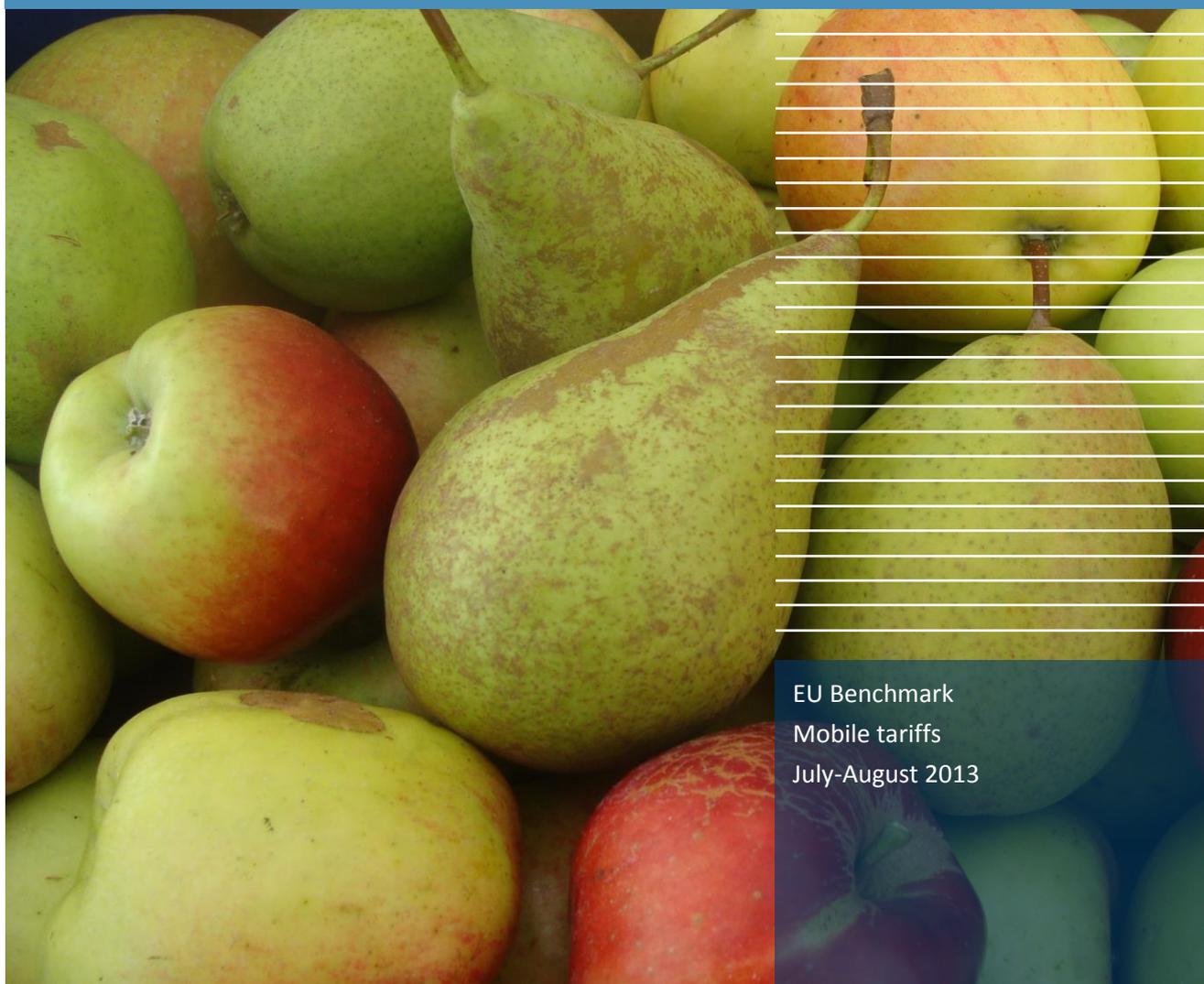


EU BENCHMARK 2013 - NL

Country comparison of mobile consumer postpaid plans across 11 Western European countries



EU Benchmark
Mobile tariffs
July-August 2013

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1 EXECUTIVE SUMMARY

This report is the result of Telecompaper research into European mobile pricing. As discussions on international roaming have brought the issue of pricing differences in (and beyond) Europe into the spotlight, Telecompaper decided to use its expert knowledge of the global telecom market to compare prices across various countries to see where the average consumer is paying more or less for mobile communications. This particular report is a special version made for the Ministry of Economic Affairs, focusing on the Netherlands.

Scope

After finding over 2,600 plans in the 11 West European countries researched, we soon realised that a like-for-like price comparison between countries is not straightforward. We decided not to base our comparison on predefined baskets, as it is impossible to select a range of baskets that covers the various types of usage in each country. Instead, we built a matrix based on common features in the packages available on the market. To account for more than just the headline cost of minutes and megabytes, a total cost of ownership (TCO) approach was used.

To keep the analysis of the thousands of plans manageable, our methodology required a number of self-imposed limitations. The most important ones are the following:

- We looked at 11 countries in Western Europe. The analysis covered postpaid plans, including promotions, offered by all mobile network operators, their second brands where applicable and two MVNOs that have acquired spectrum. The pricing data was collected during July-August 2013 from the providers' websites. The assumption is these are the plans available to an average consumer, one who is motivated by price but also takes other factors such as network quality, value-added services and length of contract into consideration.
- We calculated the total cost of ownership (TCO) based on the advertised costs. All types of fees were included and most importantly the cost of the handset. We defined four categories of plans: those with low-end, mid-range or high-end phones and SIM-only offerings. For each device category, we looked at the price of a specific type of Samsung phone, as Samsung is the market leader in most countries and offers phones in each price range. All prices have been adjusted to correct for differences in purchasing power.
- The matrix of plans is based on ranges of monthly minutes and MBs offered. We excluded SMS, as the majority of plans already offered (near) unlimited SMS. The comparative analysis is two-fold. In our first approach, we looked at the median prices for each cell in the matrix. We chose to work with the median instead of the average in order to avoid the disproportionate effect of any outliers. In the second approach, we filled in the matrix with the lowest prices available for each cell, reflecting the options available to consumers interested in price alone.

Country overview

In chapter 4 we provide an overview of the market conditions in the Netherlands, looking at the number of operators, number of plans offered, availability of handset subsidies and promotions, the launch of 4G networks as well as specific market characteristics. We also discuss the nature of the mobile plans on offer in terms of price range, the availability of unlimited use (minutes, MBs) and special features.

Characteristics such as the level of urbanisation, disposable income and number of MNOs may influence the general pricing level in a given country. However, an analysis of their impact is largely subjective, as it is difficult to prove a direct relationship between any of these characteristics and pricing, and often several factors are working together to impact the market. Not wanting to neglect these possible effects though, we have included a discussion of these characteristics in chapter 9.

Analysis

Chapters 5 to 8 cover our analysis of the over 2,600 plans, based on median prices and the lowest available prices. The conclusions vary depending on the type of plan (handset or SIM-only) and the type of handset included. Some general trends in pricing were noted in the Netherlands:

- Netherlands: mostly more expensive than the EU11 median, except for lowest TCO pricing of high-end smartphones and for the SIM-only category, where the country is somewhat less expensive.

It is important to note that plans that appear to be quite expensive in many cases have extras included in the price, such as unlimited SMS, a bundle of international calling minutes, etc.

Conclusion

In the last chapter we summarise the performance of each country, both in terms of market characteristics and pricing levels, based on the analysis of Chapters 5-8. We have also included a number of closing remarks that are essential for a balanced interpretation of our findings.

Overall our comparison is complex and shows that consumers have a wealth of choice across Europe. While there may not be a plan available for each individual cell in our matrix of minutes and megabytes, the sheer number of plans analysed says something about the level of competition. It must further be understood that our analysis was based on advertised prices, not on actual plans chosen. Next, we have assumed an average consumer, who chose his plan not only based on prices, but on other factors as well.

We feel that we have been successful in contributing research that may aid decision-making across Europe. While there is no simple answer to the question ‘Where is mobile communication expensive, and where is it cheap?’ we have been able to conclude that some countries are relatively cheap on all levels (notably Austria, Denmark and Sweden), and others are relatively expensive (especially Spain).

It must be remembered that this report is based on a snapshot of tariffs during the summer of 2013. This is especially relevant in countries such as France and Belgium, where newcomers have forced prices down. In other words, prices are quite volatile and our helicopter view of the market may look significantly different when it is repeated next year.

This report was prepared in co-operation with the Dutch Ministry of Economic Affairs.

2 INTRODUCTION

This is an accompaniment to the first Telecompaper report comparing mobile tariffs across 11 Western European countries specifically written for the Dutch Ministry of Economic Affairs. Discussions on international roaming have brought the issue of pricing differences in (and beyond) Europe into the spotlight.

The full report looked at over 2,600 plans from these 11 countries and we soon realised that a like for like comparison is not straight forward. As a result, we decided not to work with baskets, because it is impossible to define a range of baskets that are relevant in each country. Instead, we build a matrix based on ranges (from X to Y minutes, or from X to Y megabytes). Further, it is essential to work with the total cost of ownership (TCO), without which a comparison soon becomes less meaningful. By far the dominant component of a TCO approach is to include the cost of the handset.

However, we made a number of simplifications in order to keep our data manageable and the outcomes meaningful and comparable. See Chapter 3 for further underpinning of our choices and assumptions.

We made allowances for different types of handsets, as the type of phone has an impact on the TCO. Furthermore we also looked at SIM-only offers as in many countries these are gaining in popularity. Next we looked at the median TCO as well as the cheapest option available in each country.

Despite our greatest efforts to prepare a comparison which does justice to the great variety of national mobile communication issues, it has proven to be difficult to compare like for like. It is not easy to assess the impact of some national aspects onto the price plans offered by mobile providers, but our aim is to make the reader aware of the fact that a simple comparison, based only on prices for a postpaid plan found on websites, does not make for a fair comparison.

Telecompaper had initiated the full report when the Ministry of Economic Affairs in the Netherlands inquired about doing such a research. The Ministry stayed in close contact with Telecompaper throughout the period of research and writing the report. This report focuses on the Netherlands only. However, the chapters on methodology and other factors influencing pricing levels are entirely the same as the full report to enable the reader a better understanding of the research process.

3 METHODOLOGY

3.1 Introduction and summary

In this chapter, we describe our methods to come to a meaningful comparison of mobile tariffs across Europe. We explain why we made certain choices, limitations and assumptions. The main ones are:

- We looked at 11 Western European countries, forming a more or less homogeneous area in the EU: Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden and the UK.
- We considered the consumer market only (business tariffs are much harder to come by).
- Only mobile network operators (MNOs) are included, with a few exceptions in countries where there are dominant virtual operators (MVNOs) or sub-brands.
- We only studied postpaid plans (with some exceptions for Italy, where prepaid is dominant).
- Only mobile phone plans are included, i.e. no dongles or laptop and tablet plans.
- We looked at the total cost of ownership (TCO), as it is most important to include the cost of handsets. As in some countries handsets are not included in the package, we have included the chosen handset with the various plans on offer. We defined three kinds of handsets: low-end, mid-range, high-end, each based on Samsung offerings. We have omitted a number of components, most notably: SMS (because it is often offered unlimited), MMS and BlackBerry plans (for their marginal market shares), international roaming costs (to focus on national usage) and out-of-bundle costs. We have also made a comparison on a SIM-only basis, i.e. excluding a handset
- We grouped all available tariff plans in five brackets for minutes and five brackets for megabytes. This led to a matrix of 5x5 possible combinations.
- We included promotions for the fact that these are very common and in many cases run for long periods of time which can have an impact on the TCO. Also, promotions are assumed to be a factor which can influence the consumer to choose a particular plan
- We assumed an ‘average consumer’, for whom price will be very important, but not the only factor taken into account when choosing a plan (other factors include contract duration, the number of text messages included, perceived operator image and network quality, etc.). It must be remembered that in a market like the Netherlands, with over 50 active MVNOs that generally compete on price, 85 percent of users still opt for an MNO over an MVNO. Clear evidence of pricing not being the sole buying factor.
- The TCO consists of MAF (monthly access fee), the cost of the handset (unless a SIM-only plan is chosen) and additional fees. Obviously, free VAS (value added services) are included as part of the plan, but not for-pay VAS. We subtracted the value of promotional offerings. We normalised the costs to 24 months and subsequently recalculated to a per-month price.
- We made corrections for purchasing power, using the Eurostat’s PPP data. Important: the reader must keep in mind that prices mentioned (in euros) are corrected for purchasing power and therefore will not be equal to prices mentioned on operator web sites. MAF prices however represent actual prices.
- We analysed plans between 8 July and 26 August 2013.

Our approach has been to assume a regular consumer who first decides for a type of handset (price category) and next opts the desired number of voice minutes and text messages. Our analysis is based on this approach and hence we made a TCO comparison for each of the four handset categories. Our 'regular consumer' assumption justifies comparing median prices in each bracket (number of minutes and MBs), but we also made a comparison based on the lowest available pricing in each bracket, i.e. a comparison for the (not so regular) consumer whose buying decision is based on price alone. We compared these TCOs (either median or lowest) to the median of the EU11 prices.

3.2 Analysis based on median TCO of consumer plans for national usage

3.2.1 A 'normal consumer' who aims to minimise costs

Our analysis is based on the assumption of the 'average consumer' who will compare prices and select a rate plan that best suits his needs when he walks into our virtual store of all plans from all operators. However, this consumer may still make a personal choice based on perceived quality or other subjective measures, such as value added services, contract duration or the number of SMS included. Therefore he is primarily but not exclusively driven by price.

We have only recorded consumer plans as many operators do not publish their business tariffs and offer price discounts based on number of employees.

We have assumed that this consumer aims to minimise his costs and given a choice of equal options for a plan he will choose the cheapest offer. This means that if a plan was offered with a choice of contract period, we have recorded the different periods only where there was a difference in price. A proposition with a handset with the same price for a one- or two-year contract was only recorded for the two-year contract, as that is the basis of our analysis (see paragraph 3.8 Calculation of Total Cost of Ownership).

However, when a one-year contract with the same plan and the same handset was more expensive than the two-year plan, we recorded both offers. Where a consumer is given the choice of paying for his handset in monthly instalments or a single payment upfront, we have recorded the information as follows: If there was a difference in total price between the total upfront costs and the twelve, 18 or 24 monthly instalments, the cheapest option was chosen as per our 'average consumer's attitude. If the total price of the two options was the same, then the monthly instalment was recorded, as we assumed an 'average consumer prefers paying a small amount each month instead of a large amount all at once.

3.3 TCO includes all phone costs, with separate analysis of SIM-only tariffs and those with handsets

Using the TCO concept implies that the cost of a handset must be included. Additional fees (connection fees, annual fees) are added, the value of promotions is subtracted. We have used online tariff information and have focused on national costs, i.e. we did not include any costs for international roaming.

In several countries there are significant differences between SIM-only tariffs – for people that already have a handset- and tariffs that include a handset (partly/fully subsidised by the operator or paid upfront without any subsidy).

In some countries, such as the Netherlands, handset subsidies have long been used by the operators to entice people to commit themselves for a longer period to the operator, as consumers feel they get the handset free, even though the price is incorporated in the MAF. The degree of subsidy can vary though, from the consumer paying nothing extra for the handset to paying 50-75 percent of the retail price, which can considerably affect the TCO.

In other countries, such as Belgium, subsidies were not allowed until recently, and although they are now offered, it is only on a limited basis. In some others, like Spain, subsidies were first common place, but

operators such as Movistar have started more recently trying to withdraw them. In yet other countries, subsidies are not offered at all, and the consumer has to buy the handset at full retail price.

As the costs of handset subsidies are generally included in the monthly fee, prices in the countries where subsidies are common often look more expensive. Therefore we have chosen to analyse both sides of the coin: SIM-only plans where the effect of subsidies is eliminated, as well as a TCO including a certain type of handset. Although SIM-only plans are generally gaining in popularity, consumers still need a handset to use mobile communications, so calculating the total cost of the handset plus the mobile tariff provides the full picture.

Promotions, such as a discount on the MAF for a certain period or the inclusion of extra services, have been taken into account as they may be the trigger for a consumer to go for that particular offer. Promotions offering discounts for a large number of months impact the TCO. However, a mobile plan offered at a discount when a customer subscribes to fixed services from the same provider were not included, as our focus is purely mobile. It should be noted however that these quad play offers are gaining traction in some European countries, notably Belgium and France, and may eventually lead to lower mobile prices as generally mobile is offered at a discount.

3.4 11 WE countries investigated, including all MNOs and their main low-cost brands, for 2,629 plans in total

3.4.1 Western European countries at similar level of economic development.

The selection of countries was aimed at ensuring a group who are all at a similar level of economic development, in order to limit any price variance caused by macroeconomic circumstances. In addition to determining price levels, the economic level affects a range of other important issues on the mobile market, such as network investments, smartphone penetration and the share of household spending on mobile communication.

The analysis included the following 11 countries in Western Europe: Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden and the UK.

3.4.2 All MNOs, selected low-cost brands and two important MVNOs

Often comparative research looks at only two or three operators per country, assuming that this covers the market sufficiently. However, it is often the smallest of the MNOs that offers the more attractive deals to consumers, as part of a 'challenger' strategy. Ideally, one should also include the MVNO players in a market to obtain a complete picture. However, in many countries, such as Germany and the Netherlands, there is a very large number of MVNOs accounting for only a small percentage of the total mobile market. For example in the Netherlands, the independent MVNO market counted 3.35 million SIMs or 16.5 percent of the total Dutch mobile market in Q1 2013¹. In many of our 11 countries the MVNO market consists of a large number of prepaid providers, which we exclude from this price analysis. Furthermore there are some providers who focus solely on business propositions, which we also exclude from our analysis. Therefore we could only include a small share of a market which already takes a small share of the total market. It is not likely that including those players would have led to a significant effect on our results. One should bear in mind however that in each country there may be cheaper alternatives available to consumers and that the following research is only an indication of the prices in each country.

For two countries we have included a player that is currently a full MVNO: Telenet in Belgium and Tele2 in the Netherlands. Both have acquired spectrum and are expected to become MNOs in the near future. Tele2 NL, which recently signed a network- and site-sharing agreement with T-Mobile NL, has hinted that it will

¹ <http://www.telecompaper.com/research/dutch-mobile-virtual-operators-q1-2013--925546>

start offering its 4G services during 2014, while remaining a MVNO for 2G and 3G services. Telenet has bought spectrum, but has not yet confirmed if and when it plans to deploy a network of its own.

A trend in several countries in recent years is MNOs setting up or acquiring second brands in order to reach different segments of the mobile market. These second brands generally offer plans at lower price levels than the MNOs' own brands, targeting cost-conscious consumers. The second brands benefit from the MNOs' marketing power, while the MNO does not risk tarnishing its own brand with low-end offerings. We have included these brands where applicable², see below. The UK, where T-Mobile and Orange have merged their networks into EE (Everything Everywhere) is a special case, where these brands are technically now MVNOs on the EE network. The list of brands included in this research:

- Austria: tele.ring (T-Mobile)
- Denmark: Call Me (Telia), Telmore (TDC)
- France: Sosh (Orange), B&You (Bouygues)
- Germany: Blau (E-Plus), Congstar (Deutsche Telekom)
- Ireland: eMobile (eircom)
- Netherlands: hollandsnieuwe (Vodafone), Ben (T-Mobile), Telfort (KPN)
- Sweden: Comviq (Tele2)
- UK: T-Mobile (Deutsche Telekom), Orange

Including all the tariff information of all MNOs, the low-cost brands and Tele2 and Telenet, we recorded a total 2,629 postpaid tariff plans, of which 34 percent are SIM-only propositions.

3.5 Focus on postpaid packages, with a Samsung handset and SIM-only

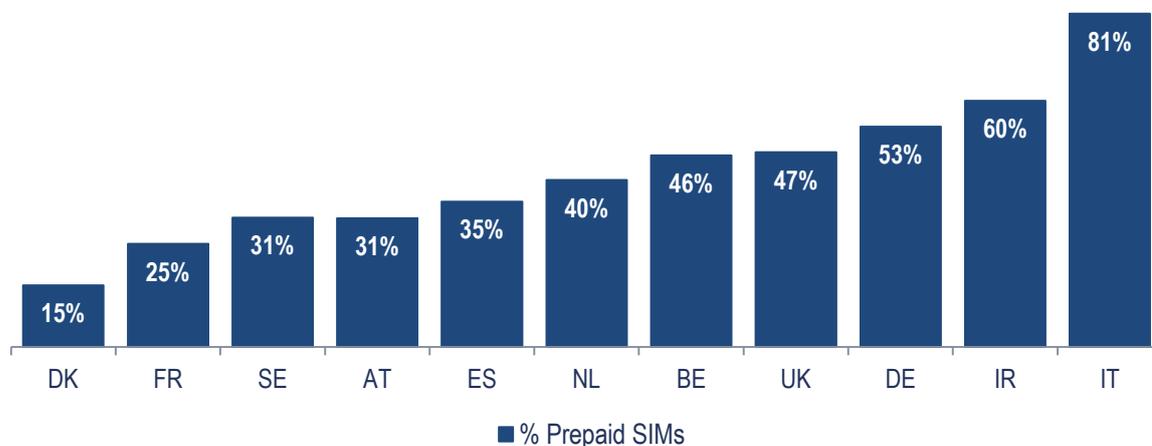
3.5.1 Prepaid, MMS, Blackberry, mobile broadband tariffs excluded

Before we started collecting information on prices we decided to exclude certain types of plans, including special roaming offers. Those excluded and the reasons why are the following:

- **Prepaid.** Prepaid's share in all the countries is falling. In addition, it is much harder to calculate costs for prepaid usage as there is no public information available on the number of top-ups prepaid customers make, nor the average value of those top-ups. This makes it impossible to calculate a TCO. The one exception is Italy, where 81 percent of mobile users are still on prepaid (see Figure 1, for more information see also the Italian country profile – paragraph **Error! Reference source not found.**). In Italy, we recorded prepaid plans with a fixed monthly charge, as they are structured in a similar way to postpaid bundles.

² Disclaimer: While we have tried to be as thorough as possible, no research can ever be exhaustive.

Figure 1: Share of prepaid mobile SIM card users by country (end 2012). Source: Regulator info and Telecompaper country report info (for NL/ BE/ DE)



- **MMS.** Costs for this service are less relevant as few people actually make use of this service.
- **BlackBerry.** The market share of BlackBerry is small and declining.
- **Mobile broadband plans.** We excluded plans for mobile internet for use on tablets, laptops or netbooks via a USB modem or embedded SIM.
- Tariffs only available for **particular groups of people**, such as plans for youngsters, seniors or those hard of hearing were excluded, in order to focus on plans open to any type of consumer.

3.5.2 Handsets from market leader Samsung used as basis for plans with phones

We wanted to compare the same handsets across countries in order to improve the representativeness of the plans including handsets. We chose to include three types of Samsung mobile phone, as Samsung is the market leader in most countries and offers various models at all price points.

We defined the high-end handset as a Samsung Galaxy S4, the mid-range as a Samsung Galaxy S3 mini or Samsung Galaxy Ace, and the low-end model as any handset from the Samsung C/E/S/X series.

3.6 Data collected July-August 2013

We checked the operator websites during the period 8 July to 26 August 2013. As prices were gathered in a closed period, this means that the analysis is only a snapshot of the market. Telecoms is a fast-changing market and at any moment an operator may decide to change its portfolio radically, forcing other players to follow suit.

Prices taken from MNOs outside of the euro area (Denmark, Sweden, UK) have been converted using the average historical rate on Oanda.com for the period. These are EUR 1 to DKK 0.1341, SEK 1.1612 and GBP 1.1612.

Country factors may also influence telecom pricing

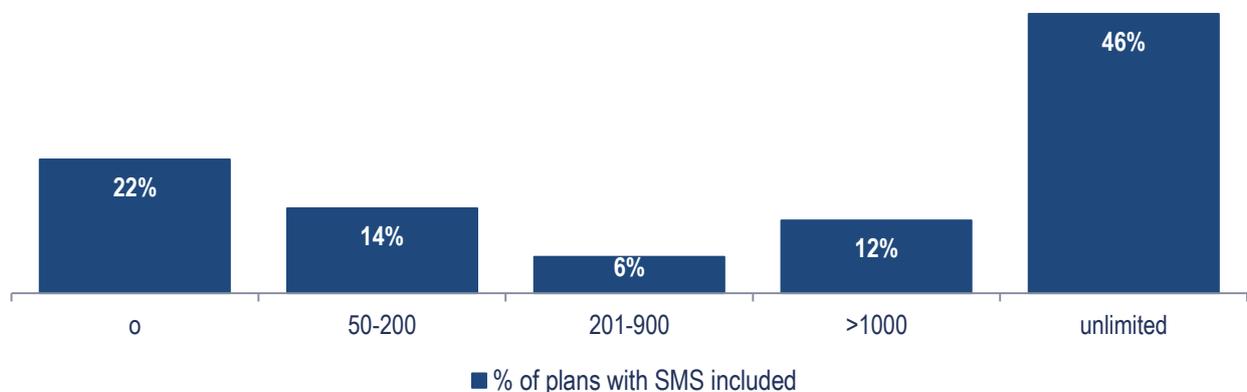
We also looked at several other factors that can influence pricing levels, but which may be more indirect and less quantifiable. Ultimately, these factors determine the cost level and hence retail pricing since a certain return must be earned. These include the size and demography of a country, the average disposable income, mobile termination rates, the mobile/smartphone penetration and average telecom usage (see Chapter 9).

3.7 Focus on minutes and MBs, leading to matrix of minute and MB ranges

Initially we considered the often-used basket methodology for comparing prices. However, after a preliminary analysis of the plans on offer, we decided that instead of trying to fit the plans into predefined baskets, which could never be representative of all eleven countries, we would develop a matrix based on common features of the plans available. This choice is further supported by the information in paragraph 9.12 on average usage, which shows that average usage does not match most of the packages on offer. Furthermore, the ultimate price paid by the consumer is determined by the choice of plan, regardless of whether he actually uses all the monthly allowance or not.

Nearly half of the packages registered included unlimited SMS, with another 12 percent offering between 1,000 SMS and unlimited SMS per month (see Figure 2 for distribution of SMS within all packages). Furthermore we can see from the information in Figure 17 that in six out of our eleven countries the average consumption of SMS is less than 100 SMS per month. Data collected for our various Telecompaper country mobile markets monitors³ show that in many countries SMS usage is dropping, leading us to believe that SMS is becoming less important in most of our eleven countries than minutes and MBs. As we expect that in all countries the smartphone penetration will continue to rise, we also expect that SMS usage will decline in favour of IP-based messaging apps. All of the above means our method of calculating the TCO is based primarily on the number of minutes and MBs included in the tariff plans. Of course, the reader should bear in mind that the TCO of plans with a certain number or an unlimited usage of SMS has a cost element for SMS included in that TCO. In the Netherlands and Ireland a very small number of plans existed which included only SMS and no minutes or MBs. These plans have been included in our matrix range of 0 minutes and 0 MB (see Figure 5 below).

Figure 2: Number of SMS included, by percentage of all plans recorded. Source: Telecompaper



Matrix of five minute ranges and five MB ranges based on grouping available tariffs

In our initial analysis of the plans available, we counted all the possible monthly minute and MB allowances offered. The extensive choice available in the Netherlands (due to the Do-It-Yourself (DIY) options at T-Mobile, Tele2 and Telfort) increased the share of some allowances, especially the plans without minutes.

³ <http://www.telecompaper.com/research/german-mobile-operators-q2-2013-excel--969914>
<http://www.telecompaper.com/research/uk-mobile-operators-q2-2013-excel--969620>
<http://www.telecompaper.com/research/austrian-mobile-operators-q2-2013-excel--967714>
<http://www.telecompaper.com/research/belgian-mobile-operators-q2-2013--964619>

For minutes, this exercise showed that nearly half of the tariffs on sale were either without any minutes at all or with more than 1,000 minutes per month. The remainder was divided across plans offering just 20 minutes per month to 1,000 minutes per month, with lots of variation in between. Calculating the shares of these remaining plans, it became obvious that there were more plans offered in the 150-200 and 300-500 ranges than the others. We therefore decided to build up our categories as follows: 0, 1- 180, 181-360, 361- 1,000 and more than 1,000.

Figure 3: Share of plans according to range of minutes offered, in percentages. Source: Telecompaper

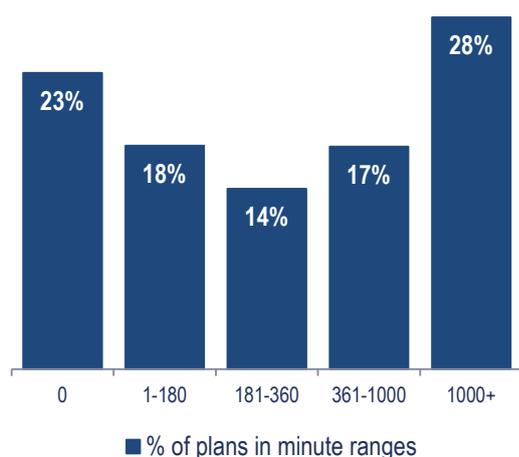
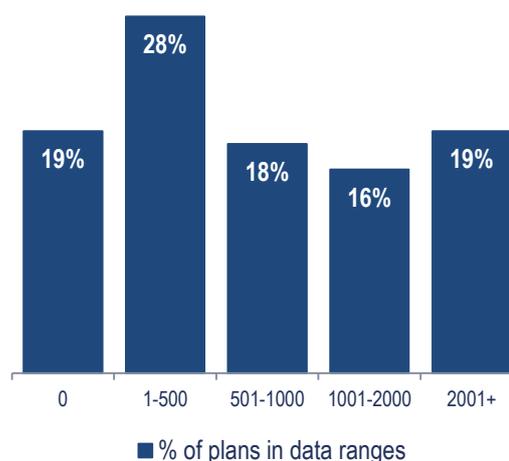


Figure 4: Share of plans according to data allowances offered, in percentages. Source: Telecompaper



We repeated this exercise to calculate the amount of MB included. The plans ranged from zero to unlimited, with allowances of 20 MB to 10GB. There was a very clear peak in the number of plans with 500 MB, 1 GB and 2 GB, leading to our MB categories of: 0, 1-500, 501-1,000, 1,000- 2,000 and more than 2,000 MB.

Effectively, this resulted in a matrix based on the choice of minutes and MBs, with a total of 25 possible combinations, each representing a range of X minutes and of Y MBs.

Figure 5: Matrix of minute and MB ranges used for analysis, based on most common allowances in all recorded plans across 11 European countries. Source: Telecompaper

Min		0	1-180	181-360	361-1000	1001+
MB	0					
	1-500					
	501-1000					
	1001-2000					
	2001+					

Each plan recorded was then assigned to one of the 25 categories. In some cases only one plan was found for a particular combination of minutes and MB in a country, or even none at all, while other combinations were very popular. This had an effect on the median of the TCOs calculated. Price differences in one country within one matrix cell occurred and were due to for example whether it concerned a MNO or a low cost brand, the (perceived) image of the brand, the (perceived) quality of its network, the number and type of valued added services and the number of SMS included.

3.8 Calculation of Total Cost of Ownership

We have assumed that our ‘average’ consumer has chosen a tariff plan that properly reflects his usage, so no out-of-bundle costs are included in our TCO calculation. We calculated the TCO based on a 24-month period, and then divided it by 24 to achieve the monthly amount.

We included the following aspects:

- the cost of the handset when it was a separate cost (the cheapest monthly or one-off payment)
- the MAF x24 , with an adjustment for plans with a contract period longer or shorter than two years
- any connection/administration fees
- in Italy the EUR 5.16 monthly tax levied on the MAF of postpaid plans
- deduction of any promotional discounts on the MAF for the duration of the promotion

We then calculated the median TCO for each combination in our matrix for the four categories of subscription plan - SIM-only, package with high-end phone, package with mid-range phone and package with low-end phone. The amount was then adjusted for Purchasing Power Parity (PPP)⁴, at the following rates:

Table 1: Purchasing power parity conversion rates by country. Sources: Eurostat

Country	PPP (EU28=100)
Austria	105.9
Belgium	109.6
Denmark	142.1
France	109.3
Germany	102.0
Ireland	115.2
Italy	104.7
Netherlands	108.2
Spain	95.6
Sweden	128.6
UK	107.9

3.9 Use of median to avoid outliers

We chose to work with the median instead of the mathematical average of the TCOs per category as the average can be affected too much (positively or negatively) by extremes on either side. As many of our ranges show a skewed distribution, with for example one really expensive tariff plan, it is better to use the median.

The analysis as explained above led to the tables in Chapter 5-8, showing the median amount a consumer would need to pay in each country if he wanted to buy a plan with e.g. 180 minutes and 500 MB or 1,000

⁴ <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00120>

minutes and 1,000MB. Note that some cells are empty for some countries as certain combinations weren't offered there at the time of data collection.

For the 25 ranges within our four segments, we calculated the median across all eleven countries (the TP11 median) and then looked to see how each country compared to the TP11 median for that range. This led to the tables in Chapter 5-8, showing how countries rank comparatively.

As it is not very meaningful to compare ranges to the median when there are only a few countries with plans in that range, the tables comparing relative values in chapters 5, 6, 7 and 8 only show the cells in the matrix where at least five countries were present. So for example where the choice of 0 minutes and 500MB is only offered in three countries, then logically one country will lie below and one above the median. This is therefore not shown in those tables. Furthermore the percentage change has been rounded to the nearest five percent to allow for an easier and quicker comparison between the countries, so a 3 percent above the TP11 median has become 5 percent above, while 17 percent below has become minus 20 percent.

3.10 Unit based plans included

We registered one particular type of postpaid plan offered primarily in the Netherlands, as well as in Ireland and Sweden. This plan does not offer a set number of minutes/SMS/MB but works with a set number of interchangeable units which the consumer can use for minutes, SMS or MB. Some operators such as hollandsnieuwe offer e.g. 550 units which consumers can divide up as they wish on minutes, SMS and MB. Others such as Tele2 in the Netherlands offer a set number of units to divide between minutes and SMS while one needs to buy a separate bundle for data. This gives the consumer a large number of options to divide his usage across. We therefore calculated the maximum range of minutes and megabytes in the plans to fit these into our matrix.

3.11 Pay-per-use plans excluded

Another type of plan caused some issues when calculating a TCO. These are the few plans we found that charge a small monthly fee, but do not include any minutes, SMS or MB and instead charge according to usage. A further exclusion concerned the Pott plans by 3 in Sweden, which are a mixture of units for minutes and SMS and pay-per-use for data. As described above, without reliable information on consumer usage patterns, it was not possible to calculate a TCO for these plans. As it only concerned about 1.5 percent of the plans, we have excluded those from our analysis.

4 COUNTRY DESCRIPTION

This chapter in the full report gives an overview per country of the market situation (number of players, has 4G been launched), the number and types of plans on offer, if any plans include truly unlimited data (no speed reductions after a certain amount of usage, no FUP) and whether promotions and handset subsidies take place. In this report only the Netherlands is discussed.

The development of a country's telecom market, such as number of players and available networks, has a bearing on the types of plans on offer and so it is important to get a good understanding of that market. Figure 6 shows clearly in which MAF bracket most plans are offered in the Netherlands, even though these prices exclude the extra costs included in the TCO. The high/mid/low end segments refer to our three levels of handsets as set out in the methodology.

4.1 Netherlands

Three MNOs, each with a low-cost brand, plus Tele2 as largest MVNO and soon a network operator. 4G services launched by KPN and Vodafone, with T-Mobile to follow soon and Tele2 probably next year

There are three MNOs in the Netherlands: incumbent KPN, Vodafone and T-Mobile. In addition we included one low-cost brand at each operator: Telfort (KPN), hollandsnieuwe (Vodafone) and Ben (T-Mobile). Also included is Tele2, the largest independent Dutch MVNO and soon a network operator, after it acquired mobile spectrum. Tele2 recently signed a network-sharing site agreement with T-Mobile, which should provide a boost to its 4G network deployment. In addition it extended its MVNO agreement with T-Mobile in order to complement its network with 3G services. Tele2 has not said when it will launch its own network; we expect sometime in 2014 or 2015.

In February 2013, KPN began the roll-out of the first commercial 4G network, targeting national coverage by H2 2014. In August 2013, KPN announced a further rollout in additional cities, while Vodafone activated its own LTE network in the four largest cities. T-Mobile announced it will launch its 4G network commercially in certain cities on 18th November 2013.

Both KPN and Vodafone are offering customers the opportunity to access their 4G networks for an additional fee. At Vodafone, customers who signed a contract between 1 October 2012 and 4 March 2013 can request access to the LTE network for a fee of EUR 2.50 per month. Access will depend on whether they have a suitable handset and the network is available in their area. At KPN, customers who signed a contract before February 2013 can access 4G for an extra fee. The amount depends on what kind of contract they have, a spokesman said. T-Mobile said earlier that all customers will have access to 4G at no extra cost.

During our research period, only KPN included 4G service free, in three of its eight main propositions. Vodafone was offering ten 4G-ready plans (out of 16 main packages), before its official launch in August 2013.

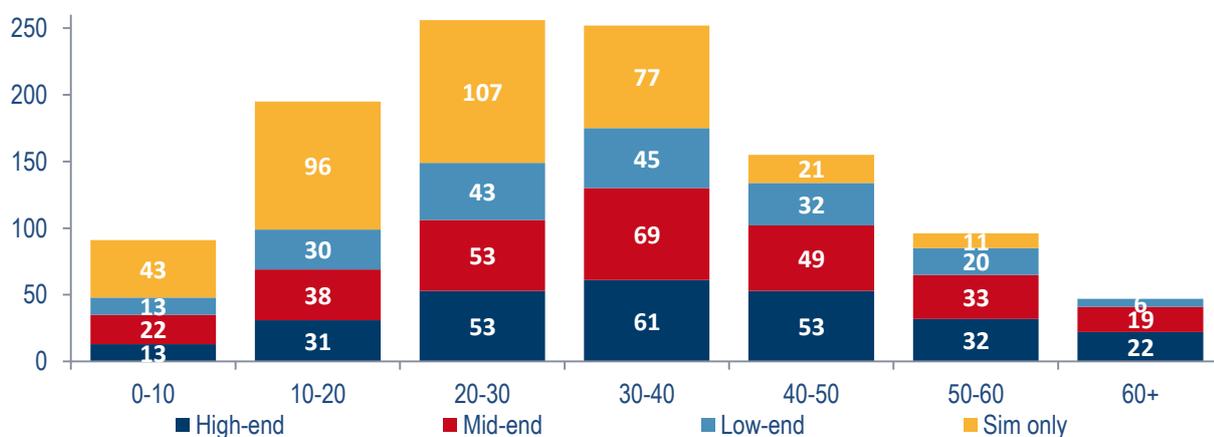
Over 1,000 packages available due to high number of DIY variants from Telfort, T-Mobile and Tele2, 33% SIM-only. Low-cost brands offer just a few tariff options

The Netherlands is characterised by the unique feature of a wide range of choice for consumers thanks to the DIY plans offered by several operators, allowing consumers to choose their preferred number of minutes, SMS and MBs. Among the seven mobile brands, we recorded a total 961 DIY packages, equal to 88 percent of the 1,092 packages on the market. The majority of all plans came from Telfort, T-Mobile and Tele2, while a low number of tariffs were found at the low-cost brands Ben (7) and hollandsnieuwe (16). Telfort (with 484 possible tariff options) offered only DIY plans. T-Mobile and Tele2 mainly offered DIY

plans, but also had some standard plans with a fixed number of minutes and SMS. These standard plans do not include any data and also are not available in combination with handsets. All in all, about a third of plans offered in the Netherlands were available as SIM-only plans⁵. Most of the DIY options offered were available as either SIM-only or with a choice of handsets.

The DIY packages range from a 100 SMS plan at Telfort for EUR 1.50 per month (available as SIM-only and with handset) to Tele’s Smartmix with 600 minutes or SMS and 2.5 GB for EUR 75 (only available in combination with subsidised high-end or mid-range handset). Standard packages run from Tele2’s 100 minutes or SMS (SIM only) with a MAF of EUR 3 to KPN’s All-in-one Premium for EUR 75 including unlimited voice and SMS and 4GB of data. As can be seen in the figure below, a majority of all packages (DIY and standard) are situated in the EUR 10-40 monthly access fee range.

Figure 6: Netherlands - Total number of packages by monthly access fee price ranges (in EUR). Source: Telecompaper dBase.



High level of choice thanks to DIY plans. No unlimited data, majority offer between 500 MB and 1.5 GB. Interchangeable units available at some providers

The Dutch have a high level of choice, thanks mainly to the DIY packages. The choice of minutes with DIY packages includes 0, 90, 150, 200, 300, 400, 500, 700, 1,000 or unlimited minutes (last one only offered by T-Mobile), while the SMS choice is limited to 0, 100, 1,000 or unlimited (again unlimited only at T-Mobile). Mobile internet varies from nothing to 200 MB, 250 MB, 500 MB, 1 GB, 1.5 GB, 2.5 GB to 5 GB (latter offered only by T-Mobile in some packages).

With standard packages including a fixed amount of units, the choice of minutes and SMS is more limited. For example all Vodafone packages with the exception of the Scherp proposition include unlimited SMS, and the Red and Red Super plans also include unlimited minutes. Data varies from 500 MB to 4 GB on these plans. KPN, which only offers standard plans, includes unlimited minutes and SMS on three out of five of its main plans, while data varies from 250 MB to 4 GB.

We didn’t find any tariffs with unlimited data. The majority of plans offer data between 500 MB and 1.5 GB per month.

Several providers offered the option to use the same bundle of units either for minutes or SMS; these included Ben (all plans), Vodafone (Scherp), KPN (Budget), T-Mobile (Bellen en SMSen and Smart seconds) and Tele2 (Bel/SMS and SIM only per second). Hollandsnieuwe only works with this type of interchangeable

⁵ Currently around 25 percent of mobile subscribers uses a postpaid SIM-only plan (Source: [Postpaid Mobile Insight Q3 2013](#), Telecompaper)

unit, meaning the number of units in the bundle can be used for either minutes or SMS and on some plans even for MBs.

Main operators offer handset subsidies, price depends on contract

Handset subsidies are still used, but seem to be fewer in number than we have previously seen in the Dutch market. For a while KPN tried a different route with handset leasing, but it has since returned to offering handset subsidies. The low-cost brands did not offer any subsidies. Of the Samsung models we researched, hollandsnieuwe only offers the S3 mini, for which the customer needed to pay either EUR 240 in full (which is the average retail price for this phone in the Netherlands) or in monthly payments with a small one-off fee (EUR 1 more expensive). Ben did not offer any of our chosen models, while Telfort offered the S3 mini and the S4, but at full retail price.

The S4 was only offered free by T-Mobile and Tele2, while KPN offered it virtually free with 24-month contracts. The S3 mini was offered at EUR 0 by T-Mobile, Tele2 and Vodafone and virtually free by KPN (in both cases KPN still charged the *Thuis kopieheffing*⁶ of EUR 6.05).

KPN and Vodafone gave customers their handsets at much lower prices with 24-month contracts compared to 12-month contracts, while T-Mobile and Tele2 also charged different prices according to the number of MBs/minutes included in the plan.

Vodafone and Telfort offered a choice of paying a one-off amount upfront for the handset or paying per month. Hollandsnieuwe focused on an offer of older models of high-end phones, in line with its focus on low-cost plans, and hence did not offer the S4 at all.

4.2 Value added Services

Next to the general features of any postpaid plan such as the MAF and how many minutes/SMS/MBs are included, we also looked at any value added services offered by the various operators. Value added services could be one of the features which may persuade our average consumer to choose a particular plan with a particular operator.

We recorded the following options:

- Free phone insurance
- Free replacement phone
- Free access to WiFi spots
- Free phone repairs
- Extra SIMs for free
- Webcare offered
- Opening hours customer service
- Free customer service number

Free webcare and customer service number available in most countries

For all the features there were many instances where the information was not found on the website of the operator, even in some instances the opening hours of the customer service. Therefore this section discusses all the eleven countries and not just the Netherlands to give more perspective of the possible value added services. Mostly the free services were only included with (one of) the plans with a MAF in the top range of that operator's offering.

⁶ *Thuis kopieheffing* is a Dutch tax levied on all devices capable of copying or downloading music or videos, such as smartphones.

The only extra service offered in all the countries was webcare, which was offered by at least one operator in each country, but in most countries by several operators. We defined webcare as having a chat assistant. Free customer service number was offered the most after webcare, with Italy as the only exception. Most customer service was offered online instead of via a call centre in Italy. Only in France, Italy and the Netherlands was customer service offered on a 24/7 basis, but in most other countries it was either closed on a Sunday or closed at the weekends, with also often limited opening hours in the evening.

Free phone insurance and free repairs were offered the least often

Free phone insurance was offered the least. As part of the plan it was only offered by Telia in Denmark and Vodafone in Germany during our research period. A free replacement phone as part of the plan was offered in six countries: Austria (A1), Belgium (Mobistar), Denmark (Telia, Telenor), France (SFR), Germany (Vodafone) and the Netherlands (Vodafone). Free repairs were not often included in a plan, although notably Base, O2 and Vodafone offered it in Germany. O2 and Vodafone also offered that extra service to its Irish customers.

WiFi and extra SIM cards not used as differentiators

WiFi was not much used as a differentiator in July and August as in only five countries was free access to WiFi included in the propositions, with France and the UK being the only countries where most operators offered free WiFi.

Despite more and more consumers having a smartphone and a tablet, not many operators were offering extra SIM cards as a free value added service. Vodafone offered it in Germany, the Netherlands and Spain. In Germany it was also offered by T-Mobile and O2, while it was further offered in Denmark (TDC) and France (Orange, SFR).

5 ANALYSIS OF PLANS WITH HIGH-END PHONE

5.1 Introduction and summary

The following tables and graphs show our analysis of all mobile plans including the Samsung Galaxy S4, either as part of the plan or bought separately. The tables in this chapter are based on the median TCO for each of the combinations of minutes and MBs (see Chapter 3). The analysis on the range of plans offered and the handset prices is shown for all the eleven countries, to show how the Netherlands compares. The actual analysis of the prices is shown for the Netherlands only (for the other countries see Telecompaper's full report).

Our main findings:

- Maximum TCOs of plans with high-end phone differ widely across the 11 countries, while minimum TCOs are relatively similar.
- High-end phone plans with MAF over EUR 50 offer some degree of phone subsidy in most countries, as customer gets a 'free' phone or only pays a low additional fee. In contrast full retail price needs to be paid with plans at lower MAF. More and more operators are moving to decoupling cost of handset from service contract.
- Median TCO for plans with high-end phone cheapest in Austria, Denmark, Sweden and UK while Spain, the Netherlands and Belgium most expensive.
- Lowest TCO: cheapest countries remain Austria, Denmark and Sweden, while France scores better. Spain and Belgium are still most expensive. Netherlands and Germany score better on several combinations.

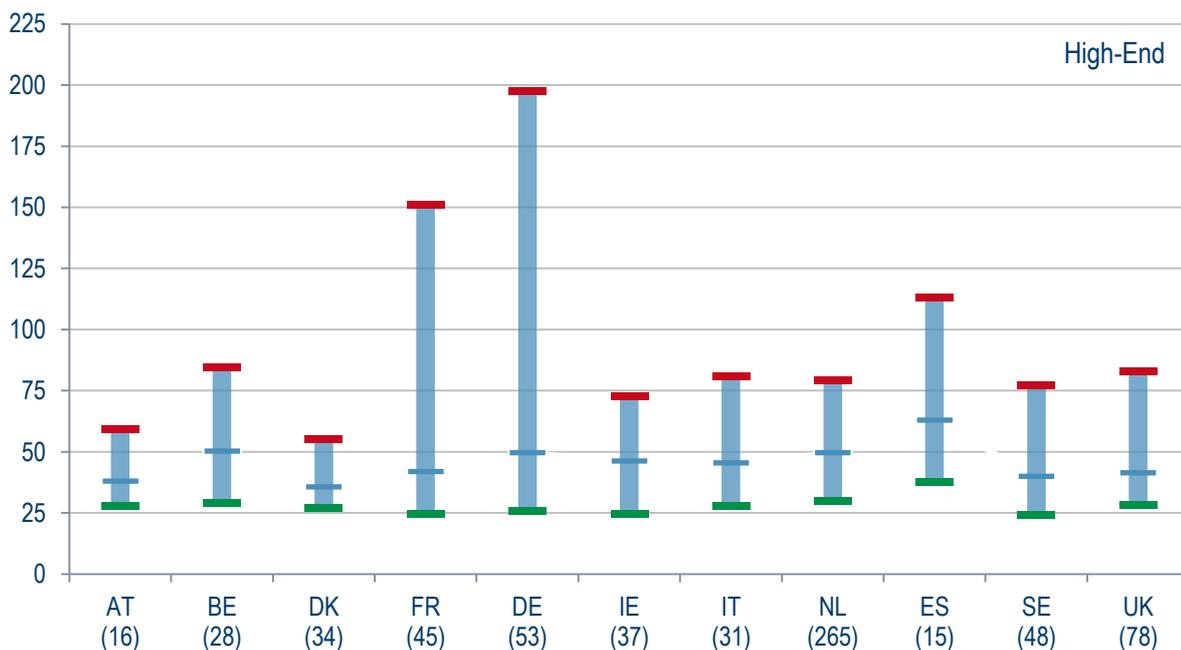
5.2 Maximum TCOs of plans with high-end phone differ widely across 11 countries, while minimum TCO relatively similar

Figure 7 below shows the wide range of TCOs resulting from our analysis, with the green line indicating the lowest TCO per country, the red one the highest TCO found and the blue one being the median. For each country, the graph shows the range of all the plans (with all ranges of minutes and MBs) with a high-end model phone, from the minimum to maximum TCO in euros PPP, recalculated to a monthly figure. The graph makes it clear that there is a great variety in choice across the eleven countries, not only in the range of monthly fees but also the number of plans offered (as shown in the graphs by the N = below the countries).

- Although the minimum costs were all at similar levels, ranging from EUR 24 in Sweden to EUR 38 in Spain, the maximum costs varied greatly, ranging from EUR 55 in Denmark to EUR 197 in Germany.
- The difference in prices can be explained by a number of factors, such as value-added services included, duration of contracts, brand positioning etc. For example, Germany's highest TCO is a Vodafone package called Black, which offers in addition to domestic usage 1,000 minutes for international calls and 1,000 minutes and SMS and 1 GB for roaming in EU countries. It also includes eight weeks per year of worldwide surfing, every year the option to obtain a new smartphone and other value-added services such as Vodafone protection, insurance, cloud storage, Joyn etc. In France, SFR had the highest TCO as its plan Carré Voyageur also offers several value-added services, such as 2 GB of Dropbox storage and 250 MB international data, amongst other things.

- This graph also shows that for example Sweden, Ireland and France have one of the lowest TCOs, but at the same time they have less choice (less than 48 tariff options in Sweden) than for example the Netherlands (with 265 tariff options). The lowest TCO package in each country varies greatly too; for example in Sweden it is a package of Tele2 called Kompis which includes 1,000 MB and unlimited on-net calling and a maximum of 3,000 SMS on-net each month. In Ireland the cheapest option is the low-cost brand e-Mobile with 100 minutes and unlimited free calling to landlines, while in France it is a package of Free Mobile with 120 minutes and unlimited SMS.

Figure 7: Range of TCO per country for high-end mobile phone plans, in Euros PPP per month, excluding plans with only SMS. Figures between brackets are number of plans found in that specific country (source: Telecompaper analysis)



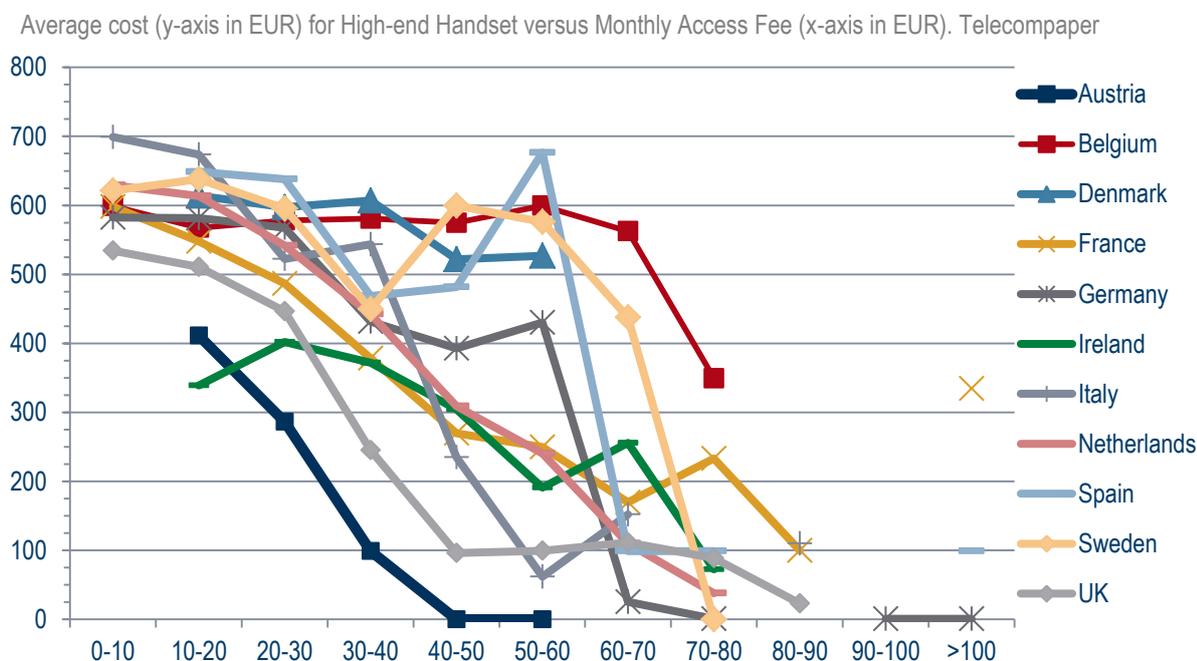
5.3 High-end phone plans with MAF over EUR 50 offer some degree of phone subsidy in most countries. More and more operators moving to decoupling cost of handset from service contract.

With an expensive model like the S4 the price paid for the handset by the consumer (i.e. the level of handset subsidy by the operator) can make a large difference to the TCO. The graph below shows the average price a customer needs to pay, either monthly or as one-off fee, for the high-end phone in all the plans available with the S4, relative to the MAF range of the accompanying plans. We noticed that some operators are moving away from including the handset price in the monthly fee to a different model where the cost of the phone is separated from the service contract. Examples include O2 in the UK with its Refresh plans, Movistar in Spain where the customer has the option to pay for the phone upfront (with some discount) or sign a finance contract and pay monthly with no interest.

The graph below shows that in most countries the S4 is charged at (nearly) the full retail price with plans with a low monthly fee, while most of the plans with a MAF over EUR 50 offer some degree of subsidy, but only in certain countries. Customers only get a 'free' high-end phone with some operators, and this was only found in Austria, Germany and Sweden, with plans with a higher monthly fee (over EUR 50). In contrast in Belgium and Denmark operators do not provide any or only a limited amount of handset

subsidy, as the customer needs to pay nearly the full retail price. The peak in Spain at a MAF of EUR 50-60 is due to the fact that only one plan was recorded in that MAF range, and that plan did not offer any subsidy.

Figure 8: Average extra cost⁷ of a Samsung Galaxy S4 relative to the plan's MAF range, in euros. Source: Telecompaper analysis



5.4 Median TCO for plans with high-end phone mostly expensive in the Netherlands

Table 2 below shows how the Netherlands fare compared to the median of the eleven West European countries researched. The TP11 median shows the median TCO in EUR PPP of the matrix combinations, the numbers for the Netherlands are the percentage differences compared to the TP11 median. So for plans with a high-end phone and 1,000 minutes and 500MB the Netherlands is 30 percent more expensive than the median prices in the eleven countries together but for plans with 360 minutes and 500MB the median price in the Netherlands is the same as in the eleven countries together, as was the case in six other ranges. In two ranges (1,000+ minutes and 1 GB or 2 GB) the median prices in the Netherlands were only five percent higher. In the remainder of the ranges however the prices in the Netherlands were between 10-30 percent higher.

Table 2: Percentage difference of median country TCO versus median TCO of TP11 for plans with a high-end phone. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis.

HIGH-END MB	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.				
	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	0	5	15	0	20	20	15	15	15	0	0	0	25	0	10	0	30	30	30	55	15	30	5	5	10
TP11 - Median	30	35	36	46	48	31	37	40	42	51	39	46	39	52	50	41	39	43	46	40	41	43	57	56	64

⁷ See methodology, prices based on operators' online information

The analysis shows that even when looking at plans with just one phone, it is not possible come to one conclusion as to whether the Netherlands is expensive or cheap as there is too much variation between the ranges.

5.5 Lowest TCOs: Netherlands scores better on several combinations

In addition to calculating the median TCO per matrix cell, we also looked at the cheapest option per matrix cell. Calculating the median shows roughly what the average costs are for a particular option, but of course there are usually cheaper options available than the median. Calculating the TCO of the cheapest plans shows what a pure ‘homo economicus’ would have to pay, if he were led only by the price of voice and data services and nothing else.

Table 3: Percentage difference of lowest TCO with a high-end phone versus lowest TCO of the TP11. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis.

HIGH-END MB Country	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.				
	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	0	0	10	-5	30	10	5	-5	-10	0	-10	-15	5	25	-5	-10	30	15	15	40	10	20	5	-5	30
TP11 - Median	27	34	35	39	44	27	29	35	37	35	35	41	38	50	43	37	33	42	44	38	41	41	51	49	44

Table 3 above shows the difference in TCO for the cheapest plans compared to the TP11 median for that range. The Netherlands scored lower than the TP11 median on nine of the 25 cell ranges. These included the ranges with 360 minutes and 0 MB, 500 MB or 2GB and 1,000 minutes with 0 MB, where it was at least 10 percent cheaper than the TP11 median of the lowest plans. Although in the ranges of 1,000 minutes or more a Dutch consumer wanting a high-end phone would generally still be worse off compared to the median consumer in the eleven countries together, in ranges with less minutes a Dutch consumer focusing on price only could choose between several plans which were cheaper than the TP11 median.

6 ANALYSIS OF PLANS WITH MID-RANGE PHONE

6.1 Introduction and summary

This chapter shows our analysis of the plans including a mid-range model, for which we used the Samsung Galaxy S3 mini or Samsung Galaxy Ace, either as part of the plan or bought separately at the mobile operator's online shop. The tables in this chapter are based on the median TCO for each of the matrix combinations of minutes and MB as outlined in the methodology (see Chapter 3). The analysis on the range of plans offered and the handset prices is shown for all the eleven countries, to show how the Netherlands compares. The actual analysis of the prices is shown for the Netherlands only (for the other countries see Telecompaper's full report).

Our main findings:

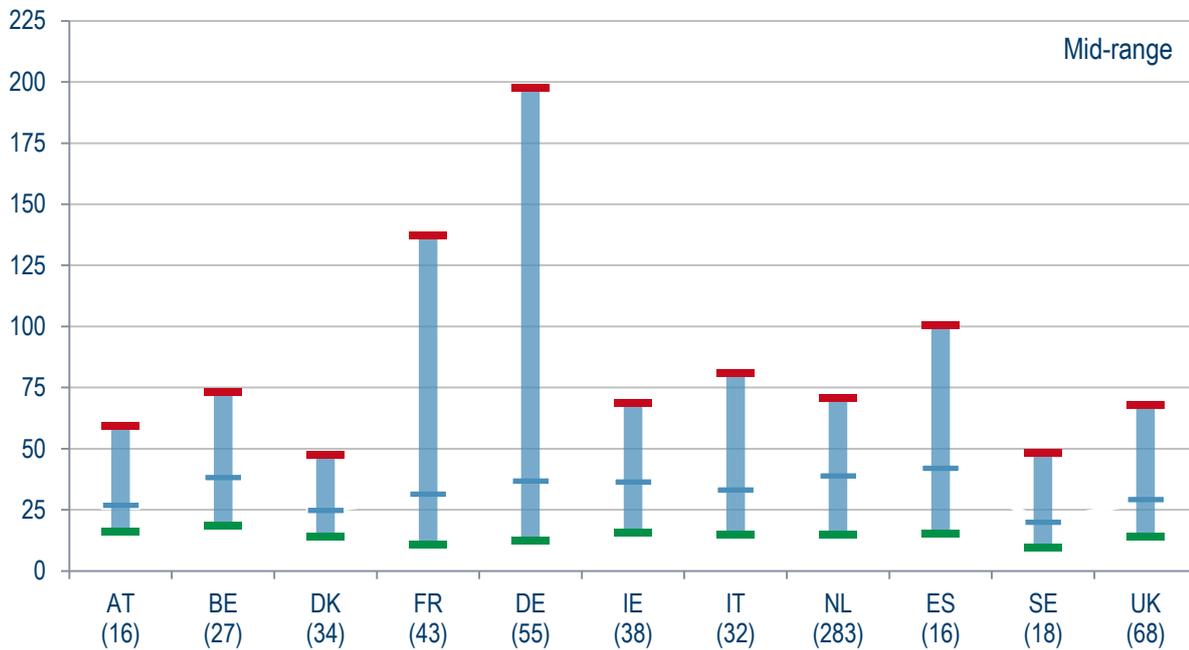
- Maximum TCOs of plans with a mid-range phone differ widely across the 11 countries, while minimum TCOs relatively similar.
- Mid-range phone plans with MAF over EUR 20 offer some phone subsidy in several countries as customers get a 'free' phone or pay a lower additional fee. Full retail price charged for phone in Belgium.
- For mid-range phones, Austria and Denmark the cheapest; France, Sweden and UK perform well; Ireland, Spain, Belgium and Netherlands the dearest.
- Lowest TCO: cheapest countries remain Austria, Denmark and Sweden, with France scoring better. Spain and Ireland expensive, Netherlands and Belgium also score high on most matrix cell combinations.

6.2 Maximum TCOs differ widely across the 11 countries, while minimum TCOs relatively similar

The Figure 9 below makes clear that there is a wide range of choice for all the plans (with all ranges of minutes and MBs) with a mid-range phone across the eleven countries, not only in terms of the monthly fees but also in the number of plans on offer in each country (as shown in the graphs by the N= below the countries).

- The price range is small for consumers in Austria (going from EUR 16 to EUR 59), while Germany has the widest range in terms of price (from EUR 12 to EUR 197).
- The minimum costs were all at a similar level, ranging from EUR 10 in Sweden (consisting of a Tele2 package with only 200 MBs) to EUR 18 in Belgium (Base with its B9 package only including 120 minutes and unlimited SMS)
- The maximum costs varied greatly, ranging from EUR 47 in Denmark to EUR 197 in Germany (see description in Chapter 5 of this particular package which includes several extra value added services).
- Consumers in some countries had a small number of plans to choose from, while in other countries, the choice was abundant. For example in Austria, Spain and Sweden there were less than 20 plans including a mid-range phone, while in Germany and the UK there were at least 55 plans to choose from, and Dutch consumers had more than 280 options.

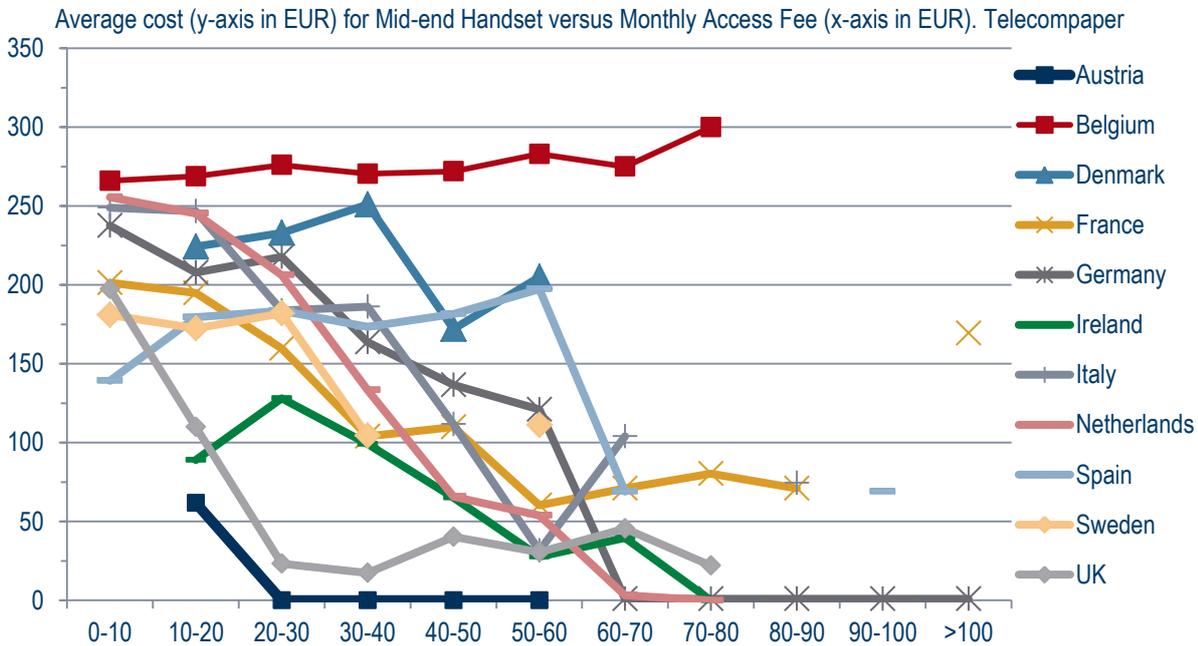
Figure 9: Range of TCO per country for mid-range mobile phone plans, in euros PPP per month, excluding plans with only SMS. Figures between brackets are number of plans found in that specific country (source: Telecompaper)



6.3 Mid-range phone plans with MAF over EUR 20 offer some phone subsidy in several countries. Full retail price of phone charged in Belgium

We also looked at the average additional cost for a consumer to buy a mid-range phone in relation to the MAF range of the associated plan. Figure 10 shows that in several countries the extra costs decline, sometimes considerably, after a MAF of EUR 20 per month. This applies to Austria, UK, Ireland and the Netherlands. Belgium clearly offers virtually no subsidies for the mid-range phones, while in Spain the mid-range phone is only offered at around EUR 70 when the MAF is in the EUR 60-70 range.

Figure 10: Average price for phone for all plans available with mid-range phone relative to the plan MAF range, in euros. Source: Telecompaper analysis



6.4 Median TCO with mid-range phone in Netherlands expensive for some ranges, around TP11 median for other ranges

Table 4 below shows the percentage variance in the cost of each type of plan with the median of the eleven countries (the TP11 median shown in the last row). The red shading means that the TCO is more than the TP11 median. In many ranges the Netherlands are more expensive than the TP11 median, but there are also ranges where it is around the same as the TP11 median. For plans with mid-range phone two of the combinations in the range of 360 minutes are more expensive (with 1GB and 2+GB) but also two are the same (0MB and 2GB). For plans in the highest range of minutes (1,000+) the first two ranges of MBs included (0 and 500MB) the median price in the Netherlands was higher than the TP11 but for the other three ranges (1GB, 2GB and 2+GB) the prices were around the TP11 median.

Table 4: Percentage difference of median TCO versus median TCO of the eleven countries for plans with a mid-range phone. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis

MID-END MB Country	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.				
	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	0	45	10	10	15	5	30	25	40	85	0	5	40	0	55	0	50	25	45	75	20	30	0	0	5
TP11 - Median	17	18	24	28	36	17	23	27	27	25	22	32	28	43	34	27	28	38	35	35	29	35	50	51	58

6.5 Lowest TCO: Netherlands scores high on most matrix cell combinations

Table 5 shows the percentage difference in lowest TCO for each cell in the matrix to the TP11 median for that range.

Table 5: Percentage difference of lowest TCO with a mid-range phone versus lowest TCO of the TP11. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis.

MID-END MB Country	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.				
	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	0	20	10	20	20	-5	30	5	15	30	0	-30	25	0	25	-5	30	15	25	55	20	45	10	-10	15
TP11 - Median	13	17	23	25	35	15	16	24	25	25	18	26	25	37	33	19	24	30	33	35	28	28	45	40	41

When looking at the lowest TCOs the Netherlands have several ranges where it performed better than the TP11 median. The ranges with 180 minutes and 0MB, 360 minutes and 500 MB, 1,000 minutes and 0MB and 1,000+ minutes with 2 GB were all at least 5 percent less than the TP11 median. A plan in the 360 minutes and 500MB range cost 30 percent less when looking at the lowest TCO, while it cost 5 percent more than the TP11 median when looking at the median prices.

7 ANALYSIS OF PLANS WITH LOW-END PHONE

7.1 Introduction and summary

This chapter shows our analysis of the plans including a low-end handset from the Samsung B/C/E or X cover ranges, all of which are considered feature phones, purchased either as part of the plan or separately. The tables in this chapter are based on the median TCO for each of the combinations of minutes and MB outlined in the methodology (see Chapter 3). The analysis on the range of plans offered and the handset prices is shown for all the eleven countries, to show how the Netherlands compares. The actual analysis of the prices is shown for the Netherlands only (for the other countries see Telecompaper's full report).

Main findings:

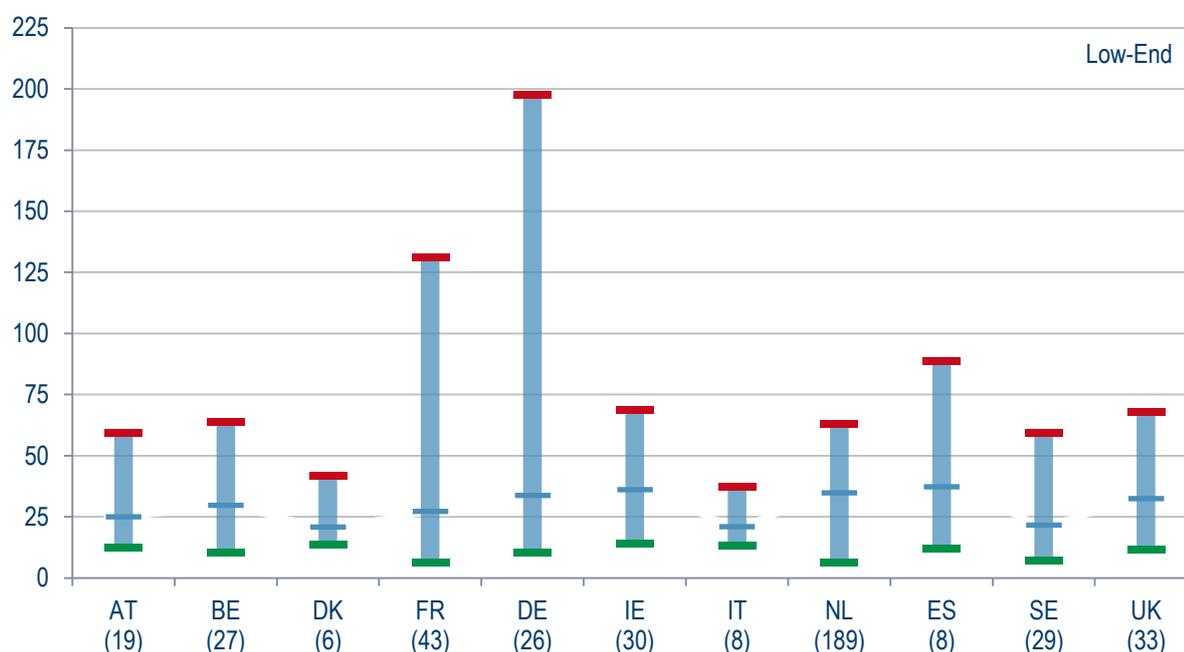
- Minimum and maximum TCOs of plans with a low-end phone differ widely across the 11 countries.
- Handset subsidies very common with low-end phone.
- Austria and Denmark have cheapest TCOs, Sweden also scores well. Ireland and Netherlands are the dearest.
- Lowest TCO: Austria, Denmark, France and Sweden perform well, Ireland still the most expensive, Spain deteriorates while Netherlands performs better.

7.2 Minimum and maximum TCOs with low-end phone vary widely across the 11 countries

Figure 11 below makes clear that like with the other two types of phone, the choice between all the plans with a low-end phone varies tremendously across the 11 countries, not only in the range of monthly fees but also in the number of plans offered (as shown in the graphs by the N= below the countries).

- In Denmark, Italy and Spain very few plans were offered with a low-end phone, less than ten. In terms of price, there is a very small range of choice for consumers in Italy and Denmark, while Germany has the widest range of price points.
- The lowest monthly TCO for a plan with a low-end phone was found in the Netherlands (Telfort package with 150 minutes) and France (B&You package with 120 minutes and unlimited SMS) both with a TCO of EUR 6 pm. In the other countries, the minimum price ranged from EUR 7 in Sweden (Telia package with 71 total units to be used for either minutes or SMS or combination of both) to EUR 14 in Ireland (eMobile with 100 minutes and unlimited calling to fixed national numbers).
- The most expensive was found in Germany, at a cost of EUR 197 (see description in Chapter 5 of this particular package which includes several extra value added services), while the lowest maximum TCO was in Italy (Wind package with 2,000 MB, 900 minutes and 900 SMS), at EUR 37.

Figure 11: Range of TCO per country for plans with low-end mobile phone, in euros PPP per month, excluding plans with only SMS. Figures between brackets are number of plans found in that specific country (source: Telecompaper)



7.3 Handset subsidies very common with low-end phone

The various Samsung low-end phones were quite often offered at EUR 0 or a very small amount paid by the consumer. Of the 418 plans with a low-end phone, 259 or 62 percent required no extra charge for the phone. As a result of this high percentage, it does not add value to show a graph of the various additional charges for the low-end phones. In Belgium, Denmark, Italy and Spain the price paid for a low-end phone was the same, irrespective of the MAF range. In Germany, Ireland and the Netherlands the price of the phone went down as the MAF increased. In France, Sweden and the UK it was quite common to pay a small amount for the phone with a 24 months contract but a higher price with a contract of less than 24 months.

7.4 Netherlands expensive for plans with low-end phones in range of 180 minutes

Table 6 below shows that all the plans in the ranges of 180 minutes, combined with a low-end phone, are quite expensive in the Netherlands. Any Dutch person wanting to take out a plan in the range of 180 minutes and 500MB in combination with a low-end phone would have paid 75 percent more than the TP11 median. On the other hand a consumer wanting a low-end phone and a plan including 1,000 minutes but no MBs would be 35 percent cheaper off, while a Dutch consumer wishing to take out a plan with the most allowance (1,000+ minutes and 2+GB) would have paid the same as the price of the TP11 median.

Table 6: Percentage difference of median TCO versus median TCO of the TP11 for plans with a low-end phone. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis

LOW-END MB Country	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.				
	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	0	25	60	15	25	20	75	65	55	40	-10	30	40	15	50	-35	5	0	35		0	35	30	15	0
TP11 - Median	8	14	13	23	32	13	17	20	25	36	21	26	27	36	36	35	32	38	32		33	32	38	43	56

7.5 Lowest TCO: Netherlands show mixed results

Table 7 below shows the percentage difference between the lowest TCO of each cell in the matrix and the TP11 median for that range.

Table 7: Percentage difference of lowest TCO versus median TCO of the eleven countries for lowest price plans with a low-end phone. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis

LOW-END MB Country	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.				
	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	0	0	15	5	30	-45	80	40	30	40	-35	-5	-5	5	50	-50	10	0	25		0	50	55	10	35
TP11 - Median	3	12	13	21	32	10	12	19	25	35	18	22	25	31	35	34	24	30	28		33	28	32	41	39

The Netherlands showed mixed results, as it did with the median TCO for plans with a low-end phone. However, where all the plans in the 180 minutes range were above the TP11 median when looking at the median TCO, with the lowest TCO one plan in that range (180 minutes and 0MB) is 45 percent cheaper than the TP11 median. Plans with more than 1,000 minutes did not score well in the lowest TCO comparison as two were more than 50 percent dearer. While with the median TCO the best options were found in the 1,000 minutes range, for the lowest TCO the best options lay in the 360 minutes range.

8 ANALYSIS OF SIM-ONLY PLANS

This chapter shows our analysis of the plans excluding a handset. The tables in this chapter are based on the median TCO for each combination of minutes and MB.). The analysis on the range of plans offered and the handset prices is shown for all the eleven countries, to show how the Netherlands compares. The actual analysis of the prices is shown for the Netherlands only (for the other countries see Telecompaper's full report).

Main findings:

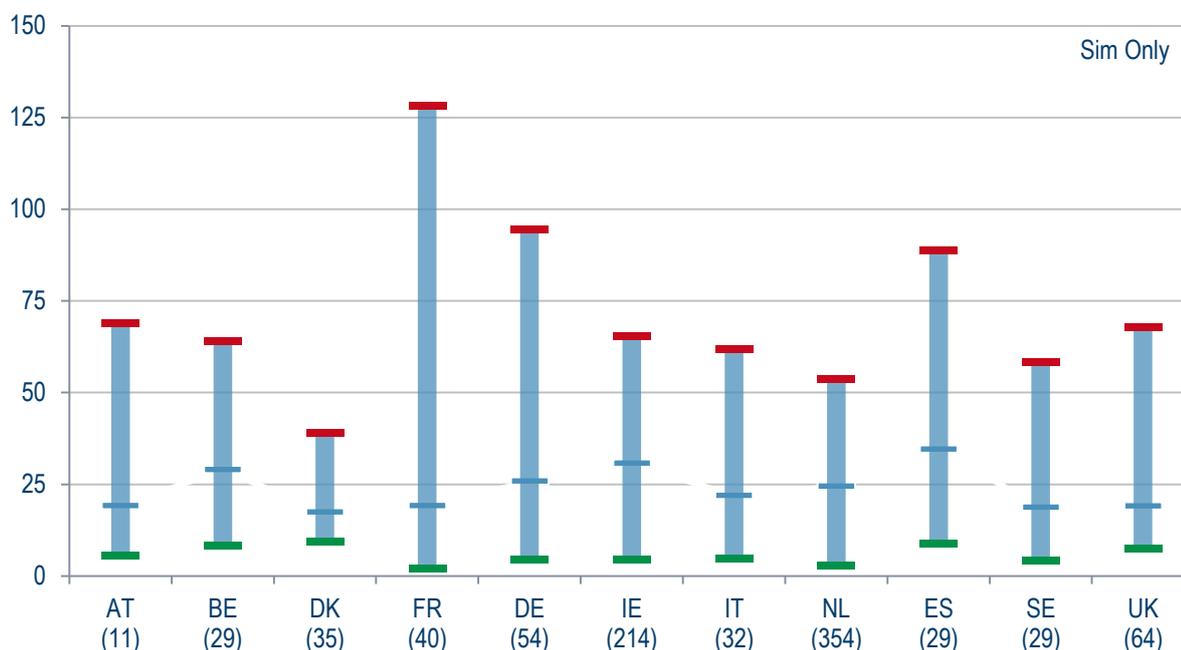
- Minimum and maximum TCOs of SIM-only plans vary widely across the 11 countries.
- Austria, Denmark, France, Sweden and UK the cheapest, Ireland and Spain the dearest.
- Lowest TCO: Austria, Denmark, France, Sweden and UK perform best, Belgium and Spain the worst.

8.1 Minimum and maximum TCOs of SIM-only plans vary widely across the 11 countries

The Figure 12 makes clear that there is a wide range of choice for SIM-only plans across the 11 countries (for all the plans, with all the ranges of minutes and MBs), not only in the range of monthly fees but also in the number of plans offered (as shown in the graphs by the N = below the countries).

- Contrary to the plans with phones, the smallest range in price was found in Denmark and the largest range in France.
- France had the cheapest SIM-only plan at EUR 2 (Free Mobile with only 120 minutes and unlimited SMS), while the rest of the minimum prices ranged from EUR 3 in the Netherlands (Tele2 with 100 units either to be used as SMS or minutes) to a TCO of EUR 9 in Denmark (Call Me with 2,000 MB, 180 minutes and unlimited SMS) and also Spain (Orange package with only 500 MB).
- The highest TCO for a SIM-only was recorded in France (SFR package with 6,000 MB, unlimited minutes and SMS included free services as 250 MB free data international) at EUR 128, while the remaining countries varied from EUR 39 in Denmark (Telia package with unlimited minutes/ SMS and 100 GB at highest speed with several other extra free services as Spotify) to EUR 94 in Germany (Vodafone package with unlimited minutes and SMS and 10 GB including value added services as 250 minutes/SMS/MB in EU countries, 240 minutes international calls and four weeks surfing globally).

Figure 12: Range of TCO per country for SIM-only, in euros PPP per month, excluding plans with only SMS. Figures between brackets are number of plans found in that specific country (source: Telecompaper)



8.2 SIM-only: Netherlands performs quite well

Table 8 below the Netherlands performs quite well in the SIM-only segment as mostly the TCOs are either below the TP11 median or they are only slightly above it. There is one exception however: a plan with 1,000 minutes and 1GB cost 115 percent more than the TP11 median. The TP11 median in that range is low because of some very cheap plans in Austria and Italy while the Netherlands had the highest median TCO in that range.

Table 8: Percentage difference in median TCO versus median TCO of TP11 for SIM-only plans. If number of countries where plan is available < 5, no comparison is given. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis

SIM ONLY	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.					
	Country	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	-50	0	20	-10	15	-20	25	15	10	0	-35	-10	5	-10	0	15	15	115	5	0	10	20	0	0	0	5
TP11 - Median	11	11	13	22	26	9	13	18	23	34	19	19	22	30	29	19	22	14	33	36	21	25	35	38	42	

The 50 percent cheaper result in the 0 minutes and 0MB range was due to some cheap plans with only SMS included. Overall a Dutch consumer who wanted a SIM-only with 360 minutes and a choice of MBs could have found some good deals during our research period.

8.3 Lowest TCO: Netherlands mixed

In addition to calculating the median TCO per matrix cell, we also looked at the cheapest option per matrix cell. Table 9 below shows the percentage difference between the lowest TCO of each cell in the matrix and the TP11 median for that range.

Table 9: Percentage difference in lowest TCO versus median TCO of TP11 for lowest price SIM-only plans. Ranges are minutes: 0, 1-180, 181-360, 361-1000 and 1000+ and for data allowance: 0 MB, 1-500MB, 501-1000MB, 1001-2000MB, 2000+ MB. Source: Telecompaper Analysis

SIM ONLY MB Country	0 Min.					180 Min.					360 Min.					1000 Min.					1000+ Min.				
	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+	0	500	1000	2000	2000+
Netherlands	-30	0	10	10	30	-40	-10	10	0	0	-75	-45	5	0	40	-30	0	125	10	0	25	60	40	5	60
TP11 - Median	7	5	13	17	23	5	8	14	17	22	16	15	16	18	18	12	14	11	24	32	19	18	24	31	26

The Netherlands performed well with the lower number of minutes, but less so with ranges with more than 1,000 minutes. Again it was the ranges of 180 and 360 minutes which gave the Dutch consumer the best options to buy a plan at a cheaper price than the TP11 median for the lowest plans.

9 COUNTRY CHARACTERISTICS INDIRECTLY INFLUENCING ITS TELECOM MARKET

9.1 Introduction and summary

The analysis considered country factors that may have an indirect effect on telecom prices, such as size and demography of a country, average disposable income, MTR levels and other telecom-related factors. Although they cannot be quantified, these factors do have a cumulative impact on pricing.

There are many factors that shape a country's telecom market, beyond the obvious ones such as the number and type of network operators, consumer behaviour and consumer budgets.

Important country specifics having an indirect influence may include the size and geography of the country (how hard or easy is it to build a mobile network), the size and make-up of the population (a younger population is more likely to embrace new technology quicker), the extent of fixed network services (a country with a less developed fixed network may adopt mobile services faster) and the level of urbanisation.

In this chapter we look at several of these aspects which we believe are the most important. It is difficult to measure the exact effect of these issues on the level of mobile price plans or to create a direct link, as it is often a combination of several factors determining prices. In some countries only a few factors may play a role, while in others all will have some influence.

The aim of this chapter is to offer an extra dimension of research, which may help to further explain how different price levels originate in certain countries and how prices may be affected in future.

We look at the most important general characteristics of a country that may influence how its telecom market develops.

The characteristics we considered, including a number of telecoms characteristics, are summarised in Table 10 below. We have provided the general direction of the theoretical effect on pricing these characteristics could have. As a starting point, we assume that providers aim to maximise pricing, although this isn't necessarily the case. A provider banking on elasticity could lower pricing in order to drive volumes.

Table 10: Market characteristics and their influence on mobile prices, assuming providers aim to maximise prices rather than bank on price elasticity effects. Source: Telecompaper

Characteristic	Theoretical effect on pricing
Geography, including level of urbanisation	Higher capex and opex could lead to higher prices.
Population, including the percentage of under 25s	Dense population and a high proportion of under 25s may lead to higher demand and thus lower prices.
Number of tourists (roaming income)	Higher roaming income could lead to lower pricing.
Level of VAT	Higher VAT could pressure demand and as a result lead to (even) higher pricing (for revenue compensation).
Average income/disposable income	Higher income means more to spend on telecoms, which could allow operators to raise tariffs.
Number of MNOs and MVNOs and mobile coverage	More competition generally means lower prices. Increased coverage can lead to higher usage (which could allow providers to drop prices) but also to higher maintenance

Characteristic	Theoretical effect on pricing
	costs, esp. when rural coverage is expanded (which would lead to higher prices).
Mobile penetration/smartphone penetration	Higher penetration leads to higher usage, making room for providers to lower prices.
Costs of recent 3G and 4G auctions	The cost of licenses are amortised and lower profits. Hence, tariffs could rise when license costs rise.
Level of MTA	Dropping revenues from regulatory effects on termination income could bring providers to raise prices in order to compensate for the effect.
Penetration fixed network	Competition between fixed and mobile broadband could have a downward effect on pricing.
Telecom usage (average use of min/SMS/MB)	Higher usage leads to higher network utility (occupancy) and hence lower relative pricing, giving providers room to lower tariffs.

9.2 Geography affects cost of building and maintaining a network

The geography of the countries has an impact in terms of building and maintaining a mobile network. The Netherlands for example have a virtually flat surface and is quite small in size, in both square kilometres and population, compared to countries such as France, Germany, Italy and Spain, which have mountainous areas and are much larger in size and population. Population density is a factor as well; nationwide network coverage can be achieved much faster in densely populated countries such as the Netherlands, compared to those with small, disperse populations, such as Sweden. Countries with a large geographic area also require more costs for building and maintaining the network, as they will need many more towers, antennas and other equipment for a well-functioning network. So differences in capex (construction) and opex (maintenance) will theoretically be reflected in higher tariffs.

Whether a country has a large part of the population living in cities or in rural areas also has an influence. It is generally easier to reach more people in urban areas than in rural areas. For example in Sweden, which is known for its early launch of 4G, many rural places are still without LTE coverage and only have access to 2G. At the same time, while it may be easier to cover cities, these also require more equipment to address possible congestion, as more people will be using the same cells/towers. The location and the number of towers/cells is also of importance when it comes to coverage.

Table 11: Countries with their respective size in square km and share of population based on degree of urbanisation using LAU Level 2 areas⁸. Source: Eurostat

Country	Total size in km ²	% densely populated	% intermediate density	% thinly populated
France	548,763	46	21	33
Spain	493,498	48	25	27
Sweden	449,159	38	31	31
Germany	357,114	34	42	24
Italy	301,392	33	42	25

⁸ http://epp.eurostat.ec.europa.eu/portal/page/portal/degree_urbanisation/introduction

Country	Total size in km ²	% densely populated	% intermediate density	% thinly populated
United Kingdom	244,436	57	30	13
Austria	83,921	30	29	41
Ireland	69,883	35	21	44
Denmark	42,853	34	21	45
Netherlands	37,357	43	42	15
Belgium	30,666	27	57	16

9.3 Size and make-up of population

The population pyramid of a country is another contributing factor. A country with a large percentage of youngsters is more likely to have a larger telecom customer segment that wants to adopt the latest trends in telecommunication than a country with a large percentage of elderly people. In the current mobile market, that can influence the take-up of smartphones, which in turn has an effect on the usage of the various mobile services. Whether young people will actually follow the latest trends is also related to the general wealth of the country, as youngsters will often (partially) depend on their parents for their telecom expenses.

Table 12: Population size and percentage of population under 25 years. Source: Eurostat (2012 data, some population figures still provisional)

Country	Population	% of population <25 years
Germany	81,843,743	24
France	65,327,724	31
United Kingdom	63,256,141	31
Italy	60,820,696	24
Spain	46,196,276	25
Netherlands	16,730,348	30
Belgium	11,094,850	29
Sweden	9,482,855	30
Austria	8,443,018	27
Denmark	5,580,516	30
Ireland	4,582,769	34

9.4 Number of tourists affects roaming revenues

Another factor is the number of tourists visiting a country, as more foreign visitors will mean more roaming revenues for the mobile operators. Although generally speaking roaming constitutes a small part of an operator's income, the share is much larger for operators in countries with a high number of tourists (such as France, Spain and Italy) than those in e.g. Sweden. Although no public data was available on the separate

countries, the WTO figures below show that indeed countries such as France, Spain and Italy receive a much greater number of tourists than Nordic countries such as Sweden and Denmark.

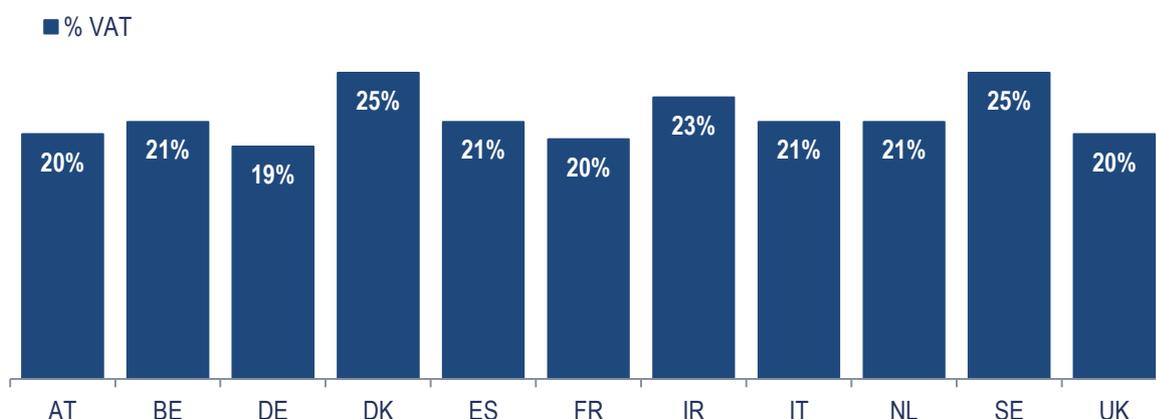
Table 13: International tourist arrivals per region, in millions. Source: World Tourism Organisation

Country	2011	2012
Europe	516.9	534.4
Of which		
Northern Europe	64.8	65.1
Western Europe	161.1	166.5
Central/Eastern Europe	103.9	111.6
Southern/Mediterranean Europe	187.0	191.2

9.5 Western European VAT levels vary from 19% to 25%

VAT levels across Western Europe vary from 19 percent to 25 percent, with Germany the lowest and Denmark and Sweden the highest. So a consumer in Sweden pays 6 percent more for the same item than a consumer in Germany. Therefore when doing international comparisons, it is generally better to compare prices without VAT. However, when including a comparison based on PPP (Purchasing Power Parity) it is necessary to take prices including VAT as that is the way PPP is calculated (see also page 15, paragraph 3.8).

Figure 13: VAT rates in various European countries (in percentages). Source: EU tax database, <http://www.tmf-vat.com/vat/eu-vat-rates.html>



9.6 Consumer financial situation contributes to MNO's ways of marketing tariffs

The amount consumers have available to spend on goods and services is also one of the many factors determining prices, including telecom prices. For example, prices for daily goods such as bread are much lower in several Eastern European countries than in Western Europe, in recognition of the fact that wages are lower, people earn less and so have less to spend. No retailer or operator will price its goods at such a level that no-one can afford to buy it.

There are many parameters available to assess the financial situation of consumers. When considering the effects of income on the telecom market, the household net-adjusted disposable income is a good indicator as it shows the average amount a household has available for spending on goods and services in a year

after paying taxes, including the basics such as food and clothing as well as other items such as household goods, sports activities and a mobile phone and tariff plan.

The table below shows that there is a considerable difference between the amount households in Austria (the highest level) and Spain (the lowest level) have available for spending per year. This illustrates how many country characteristics have only an indirect impact on mobile prices, and disposable income is just one of many factors affecting tariff development. Austria has in fact some of the lowest mobile prices in Europe, despite having the highest income. While we can assess a consumer's financial situation, we cannot predict how they will choose to divide up their available income. For example, the median TCO for a particular high-end phone plan may be the same in two countries, but the consumer in the country with the lower income must spend a much higher percentage of his disposable income to acquire that plan.

Table 14: Household net-adjusted disposable income in USD at current PPP per capita. Source: OECD Better Life Index⁹

Country	Household net-adjusted disposable income in USD
Austria	28,852
Germany	28,799
France	28,310
United Kingdom	26,904
Belgium	26,874
Sweden	26,242
Netherlands	25,493
Denmark	24,682
Italy	24,216
Ireland	24,104
Spain	22,847

9.7 Number of MNOs and MVNOs and mobile coverage

All researched countries have either three or four MNOs. All countries also have various MVNOs competing for the consumers' attention and money. The number of MNOs may have some effect on the level of competition within a country's telecom market, especially if they also have second brands in the market, although it is more likely that the number of virtual players is of greater influence. The number of providers a consumer can choose from has a large effect on the telecom market and by extension its pricing levels. A few providers will most likely lead to little competition, which often means high prices.

⁹ Household net-adjusted disposable income is the amount of money that a household earns, or gains, each year after taxes. It represents the money available to a household for spending on goods or services. <http://www.oecdbetterlifeindex.org/topics/income/>

Table 15: Number of MNOs and active MVNOs per country. Source: Telecompaper

Country	Number of MNOs	Number of active MVNOs ¹⁰
Austria	3	11
Germany	3	81
France	4	54
United Kingdom	4	71
Belgium	3	35
Sweden	4	18
Netherlands	3	55
Denmark	4	11
Italy	4	18
Ireland	4 ¹¹	6
Spain	4	32

Mobile coverage is often discussed, but operators and regulators use a wide range of definitions, from households or premises covered to the percentage land area covered. It was therefore not possible to gather comparable figures for all countries. Generally it can be said that in all the countries researched there is now near-national (in terms of land area) coverage for 2G. Of course there will always be areas, such as in the north of Sweden or mountains of Austria, where there will be no mobile reception possible. 3G networks have also been rolled out nationally in all the countries, although likewise no country will have full, 100 percent coverage. Only a few countries (Sweden, Denmark, Austria) already have established 4G networks, as in several countries (Netherlands, Germany, France) operators are still busy rolling out 4G, and in some others, the auction of 4G spectrum still needs to take place (Ireland, Belgium).

9.8 Mobile/smartphone penetration could also have an indirect effect on pricing

The level of mobile penetration can also have an indirect effect on pricing, as when everyone has a mobile phone, the providers are likely to use different approaches to entice customers away from competitors than when they can focus on reaching people who don't yet have a mobile phone/plan. All of the countries covered in this research have a mobile penetration above 100 percent, as many consumers have more than one SIM and/or multiple devices.

While the overall level of mobile penetration likely no longer has much effect in our research countries, pricing levels may be affected by smartphone penetration. While comparable data for all our countries was not available, we have assembled data from several sources below to give an indication of the growing popularity of smartphones.

¹⁰ Based on Telecompaper's MVNO database, please be aware the actual number may vary as it fluctuates regularly. It includes independent MVNO and (E)SP excludes mobile brands owned by MNOs

¹¹ Since our tariff plan check, 3 Ireland has bought O2 Ireland, meaning there will soon be 3 MNOs in Ireland

Table 16: Mobile and smartphone penetration by country. Source: Various and Telecompaper

Country	Mobile penetration, % ¹²	Smartphone penetration, %
Austria	160	68 ¹³
Germany	138	62 ¹⁴
France	112	65 ¹⁵
United Kingdom	122 ¹⁶	51 ¹⁷
Belgium	111	42 ¹⁸
Sweden	146	80 ¹⁹
Netherlands	122 ²⁰	61 ²¹
Denmark	148	80 ²²
Italy	163	62 ²³
Ireland	119	50 ²⁴
Spain	110	NA

Increasing smartphone usage has led consumers to change their mobile communication behaviour. Rather than using their mobile phone for mostly voice and SMS, they are now using more data services. Many providers have adjusted their propositions accordingly and changed their tariff structures. A lot of plans now include allowances for minutes, SMS and MB, making it impossible to calculate an average price per unit without making an arbitrary choice about which percentage of the MAF goes to each service. Some providers are also offering DIY pricing where consumers can make up their own plans, for example choosing only data and voice or only data and SMS.

9.9 Cost of auctions, LTE roll-out will need to be earned back

The mobile providers in all the countries researched have had to pay out large sums of money to obtain spectrum in a number of licence auctions. In the last few years we have seen auctions for spectrum in the 3G and 4G bands, which the operators need to be able to offer voice and data services. Although it is impossible to prove a direct link, it is logical to assume that at least a part of the costs of these auctions are incorporated into the price levels set for their propositions, as the operators need to earn back the money spent. Countries where operators had to pay what some have termed excessive amounts may have seen some price increases as operators try to accelerate their return on the cost of licences.

¹²At Q4 2012, based on information found at each country's regulator. Each regulator may differ in the definitions used, e.g. some include number of data cards of M2M SIMs while others do not. It was not possible within the time frame of this research to try to recalculate all the figures to the same standard.

¹³Austrian regulator, RTR annual review 2012

¹⁴<http://www.telecompaper.com/news/german-smartphone-penetration-grows-to-62-nielsen--959634>

¹⁵<http://frenchweb.fr/wp-content/uploads/2013/09/Infographie-Mobile-septembre-13.jpg>

¹⁶Based on Telecompaper UK Mobile Operator excel Q4 2012 as Ofcom does not give mobile penetration figures

¹⁷UK regulator Ofcom, UK Market Info Charts Q1 2013

¹⁸<http://www.telecompaper.com/nieuws/gfk-bijna-1-miljoen-tablets-verkocht-in-belgie--921021>

¹⁹Regulator has no information. Q4 2012 according to Tele2 CEO, <http://www.aktiespararna.se/analysguiden/Hitta-Bolag/Teleoperatorer/Tele2/Nyheter/2013/Tele2-iPhone-5-rabatter-paverkade-klart-negativt-4-kv---VD/>

²⁰Based on Telecompaper Dutch Mobile Operator report Q2 2013, figure for Q4 2012

²¹Based on Telecompaper Dutch Smartphone User Q4 2012

²²Regulator had no information. <http://www.telecompaper.com/news/danes-least-satisfied-with-smartphone-battery-survey--942766>

²³<http://www.telecompaper.com/news/62-of-italians-own-a-smartphone-mostly-used-for-texting--927392>

²⁴Irish regulator ComReg, Irish Communications Report Q1 2013

In some of the countries researched (such as Sweden), 4G has been up and running for a while, while in others part of the LTE spectrum still needs to be auctioned off (2,600MHz in Ireland). In most of our eleven countries the auctions took place during 2012 and 2013, and so operators are now busy rolling out their 4G networks. It has been noted that in several countries where 4G is in the process of being rolled out, the first operator to do so has been offering special 4G plans at a premium (EE in UK, KPN in NL). Judging by the situation in Sweden however, we believe that that effect on pricing is for a limited period. Once 4G is the de-facto network, it no longer represents a unique selling point and the premium disappears.

In some countries, roll-out conditions have been attached to the spectrum licences, such as the obligation to cover rural areas in Germany and Denmark. As building a network in rural areas is generally more expensive than in urban areas (to reach the same level of population coverage), these operators may incur extra costs.

We have calculated the prices paid for mobile licenses in auctions that took place between 2010 and today (see Table 17). We have expressed the prices in eurocents per MHz per inhabitant per year (far right column). Details from regulators were not sufficient to make this calculation for each individual spectrum band. In itself, this would certainly make sense, since e.g. the 800 band is regarded more valuable than any other because of the benefits of 'low' spectrum and because this spectrum was mostly new to operators (most 3G services are in 'higher' bands such as 1900 and 2100).

Taking all spectrum together, we can see that some auctions delivered remarkably low prices, while others ended up at high levels. Even within a single country this becomes apparent: in the Netherlands, the 2600 spectrum sold for just 0.006 cents, whereas the multiband auction generated 3.613 cents per MHz per inhabitant per year.

Further, spectrum was sold at low prices in for instance Denmark (0.065 cents) and at high prices in Belgium (3.163 cents), Spain (3.926 cents), Austria (4.507 cents) and France (4.490 cents for 800 spectrum and 6.063 cents for 2100 spectrum).

Table 17: Auctions in Europe since 2010, and the cost per MHz per inhabitant per year in eurocents. Source: Telecompaper

Country	800	900	1X00	2X00	Auction (end date)	Paid (EUR mln)	Total MHz	Population (mln)	Duration (years)	cents/MHz/pop/year
France				X	May-10	582	10	65.3	15	6,063
Austria	X	X	X		Oct-13	2,014	280	8.4	19	4,507
France	X				Dec-11	2,639	60	65.3	15	4,490
Spain		X			Nov-11	169	5	47.2	19	3,926
Netherlands	X	X	X	X	Dec-12	3,804	360	16.7	17,5	3,613
Belgium		X	X	X	Mar-11	206	59	11.0	10	3,163
Ireland	X	X	X		Nov-12	855	260	6.4	17,5	2,935
Sweden	X				Mar-11	231	60	9.5	25	1,620
Italy	X		X	X	Sep-11	3,945	240	60.8	19	1,423
Denmark				X	Jun-12	99	60	5.5	22	1,368
Germany	X		X	X	May-10	4,385	359	81.8	15	0,996
Sweden			X		Oct-11	148	70	9.5	25	0,891
UK	X			X	Feb-13	2,693	245	63.2	20	0,870
France				X	Sep-11	936	140	65.3	15	0,683
Spain	X	X	X		Jul-11	1,650	270	47.2	19	0,681

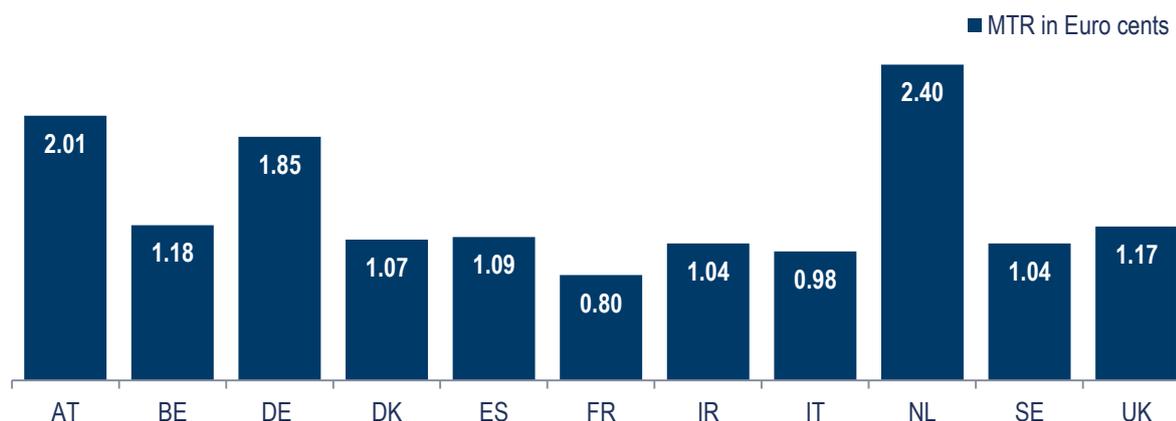
Country	Auction				Paid (EUR mln)	Total MHz	Population (mln)	Duration (years)	cents/MHz/pop/year
	800	900	1X00	2X00					
Denmark				X	135	185	5.5	20	0,665
Belgium				X	78	135	11.0	15	0,350
Spain			X		42	30	47.2	19	0,158
Austria				X	40	190	8.4	16	0,155
Denmark	X	X			2	30	5.5	15	0,065
Netherlands				X	3	130	16.7	20	0,006

9.10 Continuous drop in mobile termination rates means lower revenue for MNOs

Each country’s regulator can set the level of MTR (Mobile Termination Rate)²⁵, although they are expected to comply with EU recommendations. As can be seen in the graph below, the MTRs still differ considerably across our eleven countries, with France having the lowest average level of 0.80 eurocents and the Netherlands the highest at 2.40 eurocents

As operators lose revenue when MTR levels are reduced, it is to be expected that they will try to get some of that revenue back via direct or indirect price increases.

Figure 14: Average levels of MTR in eleven Western European countries per 1st of July 2013, in Euro cents. Source: Regulators info.



9.11 Development and penetration of fixed networks

Another factor influencing the mobile market is the penetration of fixed telephony and fixed broadband. A highly developed fixed network with Wi-Fi extensions could limit mobile services take-up. Operators such as Ziggo in the Netherlands are already trying to market this as a partial alternative to mobile. However, in rural areas without access to decent fixed broadband, it may well mean that consumers are more likely to choose mobile-only communications, as fixed is not a viable competitor. This is what happened in Austria, where fixed penetration and development was lagging, and so the mobile market flourished as a replacement service. And in Sweden, Telia has been allowed by the regulator to phase out 50,000 rural lines, for which it has an LTE-based solution as an alternative.

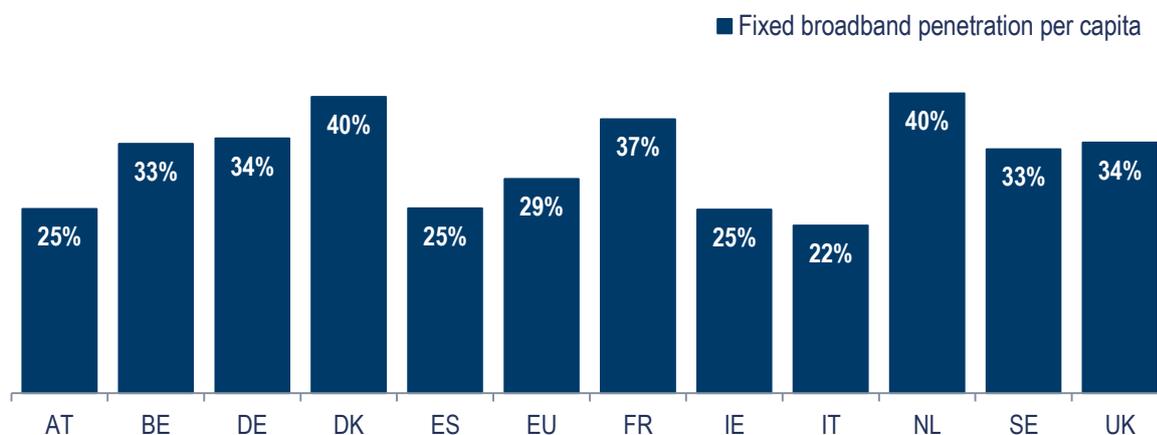
²⁵ MTR stands for mobile termination rates, these rates are the charges which one telecommunications operator charges to another for terminating calls on its network. In Europe these are mostly regulated.

In general, one could argue that the presence of alternative networks, be it fixed or WiFi, undermines the value of a mobile megabyte. As a result, consumers will be less willing to pay for a mobile megabyte, but the net effect on pricing remains unclear. Operators could raise pricing to compensate for the loss of volume. But instead they could drop pricing to better compete with fixed/WiFi and bank on increased volumes to make up for any traffic loss.

Things are complicated further by the varying intensity of competition within the mobile segment. Austria has long had a crowded mobile market, with five operators. Consolidation has brought this number down to three relatively recently.

As can be seen in the following graph from the EU Digital Scoreboard, the Netherlands and Denmark have the highest per capita fixed penetration, while indeed Austria has a much lower penetration.

Figure 15: Fixed broadband penetration per capita at Jan 2013. Source: EU Digital Scoreboard



9.12 Average mobile consumption differs across WE countries

Based on information from the regulators²⁶, we have calculated average monthly usage of minutes, SMS and MBs (see Figures below). This was based on the total number of minutes, SMS and MBs provided by the regulators and then divided by the total number of SIMs in that country. The total number of SIMs includes both pre- and postpaid as well as business and consumer, even though not every SIM is necessarily used for all three services. We deliberately chose not to divide it per capita, as those without a mobile phone do not contribute to the average use.

The definitions used by the various regulators are not exactly the same, and this should be taken into account when looking at the graphs below. For example some regulators included MVNO numbers and/or M2M SIMs, while others did not.

Average use by definition means that some people will use less, while others will use (much) more. Nevertheless, it can provide an indication of the differences in mobile communication consumption across the various countries. It also shows that average use differs significantly from what operators tend to offer in their tariff plans. It also strengthens our belief that plans with more than 1,000 minutes are effectively unlimited plans, as very few people will use up that many minutes in one month.

Higher usage leads to higher utilisation of the network and hence a higher and quicker return on investment. Theoretically, this would lead to lower pricing (*ceteris paribus*).

²⁶ Austria: RTR; Belgium: BIPT; Denmark: Erhvervsstyrelsen; France: Arcep; Germany: Bundesnetzagentur (BNA); Ireland: Comreg; Italy: Agcom; Netherlands: ACM; Spain: CMT; Sweden: PTS; UK: Ofcom

Figure 16: Average monthly minutes per SIM card per country²⁷. Source: National regulators, Telecompaper

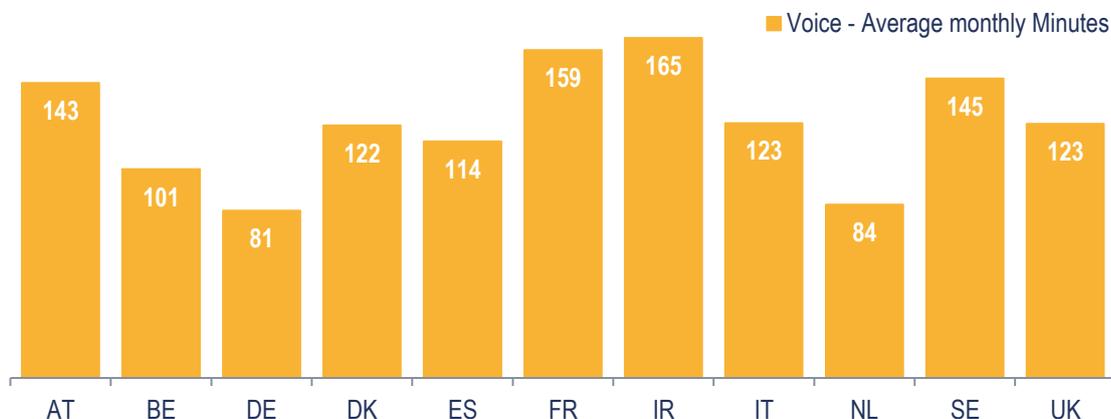
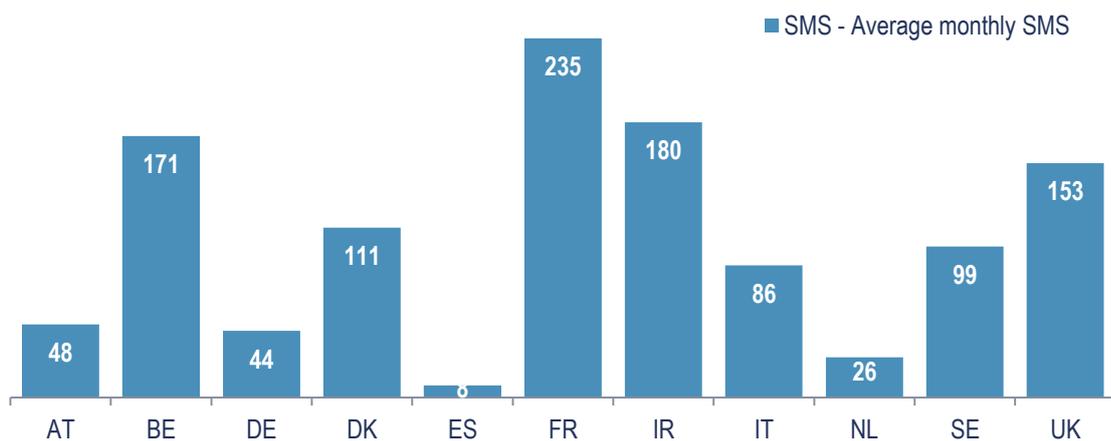
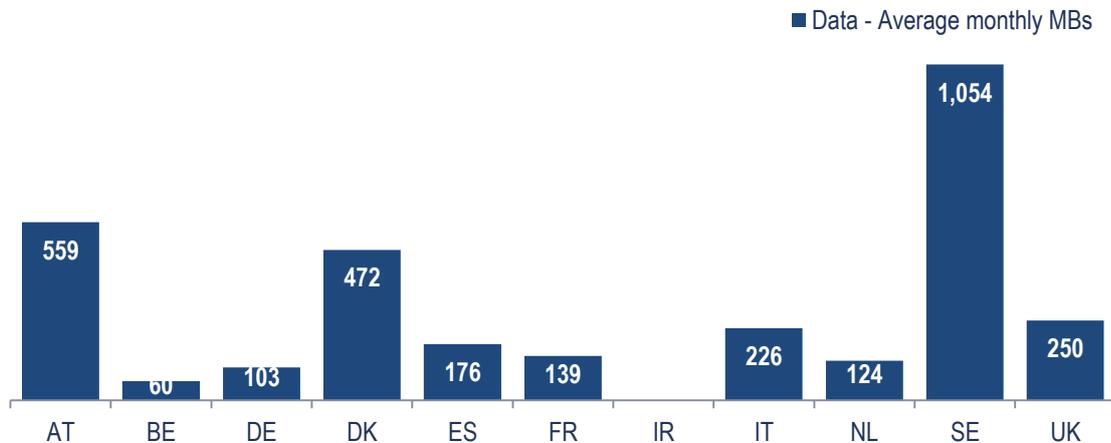


Figure 17: Average monthly use of SMS per SIM card per country²¹. Source: National regulators, Telecompaper



²⁷ Data in some countries (Belgium, UK, Italy, Sweden and Germany) is based on full year 2012 results, the Netherlands, Ireland, France and Austria based on Q4 2012 while Denmark is only based on second half 2012 data.

Figure 18: Average monthly use of MBs^{28,29} per SIM card per country²¹. Source: National regulators, Telecompaper



In addition to all of the above factors, other issues that could influence mobile tariffs include the popularity of quad-play offers (where often the mobile plans from the same provider are offered at a discount) and any national or local regulations making the building or maintenance of mobile networks more complicated, such as environmental demands.

We have named here only some of the innumerable factors determining prices. The variation in prices shown by our data can be explained in many ways, and it is essential to bear in mind that each country will have its own particularities.

²⁸ Irish regulator did not have insights into MB usage in their country.

²⁹ With the deployment of LTE networks, it is to be expected that data usage will increase

10 OVERVIEW NETHERLANDS

To round off our report, we have a few closing remarks, as well as a short overview of the pricing situation in the Netherlands.

First of all, we wish to stress that making a truthful and meaningful comparison, as we feel we did, renders drawing simple conclusions virtually impossible. We needed to introduce a level of complexity in order to make a like for like comparison, and the price we paid for this was a complex answer to the question: ‘which country is cheap and which country is expensive for mobile communications?’

Next, our demarcation (see Chapter 3) included only analysing advertised plans on offer. This implies that we haven’t made corrections for actual usage, and nor could we determine which plans are more popular than others. Put differently: a country may appear expensive on account of the availability of a large number of expensive subscription plans. But if none of these is very popular and instead people generally opt for a few simple and cheap plans, consumers have no reason to complain. Having expensive plans available may simply be a way for operators to try and entice people into buying expensive plans. But ultimately this could be an entirely idle effort.

Further, we have taken an ‘average consumer’ as a starting point, a person who is led not only by price but also by things such as brand image, perceived network quality, etc. In line with this approach, we decided to compare median prices in the ranges that we defined. However, a true ‘homo economicus’, led by price and by price alone, may still have options for (much) cheaper plans than the median prices suggest. This is the reason why we also compared pricing based on the cheapest available package in each bracket.

We also need to point out that some packages appear unreasonably expensive, but this may very well be the result of a number of extras, such as international calling minutes, unlimited SMS or free on-net calls.

All in all, we made eight separate comparisons: plans with a high-end, mid-range, low-end handset or no handset at all; and for each of these four choices, we looked at both median pricing, as well as the lowest available pricing for the 25 ranges we defined. This approach represents the buying decision of a typical consumer: the first choice often is for the type of handset, and then a number of minutes and megabytes is chosen.

Finally, despite all these reservations and complications, the central question (‘which country is cheap, and which one is expensive’) can still be answered – up to a certain extent. Based on all the comparisons we made, it is safe to say that Austria, Sweden, Denmark and France are generally ‘cheap places’ for mobile communications – at least at the time of measurement (summer 2013).

10.1 Netherlands

The Netherlands are characterised by a high population density and a relatively quick take-up of new technology and services. Rather uniquely, it has three MNOs with a fourth network under construction. The arrival of a new entrant, Tele2, may shake up the market, but it remains to be seen what the net effect of this entrance will be. After all, Tele2 is already present and currently is among the nation's largest MVNOs (of a total of more than 50) with over 600,000 subscribers. LTE services have been launched by KPN (February 2013) and Vodafone (August 2013), with T-Mobile to follow shortly (November 18). Tele2 has not yet announced a set date; network construction is scheduled to be complete during 2015.

The MNOs are: KPN, Vodafone and T-Mobile. Other large providers, besides Tele2, are mainly sub-brands owned by the MNOs: Telfort (KPN), hollandsnieuwe (Vodafone) and Ben (T-Mobile). The mobile market in the Netherlands is characterised by a large number of plans, because of the DIY plans from four of the

players, giving consumers a choice of minutes and MBs (and SMS). Uniquely, for each handset option, the Netherlands had packages available in each combination of minutes and MBs in our matrix. Handset subsidies and promotions in general are quite common in the Dutch market. MAF prices mostly vary between EUR 10 and 40 PPP per month. The majority of data plans contain between 500 and 1,500 MB per month. Unlimited data is not part of any subscription available.

All in all, pricing in the Netherlands showed mixed results. Especially in the high-end handset market it compared unfavourably to the EU11 average. In the SIM-only market however, the country performed markedly better, especially with much cheaper pricing available for combinations of up to 360 minutes and up to 2000 megabytes.

Reverting to the lowest TCO view brings about little change, with the exception of the high-end handset market. Now, there are several options available for consumers to be cheaper off than the EU11 median, especially in the 360 minutes range.

11 APPENDIX - OPERATORS INCLUDED

Country	MNO	Low Cost Brand/MVNO
Austria	T-Mobile, A1, 3	tele.ring
Belgium	Proximus, Mobistar, Base, Telenet	
Denmark	TDC, Telia, Telenor, 3	Telmore (TDC), Call Me (Telia)
France	Bouygues, Orange, SFR, Free Mobile	B&You (Bouygues), Sosh (Orange)
Germany	O2, T-Mobile, Vodafone, Base	Blau (Base), Congstar (T-Mobile)
Ireland	O2, Vodafone, Meteor, 3	e-Mobile (Meteor)
Italy	TIM, Vodafone, Wind, 3	
Netherlands	KPN, T-Mobile, Vodafone, Tele2	Telfort (KPN), Ben (TMO), hollandsnieuwe (Vodafone)
Spain	Movistar, Orange, Vodafone, Yoigo	
Sweden	Tele2, Telenor, Telia, 3	Comviq (Tele2)
UK	EE, O2, Vodafone, 3	Orange and T-Mobile (EE)

12 APPENDIX - OTHER COMPARATIVE RESEARCH

12.1 Overview

We have noted an increase in recent years of studies making international comparisons of mobile communication prices. Before we set out on our own comparison, we looked at how other organisations tackled the issue. While each publication used its own method, the common ground was that they all used some form of basket methodology to create groups of users.

We have analysed the following research publications regarding international mobile price comparisons:

- OECD Communications Outlook 2013
- Rewheel June 2013
- BIPT Comparative Study of prices in Belgium, France, Netherlands, Germany, UK, 2012
- Ofcom International Communications Market Report 2012

12.2 OECD

The OECD is an international organisation made up of 34³⁰ countries. Every two years it publishes a report on telecom pricing across the OECD countries. The OECD has set up three baskets of low/medium/high user profiles. For each country the cheapest offer fitting the profile is chosen.

The OECD uses data based on market share. It includes a third operator in a particular country if the first two have less than 70 percent market share. The two largest operators also need to have a combined market share of at least 50 percent.

12.3 Rewheel

Rewheel is a Finnish research organisation, focusing on prices for mobile internet/mobile broadband usage. In June 2013 it published a report with price comparisons across the EU countries. Its baskets were based on various amounts of MB, with the same number of SMS included in all baskets and the number of minutes increasing after the third basket.

12.4 BIPT

BIPT is the Belgian telecoms regulator. It published a report on price comparisons between Belgium and five European countries in February 2013, with the research carried out in August 2012. It looked at prices in Belgium, France, Germany, Netherlands and the UK. Its baskets are based on the average usage of a Belgian consumer, with the aim of showing how much better or worse off a Belgian consumer would be in the other countries researched.

12.5 Ofcom

Ofcom is the British telecom regulator. It publishes a yearly report on International Communications, including price comparisons. Its baskets are based on 'typical' households in the UK, France, Germany, Italy, Spain and the US. Mobile is just one component of the baskets, although Ofcom does conduct an analysis

³⁰ <http://www.oecd.org/about/membersandpartners/>

of the separate services. Its mobile analysis is a thorough one, as it includes MAF, connection charges, handset prices and billing method.

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14 APPENDIX - GLOSSARY

DIY plan	Do-It-Yourself plan, tariff whereby consumers can mix and match their number of minutes/SMS/MBs, e.g. choose to have 0 minutes, 100 SMS and 2 GB or 500 minutes, 0 SMS and 1 GB or 200 minutes, 200 SMS and 500 MB or any combination of the different levels of minutes, SMS and MBs set by the operator.
FUP	Fair Use Policy, policy used by operators to limit usage, based on either x times the average use or a set figure such as unlimited minutes included but calls can last no longer than 3 hours per call.
LTE	Long-term evolution, 4G-standard.
MAF	Monthly Access Fee, the standard monthly fee to pay for a postpaid subscription
MNO	Mobile Network Operator
MTR	Mobile termination rates; the regulated rate the termination mobile network operator is allowed to bill the originating mobile operator for.
MVNO	Mobile Virtual Network Operator, does not own its own network, buys wholesale from MNO.
Postpaid	Type of mobile plan where one pays a standard fee at the end of the month
PPP	Purchasing Power Parity, are indicators of price level differences across countries. They indicate how many currency units a particular quantity of goods and services costs in different countries
TCO	Total Cost of Ownership. We have calculated this based on the most important elements of mobile communication: a handset price, the MAF for using minutes/SMS/MBs, any connection fee and have deducted any promotions from this.