mbps and 100+ Mbps basket and remained stable for the 30-100 Mbps one. For Double Play TV, prices have decreased in all three speed baskets. Prices for Triple Play offers have increased for both 12-30 Mbps and 30-100 Mbps, the least expensive offer in this bundle now comes from the 100+ Mbps range.
**Price Breakdown**
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**
In Ireland, adding fixed telephony to the least expensive Standalone or Double Play offer with TV within the 12-30 Mbps basket costs 8.5 EUR, which is 70% more expensive compared to the respective EU average being 5 EUR. Yet, in the two higher speed baskets (30-100 Mbps and >100 Mbps), the least expensive offers already include fixed telephony. Adding TV services to a Standalone or Double Play bundle including fixed telephony costs between 17 and 25.5 EUR depending on the speed basket. This is between 93 and 214% more expensive than the respective EU averages. Finally, adding both services at the same time costs between 30.7 and 42.5 EUR, being significantly more expensive (up to about 150%) compared to the EU average of about 17 EUR across all speed baskets.

**Very High Speed Premium**
In Ireland, consumers pay 8.5 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer with regard to the Standalone internet, which is 150% more expensive than the EU average being 3.4 EUR. The least expensive 12-30 Mbps broadband offers within the Double Play bundles already exceed 30 Mbps, therefore, no premium data is available in these cases. The premium between broadband offers of 30-100 Mbps and those of more than 100 Mbps is between 3.4 and 8 EUR depending on the bundle type. This is significantly less expensive compared to the respective EU averages (up to -81%). Finally, the least expensive Triple Play offer has a speed range of more than 100 Mbps, which is why no premium prices are depicted.

**Competition and Technology**

**ISP’s Competition**
Overall, Eircom represents the most expensive provider and is yet the only one providing the Triple Play bundle in the 30-100 Mbps speed basket in this comparison. Virgin Media provides the same bundle types in the 100+ Mbps basket 20% cheaper. Vodafone at home is the least expensive option for Standalones and Double Play bundles including TV services across all speed ranges except for the 12-30 Mbps Standalone package, which is offered by Sky.

**Cheapest Technology**
Regarding all 30-100 Mbps and 100+ Mbps Standalone offers, FTTx provides the cheapest solution. Yet, for Double Play bundles including fixed telephony and Triple Play bundles in a speed range of more than 100 Mbps as well as Standalones in the 12-30 Mbps basket, xDSL represents the least expensive technology.

**Notes**
ISP marked with an ‘i’ are incumbents in the respective country.
Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP: February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.
Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

Compared with 2015, fixed broadband prices have dropped in all basket/bundle combinations: prices are up to 50% less than what was monitored in last year’s study. The least expensive offers for Double Play TV and Triple Play in the 30-100 Mbps basket are offers from the 100+ Mbps basket.
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**

Overall, in Italy the least expensive Standalone or Double Play offers across all speed baskets already include fixed telephony, whereas on EU average, adding fixed telephony costs between 5 EUR (12-30 Mbps) and 8.1 EUR (>100 Mbps). Adding TV services costs between 2 and 7.8 EUR depending on the speed range. This is generally less expensive compared to the EU average, i.e., between -11% (30-100 Mbps) and -71% (>100 Mbps). Likewise, adding both fixed telephony and TV services at the same time is less expensive in Italy than the EU average. While in Italy adding both services costs between 5.9 and 11.7 EUR depending on the speed range, on EU average, a customer pays about 17 EUR more to get a Triple Play premium, regardless of the speed basket, which is up to about 188% more.

**Very High Speed Premium**

In Italy, customers pay between 6.6 and 12.2 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. This is up to 227% more expensive than on EU average (cf., Triple Play), where consumers pay between 3.4 and 4.3 EUR extra to upgrade for a 30-100 Mbps offer. In contrast, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much lower than on EU average. While in Italy, consumers pay between 5.8 EUR extra for the respective upgrade within a Standalone or Double Play offer including fixed telephony, on EU average, the respective premiums range between 15.5 and 18 EUR, which is about 167 to 210% more. Furthermore, regarding the Double Play offer including TV services as well as the Triple Play, the least expensive 30-100 Mbps broadband offers already exceed 100 Mbps.

**Competition and Technology**

**ISPs Competition**

Telecom Italia provides the least expensive Triple Play offer for the speed basket 100+ Mbps. The least expensive bundles for the speed range of 12 to 30 Mbps are provided by Wind (Infostrada); Fastweb seems to be a reasonably cheap second choice.

**Cheapest Technology**

For speed ranges up to 30 Mbps, xDSL is the least expensive technology across all bundle types. However, in the higher speed ranges of more than 30 Mbps, FTTx represents the least expensive technology, regardless of the bundle type.

**Notes**

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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Compared with 2015, charges for most of the bundle/basket combinations have increased, with biggest increases in the 100+ Mbps bundle (+37%). However, these offers are still among the least expensive in Europe. In the 12-30 Mbps and 30-100 Mbps range, Single Play prices have remained stable, Double Play Phone prices have slightly increased. Prices for Double Play TV are down by 4% in the 12-30 Mbps basket, and up by 15%/34% in the 30-100 Mbps/100+ Mbps range. For Triple Play, charges for 30-100 Mbps decreased by over 6%, this range is now less expensive than the 12-30 Mbps one.
Price Breakdown
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

Bundle Premium
In Latvia, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs 4.5 EUR in the two smaller speed baskets, which is slightly less expensive to the respective EU averages being 5 to 5.6 EUR. However, in the highest speed basket of more than 100 Mbps, adding fixed telephony is more expensive than on EU average (10.7 EUR vs. 8.1 EUR, i.e., 32% more). Adding TV services to a Standalone or Double Play bundle costs between 3 and 5.3 EUR depending on the speed basket. This is between 40 and 67% less expensive than the EU averages ranging between 6.9 and 9.1 EUR. Finally, adding both services at the same time costs between 9.5 and 14 EUR, which is generally less expensive than the EU average, where consumers pay a premium of about 17 EUR across all speed baskets, i.e., up to 79% more.

Very High Speed Premium
In Latvia, customers pay between 4.5 and 6.8 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. This is between 32 and 58% more expensive than the EU average, where consumers pay between 3.4 and 4.3 EUR extra to upgrade for a 30-100 Mbps offer. With regard to the Triple Play, the least expensive offer in the smallest basket already exceeds 30 Mbps. Finally, in Latvia, customers pay between 3.8 and 11.5 EUR extra for a > 100 Mbps broadband offer compared to a 30-100 Mbps offer depending on the bundle type. This is significantly less expensive compared to the EU average (-36 to -72%), where consumers pay between 13.6 and 18 EUR.

Competition and Technology
ISP Competition
Livias KTV provides the least expensive Standalone and Double Play bundles with fixed telephony for the speed ranges 12-30 Mbps and 30-100 Mbps; furthermore, Livas KTV provides the cheapest offers for both the Double Play including TV services and the Triple Play (30-100 Mbps). Dautkom TV is generally the least expensive ISP for both bundle types Double Play with TV and Triple Play in the speed ranges up to 8 and 30 Mbps respectively. Finally, Balticom provides the least expensive 100+ Mbps Standalone and Triple Play offers.

Cheapest Technology
Within the speed range of 100+ Mbps, FTTx is the least expensive technology in Latvia. Across all the remaining speed baskets, xDSL represents the cheapest technology, regardless of the bundle type.

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
After steep price drops from 2014 to 2015, charges have again decreased in most basket/bundle combinations, but at a much smaller pace. Only Single Play 12-30 Mbps and 30-100 Mbps saw an increase of about 9% - starting out at very low levels, the same applies for Double Play Phone 30-100 Mbps (+6%).
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**

Overall, in Lithuania, Double Play offers including TV services are less expensive than Standalone offers across all speed baskets, hence there is no premium. Adding fixed telephony costs between 4.2 and 6.3 EUR depending on the speed basket. This is slightly more expensive for both the speed basket of 12-30 and the one of 30-100 Mbps (13-26%) compared to the EU averages. However, in the >100 Mbps basket, on EU average, adding fixed telephony is about 93% more expensive (4.2 vs. 8.1 EUR). Finally, adding both fixed telephony and TV services at the same time is significantly less expensive in Lithuania than the EU averages. While in Lithuania adding both services costs between 4.4 and 7.3 EUR depending on the speed range, on EU average, a customer pays about 17 EUR more across all speed baskets to get a Triple Play premium, i.e., up to 293% more.

**Very High Speed Premium**

In Lithuania, across all bundle types, the least expensive offers within the smallest basket already exceed 30 Mbps, while on EU average, consumers pay between 3.4 and 4.3 EUR extra to upgrade for a 30-100 Mbps offer. Finally, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much lower than on EU average. While in Lithuania, consumers pay between 5.9 and 9 EUR extra, on EU average, the premium ranges between 13.6 and 18 EUR, which is about 51 to 169% more.

**Cheapest Technology**

Apart from the 2-12 Mbps Double Play including fixed telephony, where xDSL represents the cheapest technology, FTTx and Cable are the least expensive technologies across all baskets and bundle types.

**Notes**

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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
In 2016, fixed Broadband prices decreased by up to 14% in nine of the relevant basket/bundle combinations. While prices remained rather stable for Double Play Phone 12-30 Mbps, they rose for both Triple Play (5%) and Double Play TV (4%) in the 100+ Mbps range.
**Price Breakdown**
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**
In Luxembourg, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs 7.8 EUR in the smallest speed basket (12-30 Mbps), which is 56% more expensive than the respective EU average being 5 EUR. Regarding the speed baskets of 30-100 and >100 Mbps, the least expensive offers already include fixed telephony. Adding TV services to a Standalone or Double Play bundle including fixed telephony costs between 6.8 and 19.5 EUR depending on the speed basket. This is predominantly more expensive compared to the EU averages. In particular, the big price difference of 19.5 EUR in Luxembourg vs. 9.1 EUR on EU average is striking (i.e., +114% in Luxembourg). However, in the 30-100 Mbps, adding TV services is 22% less expensive (8.8 EUR on EU average vs. 6.8 EUR in Lithuania). Finally, adding both services at the same time costs between 20.1 and 24.3 EUR depending on the speed basket. This is 45% more expensive for the 12-30 Mbps speed basket, and 10.2 to 41% less expensive for the higher speed baskets. On EU average, consumers pay about 17 EUR to get a Triple Play premium, regardless of the speed basket.

**Very High Speed Premium**
In Luxembourg, customers pay between 1.1 and 13.8 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. This is predominantly more expensive than the EU average, where consumers pay between 3.4 and 4.3 EUR extra to upgrade for a 30-100 Mbps offer. Especially with regard to the Standalone offer, the price difference is striking (+305%, with 3.4 EUR as EU average vs. 13.8 EUR in Luxembourg). Yet, regarding the Double Play offer including TV services, the premium is 74% less expensive compared to the EU average. Furthermore, in Luxembourg, consumers pay between 6 and 12.1 EUR extra for a >100 Mbps broadband offer compared to a 30-100 Mbps offer depending on the bundle type. Overall, this is less expensive compared to the EU average, where consumers pay between 13.6 and 18 EUR (i.e., 12 to 153% more).

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**Competion and Technology**
**ISPs Competition**
While for the Double Play bundles including TV services, PostLux generally provides the least expensive offers, regarding Standalones, it appears to be a rather expensive provider. Here, Orange provides the cheapest offers within the speed ranges of 12-30 and 30-100 Mbps. Moreover, Orange has the least expensive 12-30 Mbps Double Play with fixed telephony. With regard to the 12-30 Mbps Double Play including telephony, Luxembourg Online seems to be a reasonable choice, however, being more expensive for the remaining bundle types. Finally, the least expensive Triple Play bundles are provided by Tango and SFR for the speed baskets 8 -12 Mbps, 30-100 Mbps as well as 100+ Mbps.

**Cheapest Technology**
In Luxembourg, regarding all Standalone as well as all 12-30 Mbps broadband offers, xDSL represents the least expensive technology. Yet, FTtx is the cheapest technology with both 100+ Mbps Double Play bundles. Finally, Cable represents reasonable prices for 30-100 Mbps Double and Triple Play bundles.
STATISTICAL DATA

ISPs in sample

GOi

Melita

2016 prices are rather close to what was observed in 2015. Except for Triple Play, where prices have increased by 10% (12-30 Mbps) and decreased by 15% (30-100 Mbps), the difference remains below +/- 5% in all other basket/bundle combinations.
PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the respective EU average.

BUNDLE PREMIUM
In Malta, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs between 2 and 13 EUR depending on the speed basket. For the two smaller speed baskets of 12-30 and 30-100 Mbps, this is 40% to 64% less expensive compared with the respective EU averages. However, looking at the >100 Mbps speed basket, this is 60% more expensive. Adding TV services to a Standalone or Double Play bundle including fixed telephony costs between 112.3 and 19.9 EUR depending on the speed basket. This is about 17 to 119% more expensive compared with the EU averages regarding the smaller baskets of 12-30 and 30-100 Mbps. In the >100 Mbps basket, the least expensive offer already includes TV services. Finally, adding both services at the same time costs between 14 and 30.8 EUR depending on the speed basket. Compared to the EU average, this is 84% more expensive for the 12-30 Mbps basket, and 8% more expensive for the 30-100 Mbps basket. However, with regard to the >100 Mbps broadband offer, this is 19% less expensive than on EU average.

VERY HIGH SPEED PREMIUM
In Malta, customers pay between 2.8 and 12.5 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. Regarding the Standalone and the Double Play bundle including fixed telephony, this is between 235 to 267% more expensive than the respective EU averages. Yet, looking at the Double Play offer including TV services, this is 35% less expensive than on EU average. Remarkably, in Malta, customers pay between 59 and 80.4 EUR extra for a >100 Mbps broadband offer compared to a 30-100 Mbps offer depending on the bundle type. This is significantly more expensive compared to the EU average, where consumers pay only between 13.6 and 18 EUR (cf., 80.4 vs. 18 EUR, being 347% more expensive than on EU average).

CHEAPEST TECHNOLOGY
Among the three available technologies, xDSL is always the less expensive option for the 12-30 Mbps and 30-100 Mbps Standalones as well as for the 100+ Mbps Triple Play. In turn, FTTx is less expensive regarding the 30-100 Mbps Double and Triple Play bundles as well as for the 100+ Mbps Standalone and Double Play with fixed telephony. Offers from GO offers are marketed as “Fibre”.

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Fixed Broadband prices for 2016 went up in the 100+ Mbps basket by a mere 4% with Single Play up to over 30% with Double Play Phone. Prices remained almost the same for the other Double Play Phone baskets. Prices for 12-30 Mbps have remained rather stable for Single Play and Double Play Phone; they have decreased for Triple Play (14%) and Double Play TV (12%), which is a pattern similar to the 30-100 Mbps basket.
In general, being 20% less expensive than its competitors, BBNED / Tele2 provides the least expensive offers in nearly all bundle types and speed baskets. Regarding both 100+ Mbps Double Play with TV and Triple Play bundles, Ziggo represents the least expensive option. Finally, overall, the incumbent KPN appears to be the most expensive ISP on the Dutch market.

In the Netherlands, Cable represents the least expensive technology for Double Play offers with TV as well as the 100+ Mbps Triple Play bundles. However, in all other cases, xDSL is the cheapest technology.
After three years of price drops in nearly every basket/bundle combination, this year only the bundles in the 100+ Mbps speed range became less expensive, while 12-30 Mbps and 30-100 Mbps saw slight increases or remained stable (Double Play Phone and Double Play TV in the 30-100 Mbps basket). Prices for high and low speeds are very similar.
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the respective EU average.

**Bundle Premium**

In Poland, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs between 1.7 EUR and 5.8 EUR depending on the speed basket. For the two higher speed baskets, this is less expensive than on EU average (up to -80%; cf., >100 Mbps broadband offer); yet, for the 12-30 Mbps speed basket, this is slightly more expensive (+16%).

On the whole, the premium for adding TV services is the same as for adding fixed telephony to the respective speed baskets, i.e., between 1.7 EUR and 5.8 EUR. Overall, this is significantly less expensive compared to the EU averages (-36 to -77%). Last, adding both fixed telephony and TV services at the same time costs between 9.9 and 17.5 EUR. This is slightly more expensive for the 12-30 Mbps basket than on EU average (5%); however, for the higher speed baskets (30-100 and >100 Mbps), this is between 19 and 43% less expensive. In general, on EU average, prices for adding both services at the same time do not differ much between the bundles ranging all about 17 EUR.

**Very High Speed Premium**

In Poland, the least expensive offers in the smallest basket already exceed 30 Mbps for all bundles, except for the Standalone internet offer. Here, customers pay between 3.8 EUR extra to upgrade for a 30-100 Mbps broadband offer, which is similar to the respective EU average of 3.4 EUR. Furthermore, the premium between 30-100 Mbps offers and those of more than 100 Mbps is significantly lower in Poland than the EU averages (up to -81%). Finally, the least expensive Triple Play offer has a speed range of more than 100 Mbps, which is why no premium prices are depicted here.

**ISP Competition**

In Poland, for Standalones with a speed range between 12 and 100+ Mbps, MultiMedia Polska provides the least expensive offers. Netia Group is the only company providing offers in the 8-12 Mbps range for both Standalone and Double Play bundles. In higher speed ranges, Double Play and Triple Play bundles are least expensive with UPC Polska. Finally, the incumbent Orange appears to be the most expensive operator in this comparison, regardless of the bundle type and speed basket.

**Cheapest Technology**

The cheapest technology across all bundle types and speed baskets is Cable, except for the 8-12 Mbps Double Play including TV services, where Ethernet represents the least expensive option.

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

While prices for the 12-30 Mbps and 30-100 Mbps saw only small changes of +/-8%, charges for 100+ Mbps offers have increased for all basket/bundle combinations, with rates between 43% (Double Play Phone) and 32% (Single Play, Double Play TV and Triple Play).
PRICE BREAKDOWN

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

BUNDLE PREMIUM

In Portugal, adding fixed telephony to the least expensive offer in the speed basket of more than 100 Mbps costs 14 EUR, 73% more compared to the EU average. Regarding the 12-30 and 30-100 Mbps broadband offers, the least expensive offers already include fixed telephony. Adding TV services costs between 12.4 (30-100 Mbps) and 15.7 EUR (12-30 Mbps) being more expensive than the EU average, where consumers pay between 8.8 (30-100 Mbps) and 9.1 EUR (12-30 Mbps), i.e., up to 42% less. In the >100 Mbps basket, the least expensive offer already includes TV services. Finally, in Portugal, adding both services at the same time costs between 14 and 29.2 EUR, being significantly more expensive than the EU average (up to 75% in the 12-30 Mbps basket), where consumers pay about 17 EUR across all speed baskets. Yet, with regard to the >100 Mbps basket, consumer pay only 14 EUR extra, i.e., 19% less compared to the respective EU average.

VERY HIGH SPEED PREMIUM

In Portugal, the least expensive offers in the smallest basket already exceed 30 Mbps in the Double Play bundle including TV services as well as in the Triple Play bundle. With regard to the Standalone and the Double Play offer including fixed telephony, the premium prices are very similar to the EU averages (3.2 EUR in Portugal vs. 3.4 EUR on EU average). However, the premium between 30-100 Mbps offers and those of more than 100 Mbps is significantly higher than the EU average, with a price range of 22.5 and 49 EUR depending on the bundle type. In particular, with regard to the Double Play offer including fixed telephony, the premium of 49 EUR is striking, being 172% more than the EU average.

CHEAPEST TECHNOLOGY

In Portugal, xDSL represents the least expensive technology for the lower speed categories up to 30 Mbps as well as for the Double Play bundles with fixed telephony in speed ranges up to 100 Mbps. In contrast, overall, FTTx is the most reasonably priced technology for higher speed ranges.

NOTES

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

There is no clear trend in broadband price evolution in Romania. While charges for Single Play offers continued to decrease, especially in the 100+ Mbps range (-39%, and starting from already rather low levels), they increased for Double Play TV offers (18% in the 12-30/30-100 Mbps speed ranges, 7% in the 100+ Mbps range). Charges for Double Play Phone and Triple Play went slightly down for 100+ Mbps offers, which are now the cheapest option available, and slightly up for the other two speed baskets.
Price Breakdown

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

Bundle Premium

In Romania, adding fixed telephony to the least expensive Standalone or Double Play offers costs between 6.6 (>100 Mbps) and 7 EUR (12-30 and 30-100 Mbps). Overall, this is between 25 and 40% more expensive than the EU average, except for the >100 Mbps offer, where consumers pay less (6.6 EUR instead of 8.1 EUR on EU average, - 19%). Adding TV services costs between 16 and 16.7 EUR depending on the speed basket. This is up to 142% more expensive than the EU average (cf., the >100 Mbps basket). Likewise, adding both services at the same time is generally more expensive in Romania than on EU average. While in Romania adding both services costs between 21.3 and 21.7 EUR depending on the speed range, in the EU, on average, a customer pays only about 17 EUR more to get a Triple Play premium, regardless of the speed basket.

Very High Speed Premium

In Romania, the least expensive offers in the smallest basket of 12-30 Mbps already exceed 30 Mbps across all bundle types, which is why no premium data is depicted. The premium between 30-100 Mbps offers and those of more than 100 Mbps is between 0.5 (Standalone) and 1.1 EUR (Double Play with TV) being significantly lower compared to the respective EU averages of 15.5 (Standalone) and 13.6 EUR (Double Play with TV), i.e., up to 97%. Finally, the least expensive offers within the Double Play bundle including fixed telephony as well as in the Triple Play bundle exceed the speed range of 100 Mbps, thus, in these cases, no premium data is available.

Competitiveness and Technology

ISP's Competition

Even though Telekom Romania Communications (Romtelecom) stands out as the least expensive Standalone provider for the 30-100 Mbps speed basket, it appears to generally be among the most expensive ISP across all other speed baskets and bundle types. RCS & RDS provides the least expensive Standalone for the 100+ Mbps speed basket. Finally, across all 100+ Mbps bundle types, UPC Romania appears to be less expensive than Nextgen Communications offers in lower speed ranges.

Cheapest Technology

Generally, FTTx represents the least expensive option for the 30-100 Mbps basket as well as the 100+ Mbps Standalone. However, overall, broadband offers in the higher speed ranges of more than 100 Mbps seem to be less expensive when making use of Cable technology.

Notes

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Compared with 2015, fixed Broadband prices continued to decrease or remained stable in all basket/bundle combinations. The fastest offers (100+ Mbps) are the less expensive than the slower ones for all bundles except Double Play Phone, where all three speed ranges are similarly priced.
Slovakia Details

Breakdowns

Price Breakdown
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

Bundle Premium
In Slovakia, the least expensive Standalone or Double Play offers in both the speed basket of 12-30 and the one of 30-100 Mbps already include fixed telephony, whereas on EU average, adding fixed telephony costs between 5 EUR (12-30 Mbps) to 5.6 EUR (30-100 Mbps). Adding fixed telephony in the >100 Mbps basket costs 5.9 EUR being 27% less expensive than on EU average, where customers pay about 8.1 EUR. Adding TV services costs between 5.9 and 12.2 EUR depending on the speed range. For the 12-30 Mbps basket, this is 34% more expensive compared to the EU average; with regard to the 30-100 Mbps and >100 Mbps broadband offer, this is up to 28% less expensive (cf., 30-100 Mbps basket). Finally, adding both services at the same time is mostly less expensive in Slovakia than the EU average, except for the 12-30 Mbps speed basket. The biggest difference can be seen in the >100 Mbps broadband offer, where consumers pay 20.5 EUR to upgrade to a Triple Play, whereas on EU average, consumers pay about 17 EUR extra, regardless of the speed basket.

Very High Speed Premium
In Slovakia, customers pay 6 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer for both the Standalone as well as the Double Play bundle including fixed telephony. This is roughly 75% more expensive compared to the respective EU averages of 3.36/3.44 EUR. In contrast, the premium between 30-100 Mbps offers and those of more than 100 Mbps is between 0.4 (Standalone) and 6.3 EUR (Double Play with fixed telephony) being significantly less expensive than the respective EU averages of 15.5 and 18 EUR (i.e., up to -97%). Finally, regarding the Double Play bundle including TV services as well as the Triple Play bundle, the least expensive offers exceed the speed range of 100 Mbps – thus, in these cases, no premium data is depicted.

Competition and Technology

ISPs Competition
Regarding the 12-30 Mbps and 30-100 Mbps speed baskets, Slovak Telekom systematically provides the least expensive offers across all bundle types. Orange generally provides reasonably priced offers for high and low speed Standalone and Double Play bundles; the 100+ Double Play bundles is less expensive than the slowest Double Play. Generally providing reasonably priced broadband offers, Slovanet is the only ISP offering Double Play TV bundles in the lowest speed ranges between 1 and 8 Mbps. Finally, Antik Telekom represents a reasonably priced solution for both Double Play with Telephony and Triple Play bundles.

Cheapest Technology
Regarding the 100+ Mbps basket, FTTx represents the least expensive technology. Yet, in all other speed baskets, xDSL is less expensive.

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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
There is no clear price trend in the surveyed basket/bundle combinations. Single Play offer prices increased between 3% (100+ Mbps) and 39% (12-30 Mbps); they decreased between 6% (100+ Mbps) and 9% (30-100 Mbps) for Triple Play offers. Charges within the speed baskets are at very close quarters, the premium is very low. For Double Play TV, the values vary between +3% (100+ Mbps) and -10% (12-30 Mbps), Double Play Phone shows a similar picture.
PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

BUNDLE PREMIUM
Overall, in Slovenia, the least expensive Double Play TV offers are cheaper than Standalone offers, which is why no premium is depicted. Adding fixed telephony costs between 6.8 and 9 EUR depending on the speed basket. This is more expensive for both the speed basket of 12-30 and the one of 30-100 Mbps (14-78%) compared to the EU averages. However, in the >100 Mbps basket, on EU average, adding fixed telephony is about 27% more expensive (6.4 vs. 8.1 EUR). Finally, adding both fixed telephony and TV services at the same time costs the same as adding fixed telephony only. This is significantly less expensive than the EU averages. While in Slovenia adding both services costs between 6.4 and 9 EUR depending on the speed range, on EU average, a customer pays about 17 EUR more across all speed baskets to get a Triple Play premium, i.e., up to 170% more.

VERY HIGH SPEED PREMIUM
In Slovenia, customers pay between 0.9 and 3.5 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type, while on EU average, consumers pay between 3.4 and 4.3 EUR extra to upgrade for a 30-100 Mbps offer (i.e., up to 311% more). Finally, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much lower compared to the EU average. While in Slovenia, consumers pay 4.3 EUR extra for an update across all bundle types, on EU average, the premium ranges between 13.6 and 18 EUR, which is about 216 to 318% more.

ISPs COMPETITION
Across all 12-30 Mbps broadband offers, Amis is slightly less expensive than its competitors. Furthermore, Amis provides offers in the lowest speed ranges between 1 and 2 Mbps. T-2 is specialised on Triple Play bundles providing the least expensive offers in the speed baskets 30 Mbps and upwards. Finally, with a main focus on Standalones, the incumbent Telekom Slovenije provides the least expensive 30-100 Mbps Double Play including TV services.

CHEAPEST TECHNOLOGY
In Slovenia, technology prices vary a lot. Generally, Standalones and Triple Play bundles are mostly less expensive with xDSL, especially for lower speeds between 1 to 8 Mbps. Regarding Double Play bundles with TV, xDSL is less expensive in the 12-30 Mbps basket. However, for the higher speed ranges of 30 to 100 Mbps, FTTx represents the least expensive technology.

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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.
Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
There are no clear price trends when comparing 2015 with 2016 data. While charges for all Triple Play offers decreased between 10% (30-100 Mbps) and 3% (100+ Mbps), they increased for Single Play offers between 36% (100+ Mbps), 17% (30-100 Mbps) and 10% (12-30 Mbps). Double Play Phone charges did not change for 30-100 Mbps; the increase in the other baskets is very low: 2% (100+ Mbps) and 4% (12-30 Mbps). Double Play TV charges rose by 4% (100+ Mbps) and 4% (12-30 Mbps). Double Play TV charges rose by 4% (100+ Mbps) and 4% (12-30 Mbps). Double Play TV charges rose by 4% (100+ Mbps) and 4% (12-30 Mbps).
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the respective EU average.

**Bundle Premium**

Overall, in Spain, the least expensive Double Play offers with TV are cheaper than Standalone offers in all speed baskets, which is why no premium is depicted. Adding TV services costs between 8.7 (30-100 Mbps) and 12 EUR (12-30 Mbps), which is more expensive compared to the EU averages ranging between 6.9 and 9.1 EUR. Only with regard to the 30-100 Mbps broadband offer, this is slightly more expensive, with a price difference of +1%. Last, adding both fixed telephony and TV services at the same time costs the same as adding TV services only (i.e., 8.7 to 12 EUR). This is up to 48.8% less expensive than on EU average, where prices for adding both services at the same time do not differ a lot between the bundles ranging all about 17 EUR.

**Very High Speed Premium**

In Spain, customers pay around 3.3 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer for both the Standalone and the Double Play bundle including fixed telephony, which is about the same as the respective EU averages. With regard to the Double Play bundle including TV services as well as the Triple Play, the least expensive offers already exceed a speed range of 30 Mbps. Finally, the premium between 30-100 Mbps offers and those of more than 100 Mbps ranges between 13.7 and 14 EUR depending on the bundle type. Compared to the EU average, this is less expensive for the Standalone and the Double Play bundle including fixed telephony (-11.6 to -24%). Yet, regarding the Double Play bundle including TV services as well as the Triple Play, this is very similar to the respective EU averages ranging between 13.6 and 15.2 EUR.

**Cheapest Technology**

In Spain, for the slower speed baskets (8-30 Mbps), xDSL represents a reasonably priced option. Regarding speed ranges of 100+ Mbps, FTTx is the cheaper option compared to Cable offers.

**Notes**

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Recent evolutions in fixed broadband prices are based on the least expensive offer in EUR/PPP; February 2013, 2014, October 2015 and 2016 data. - Historical data may have been slightly modified from previous published data due to normalisation process to ensure comparability.

Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

Prices in Sweden have decreased except for Double Play Phone in the 30-100 Mbps basket (+23%). Prices decreased by 46% (Double Play TV and Single Play 30-100 Mbps), 44% (Double Play TV 100+ Mbps) and 10% (Single Play 100+ Mbps). Since 2013, 30-100 Mbps offers are equally or less expensive than 12-30 Mbps offers.
BREAKDOWNs

PRICE BREAKDOWN
A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

Bundle Premium
Overall, in Sweden, the least expensive offer already exceeds a speed range of 30 Mbps. Thus, adding fixed telephony to the least expensive Standalone or Double Play offer with TV costs 10.4 EUR for both the broadband offer of 12-30 Mbps and the one of 30-100 Mbps being up to 108% more expensive than the respective EU averages ranging between 5 and 5.6 EUR. With regard to the >100 Mbps basket, no Double Play bundle including fixed telephony as well as no Triple Play bundle in a speed range of more than 100 Mbps was found. Adding TV services costs 4.9 EUR, regardless of the speed range, which is significantly less expensive than on EU average (up to -46%). Since the least expensive offer already exceeds a speed range of 30 Mbps, the premium for adding both services at the same time is 10.4 EUR for both the 12-30 as well as the 30-100 Mbps basket, which is significantly less expensive than on EU average, where consumers pay about 17 EUR extra for a Triple premium.

Very High Speed Premium
In Sweden, the least expensive offers already exceed the speed range of 30 Mbps across all bundle types. Furthermore, as mentioned above, no Double Play bundle including fixed telephony as well as no Triple Play bundle in a speed range of more than 100 Mbps was found – thus, no premium data is depicted in these cases. Finally, the premium between 30-100 Mbps offers and those of more than 100 Mbps costs 11.5 EUR for both the Standalone as well as the Double Play bundle including TV services. This is 15.4 to 26% less expensive than on EU average.

COMPETITION AND TECHNOLOGY

ISPs Competition
Within the Standalone offers, Bredband 2 clearly represents the least expensive solutions with regard to the 8-12, 30-100 Mbps as well as the 100+ Mbps basket. Yet, for the 12-30 Mbps basket, Telenor Sverige (Bredbandsbolaget/Glocalnet) appears to be the cheapest option, however with price differences depending on the location. Overall, Bahnhof provides reasonably priced offers for 12-30 Mbps broadband. Also offering Double Play with TV services as well as Triple Play, Bredband 2 provides the cheapest bundles in the higher speed baskets of 30-100 Mbps.

In the lower speed ranges, TeliaSonera provides the least expensive offers, at the same time being the only ISP for 8-12 or 12-30 Mbps Double Play bundles with fixed telephony.

Cheapest Technology
Customers with a broadband connection between 12 and 30 Mbps have to rely on xDSL, which is slightly more expensive than the faster and cheaper FTTx connections.

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
Recent evolution in broadband prices

While prices for the slower two speed baskets remained rather stable from 2015 to 2016, there has been a substantial increase in the fastest (100+ Mbps) speed basket in every bundle. Compared with the EU28, the UK is below average in all bundles in the 12-30 Mbps and 30-100 Mbps baskets. However, for all Single Play and 100+ Mbps offers, the UK is partly significantly above the EU28 average.
**Price Breakdown**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her current ISP, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**Bundle Premium**

In the UK, adding fixed telephony costs between 1 (12-30 Mbps) and 5 EUR (>100 Mbps) which is significantly less expensive than the EU average, where prices range between 5 EUR (12-30 Mbps; +400%) and 8.1 EUR (>100 Mbps; +62%). In the 30-100 Mbps speed basket, the least expensive offer already includes fixed telephony. Adding TV services costs between 1.3 and 25 EUR, which is significantly less expensive for the smaller speed baskets of 12 to 30 and 30 to 100 Mbps (i.e., up to -86%). In contrast, for the >100 Mbps basket, this is significantly more expensive (+262%). Likewise, adding both fixed telephony and TV services at the same time is up to 55% less expensive regarding the smaller speed baskets, and substantially more expensive with reference to the >100 Mbps broadband offer (17.3 EUR on EU average vs. 41 EUR in the UK, i.e., +137%).

**Very High Speed Premium**

In the UK, customers pay between 0.5 and 5.1 EUR extra for a 30-100 Mbps broadband offer compared to a 12-30 Mbps offer depending on the bundle type. For the Standalone as well as the Double Play bundle including fixed telephony, this is significantly less expensive than the EU average (up to -85%). However, the Double Play bundle including TV services and the Triple Play is slightly more expensive (up to +38%, i.e., 3.7 vs. 5.1 EUR). In contrast, the premium between 30-100 Mbps offers and those of more than 100 Mbps is much higher than the EU average, regardless of the bundle type. Especially with regard to the Triple Play, the price difference is striking (+258%, with 15.2 EUR as EU average vs. 54.4 in the UK).

**Competiton and Technology**

**Cheapest Technology**

For the 12-30 Mbps basket, xDSL appears to be the least expensive technology across all bundle types. In contrast, FTTx is less expensive for the higher speed ranges between 30 and 100 Mbps as well as the 100+ Mbps Standalone and Double Play bundle including fixed telephony. Finally, regarding Triple Plays with speeds exceeding 100 Mbps, Cable seems to be the least expensive technology.

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Take-up data source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM), July 2016 data.
While prices for the slower two speed baskets remained rather stable from 2015 to 2016, there has been a substantial increase in the fastest (100+ Mbps) speed basket in every bundle.
### Price Breakdown

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

#### Bundle Premium

In Iceland, no bundles in the speed range of 12-30 Mbps were found. Thus, the least expensive 12-30 Mbps offers already exceed 30 Mbps, which is why the data for both the 12-30 as well as the 30-100 Mbps basket is identical. Overall, adding fixed telephony or TV services is significantly more expensive in Iceland than on EU average. Adding fixed telephony costs 47.8 EUR being up to 754% more expensive compared to the EU average. In general, adding TV services is slightly less expensive than adding fixed telephony, however still significantly more expensive than on EU average, i.e., up to 448% more (cf., >100 Mbps basket: 37.8 vs. 6.9 EUR). Finally, adding both services at the same time costs the same as adding fixed telephony only (47.8 EUR), being again significantly more expensive than the EU average (cf., 30-100 Mbps basket with +181.2%).

#### Very High Speed Premium

In Iceland, no bundles in the speed ranges of 12-30 Mbps were found, which is why no premium data for an upgrade from a 12-30 Mbps broadband offer to a 30-100 Mbps offer is displayed. Furthermore, regarding both the Double Play bundle including fixed telephony and the Triple Play, no >100 Mbps offer was found. Moreover, for the Standalone as well as the Double Play including TV services, the least expensive 30-100 Mbps offers already exceeded 100 Mbps. As a result, no premium data is depicted in this graph.

### EU28 Comparison

#### Iceland and the EU28

Iceland’s fixed broadband prices show a clear dichotomy when compared to the EU28. While Single Play offers are below average in every speed basket (-1% 12-30 Mbps, -16% 30-100 Mbps, -48% 100+ Mbps), customers pay significantly more for bundles including telephony and TV services. The range is between +24% (Double Play TV, 100+ Mbps) and +162% (Double Play Phone).
No clear trend could be observed for 2016 fixed broadband prices in Norway. There are substantial increases in prices for Double Play TV and Triple Play offers, especially in the 12-30 Mbps and 30-100 Mbps baskets; prices for 100 Mbps offers in those bundles only rose a little.

Prices for Single Play and Double Play Phone offers reduced in all speed baskets, most significantly in the 100 Mbps basket.
**PRICE BREAKDOWN**

A comparison of the least expensive offers of a single ISP for different types of bundles (within the same speed basket) and for different speed baskets (for the same bundle) provides the Bundle- and NGA premiums. Assuming that a customer would also change his/her current ISP to upgrade his/her speed range, the least expensive offers in the respective speed baskets and bundles are compared with the EU average.

**EU28 COMPARISON**

**NORWAY AND THE EU28**

Compared to the EU28 average, Norway has higher prices for fixed broadband in all but one basket and bundle combinations. The exception is the Double Play Phone offer in the 100+ Mbps, which is 5% below the EU28 average; the other speed baskets are 21% (12-30Mbps) and 31% (30-100 Mbps) more expensive. The Single Play offers are between 14% (100+ Mbps), 26% (12-30 Mbps) and up to 47% (30-100 Mbps) more expensive.

2016 fixed broadband prices for offers including TV are between 66% (Triple Play, 100+ Mbps) and 130% (Double Play TV, 30-100 Mbps) above the EU28 average.

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