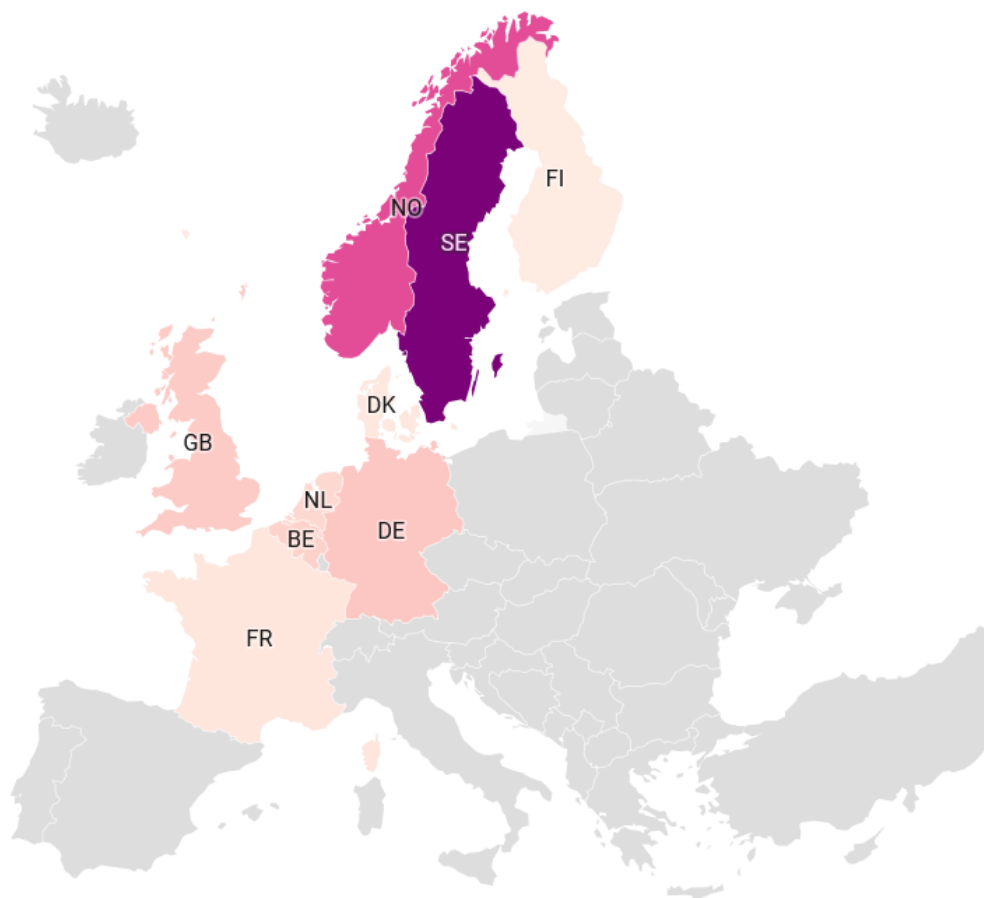


Benchmarking Danish fibre broadband pricing vs. eight other European markets

Total average 2-year fee for new build fibre subscription [PPP DKK]



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1. Executive summary

This analysis is commissioned by Fiberalliancen (part of Green Power Denmark) and compares Danish fibre broadband consumer pricing with that of eight comparable European countries: Sweden, Norway, Germany, the Netherlands, the UK, Belgium, France and Finland.

Purchasing power adjustment has been done to allow for better comparability of prices across the markets.

The analysis has gathered all fee components – all monthly subscription fees as well as all one-time fees – and uses the **total 2-year fees** as the ultimate comparison. We separate between two cases:

- The **new build** case in which a detached house owner connects to fibre broadband for the first time
- The **existing connection** case in which a new consumer subscribes to fibre broadband in a house that already has an existing fibre connection

New build: After purchase power adjustment, the total 2-year new build fees for Danish fibre broadband are **among the more affordable** in our nine European markets. Only France is generally offering lower total fees.

Existing connection: After purchase power adjustment, the total 2-year existing connection fees for Danish fibre broadband are **among the more affordable** in our nine European markets. Only France is generally offering lower total fees.

These positions were obtained with the following characteristics of the fee composition:

- Danish fibre broadband **subscriptions** are, alongside subscriptions in Finland and France among the most affordable among our nine European markets.
- Danish **one-time fees for new build customers** are moderate, in line with Germany, Belgium, the UK and France. Two Nordic countries, Sweden and Norway, operate with much higher one-time new build fees than the other seven markets.
- Danish **one-time fees for existing connections** are at the moderate-to-high range of our international spectrum.

Denmark's favourable total 2-year fee position comes although Denmark's **minimum contract duration** of 6 months is approximately 4 months shorter than the average of all offers in all countries. Denmark's 6 months isn't the shortest, though; there are providers offering fibre broadband on non-binding contracts. Our analysis can't prove any cross-market correlation between the minimum contract duration and the fees.

Since this is an update of a [similar analysis done in 2021](#), it also examines **how the fibre pricing developed from June 2021 to July 2022**. During these thirteen months – for the eight markets analysed also in 2021 – 46-48%¹ of comparable 2-year fees increased, 25-26% decreased and 28% didn't change. Two markets bucked this trend to instead develop towards lower 2-year fees: The UK and Denmark.

¹ Depending on if the new build or the existing connection case

According to Ookla Speedtest data, Denmark has the fixed broadband networks with the **highest median throughput**. Since Denmark generally has low fibre broadband subscription fees, this could have contributed to a willingness to purchase higher speed subscriptions.

The COVID-19 pandemic strained the global supply chains and created shortage of certain material and resources which has had an impact on the speed and the cost associated with the fibre rollout. On top of this, Russia's war on Ukraine led to a significant increase in market prices for energy, driving inflation to levels not seen in thirty years. This analysis ends with a section dedicated to assessing the impact on the fibre providers. It shows that **both OPEX and CAPEX will be negatively influenced by inflation**.

2. Background

This analysis is commissioned by Fiberalliancen (part of Green Power Denmark) and compares Danish fibre broadband pricing for consumers with that of eight other European countries.

3. Peer group

The following nine **countries** form the peer group of this analysis:

- Denmark
- Sweden
- Norway
- Finland
- Germany
- Netherlands
- United Kingdom
- Belgium
- France



Figure 1. The nine countries covered by this analysis

These countries have been selected based on their geographical location in North and West Europe but also because they represent markets that show some similarities with Denmark:

December 2021	Fixed broadband household adoption	Share of fixed broadband with >=30 Mbit/s download throughput	Share of fixed broadband with >=100 Mbit/s download throughput	Share of households with fibre availability	Share of fixed broadband subscriptions on fibre	Share of broadband subscriptions being mobile data-only
Denmark	84%	83%	67%	² 79%	44%	30%
Sweden	85%	92%	88%	³ 84%	78%	25%
Norway	89%	⁴ 82%	⁵ 71%	⁶ 76%	66%	⁷ 15%
Finland	60%	63%	49%	49%	60%	53%
Germany	⁸ 91%	75%	39%	22%	7%	3%
Netherlands	⁹ 95%	94%	54%	57%	25%	10%
UK	¹⁰ 100%	¹¹ 66%	n/a	¹² 33%	8%	16%
Belgium	81%	97%	69%	¹³ 16%	2%	7%
France	¹⁴ 104%	58%	50%	¹⁵ 67%	46%	9%

The figures in the table above typically originate from the respective national regulatory authority – but note that some numbers have different age and that not all definitions are identical. Some of the extreme values – high or low – have been highlighted.

² First half of 2022

³ October 2020 <https://www.pts.se/sv/dokument/rapporter/internet/2021/pts-mobiltaacknings--och-bredbandskartlaggning-2020-pts-er-202116/>

⁴ December 2020

⁵ Share of consumer subscriptions June 2021

⁶ June 2021

⁷ FWA regarded as mobile data-only

⁸ Includes B2B subscriptions, thus exaggerating this figure

⁹ Includes B2B subscriptions, thus exaggerating this figure

¹⁰ Includes SME subscriptions, thus exaggerating this figure

¹¹ September 2021

¹² January 2022

¹³ Based on Proximus/Fiberklaar

¹⁴ Includes B2B subscriptions, thus exaggerating this figure

¹⁵ Based on a value of 20.4 million households stated by FTTH Council, September 2021. Arcep's reporting states more households than the French total and is likely using a different definition.

Based on the table above, three countries are clearly behind Denmark in fibre availability and adoption: **Germany**, the **UK** and **Belgium**. The incumbent operators in these countries – Telekom, BT/Openreach and Proximus – did for long resist fibre rollout to instead offer faster xDSL variants. These countries are also well served by modernised HFC (cable TV) networks. Finland is ahead in fibre share of base but behind on fibre availability.

The countries closer to Denmark – figures-wise – are **France**, the **Netherlands**, **Finland**, **Norway** and **Sweden**. With regards to fibre adoption, Sweden, Norway and Finland are well ahead of the other countries. Finland is though having the lowest fixed broadband adoption overall as mobile data-only subscriptions play a much larger role in Finland than elsewhere.

Tefficient has documented the currently publicly offered **fibre broadband consumer**¹⁶ **prices** of the **two largest**¹⁷ **providers** in the nine countries: The incumbent operator plus the largest alternative provider:

- Denmark: YouSee and Norlys (incl. Stofa)
- Sweden: Telia and Tele2
- Norway: Telenor and Telia
- Finland: Elisa and Telia
- Germany: Telekom and Vodafone
- Netherlands: KPN and Caiway
- UK: BT and Hyperoptic
- Belgium: Proximus and Orange
- France: Orange and Free

Across these 18 providers, the pricing of **76** different fibre broadband plans has been captured.

Recurring subscription fees as well as one-off fees have been captured.

A lower threshold of **100 Mbit/s** in download throughput has been applied.

All plans – except one from Proximus in Belgium which is limited to 150 GB per month – come with **unlimited data volume**.

All prices have been captured in between 30 June and 5 July 2022.

¹⁶ Many consumers, living in apartments, will typically subscribe to broadband services through a group agreement administered by the landlord or the housing association. These agreements are not public and the pricing of these could therefore not be included in this analysis. Effectively, this means that the analysis primarily captures the pricing of broadband services delivered to consumers living in detached housing.

¹⁷ As to the Netherlands, UK and Belgium, the second largest providers in the overall fixed broadband market – VodafoneZiggo, Virgin Media and Telenet – are not yet offering full fibre broadband widely, but rely mainly on HFC. Tefficient has thus replaced these providers with the second largest *fibre* broadband provider of each country. Statistics on size for alternative fibre providers are often hard to get, but Tefficient has assessed that this is Caiway in the Netherlands, Hyperoptic in the UK and Orange in Belgium.

4. Observed data issues

- Some fixed broadband providers are only stating prices after a **specific address** has been inserted. This is done since the pricing may depend on who (the provider or a regional infrastructure partner) is delivering the underlying broadband infrastructure. In some cases, Tefficient has been able to obtain complete price lists, but in other cases **example addresses** have been used to generate prices.
- **New build connection fees** (for new connections into homes) are sometimes more difficult to find than monthly subscription fees. The reason is that they can vary according to region and neighbourhood – but Tefficient also senses that these fees are negotiable in certain countries such as Norway and Sweden – often against a binding contract. All providers not stating connection fees in their price lists have been contacted directly by Tefficient to, at least, give indications of what the connection fees *typically* are.
- In two countries, **pure fibre broadband plans aren't offered** by the studied providers: In **Germany** all fibre broadband plans also come with fixed telephony (a type of double-play or "2p"). In **France** all fibre broadband plans also come with fixed telephony and with TV (triple-play or "3p").

5. Overview of pricing analysis

The following image is used in the analysis to help the reader navigate between the comparisons of different price components:

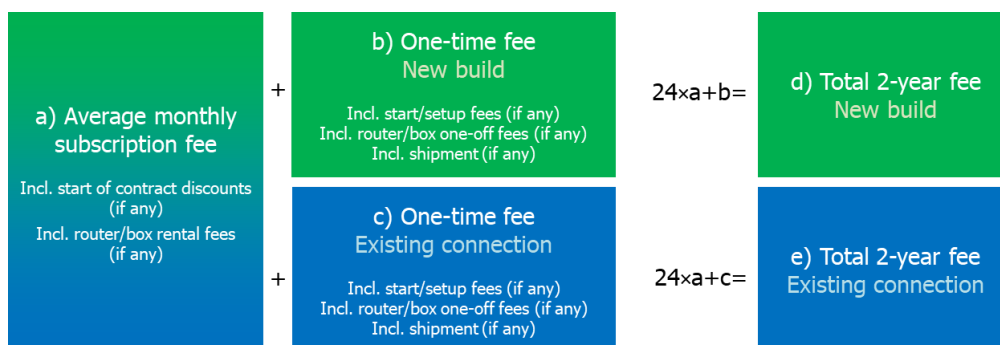


Figure 2. The price comparisons of the analysis outlined

The price component usually highlighted in the sales and marketing messages of the providers is the **monthly subscription fee**. Since different providers use different tactics to lower their monthly subscription fee – including start-of-contract discounts and a separate router or box rental fee – we will in this analysis calculate an *average* monthly subscription fee based on a 24-month subscription period. This price component is called a) in Figure 2 and is the same regardless of if the customer requires a new build or have/take over an existing fibre connection.

In certain countries, Sweden particularly, the **one-time fee for a new build** is significant. We call this price component b) and it will include also other one-time fees that providers might charge – such as router/one-off fees or shipment fees.

With an increasing reach of fibre networks, it will gradually become more common that a detached house already has an existing fibre connection – perhaps installed by the previous owner of the house. We call this price component c) – **one-time fee for an existing connection** – and it tends to be much lower than b) as no fibre installation and no digging are required.

The most complete picture of the pricing is obtained by comparing the *total* fees – subscription and one-time fees – over a certain time period. In this analysis we have calculated the **total fees over a 2-year period**. We call that d) for the new build option and e) for the existing connection option.

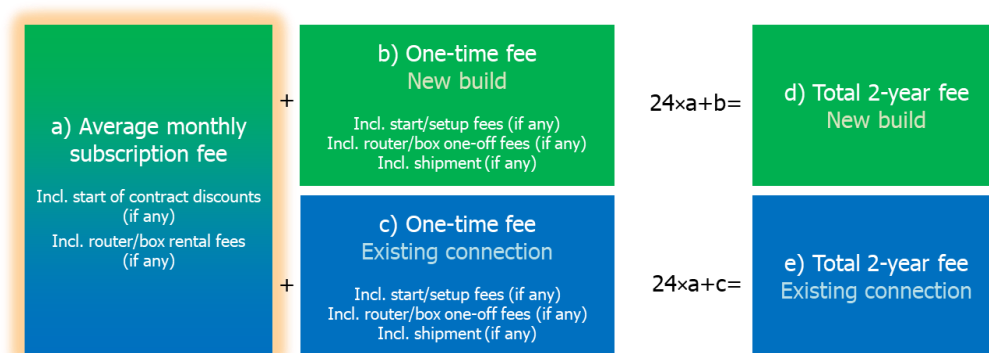
The component currently analysed will be highlighted in the beginning of each pricing section.

In order to introduce the purchasing power parity method, we will make the first pricing comparison a) twice:

- Actual fees in DKK
- Adjusted fees in PPP DKK – adjusted for general differences in country purchase power

The following pricing comparisons b)-e) will be in PPP DKK only.

6. Average monthly subscription fee



Fibre providers are generally using the monthly subscription prices as “sticker price” and hence trying to keep them as low as possible. A usual practice is to discount the price during a limited time upon start of a contract: We have found providers giving discount for the first month, the first 6 months, 12 months, 24 months and 36 months in our studied markets. This type of discounting is quite common in Denmark, Sweden, Finland, Germany, France, the UK and the Netherlands – but isn’t currently used by the providers covered in Norway and Belgium.

The habit to have different fees during different stages of a customer engagement means that it’s a big difference for the price comparison if we compare the prices during first month of an engagement – or later. To make the comparison as fair as possible, this analysis defines a **comparison period of 24 months**. We have calculated how much it will cost a customer during that time – and based on that calculated an **average monthly subscription fee** – valid for the first 24 months¹⁸.

Another, less common, way to make monthly “sticker price” low is to charge an additional monthly subscription fee for customers who need a **router**¹⁹. Two providers in our peer group – Vodafone in Germany and Telenor in Norway – have this practice. In this analysis we have included this router rental fee for Vodafone, but not for Telenor. The reason being that Telenor, unlike Vodafone, doesn’t require customers to use their router, only *recommends* it. Most providers in the analysis require their customers to use the router of the provider, but don’t charge a monthly subscription fee for it²⁰.

All plans – except one from Proximus in Belgium which is limited to 150 GB per month – come with **unlimited data volume**. In all other cases, the defining parameter for the monthly service subscription price is instead the download throughput – measured in **Mbit/s**.

¹⁸ Providers in the UK adjust prices annually based on the official Consumer Price Index plus, typically, an additional 3-4%. Since we can’t not say how large these prices changes will be, it’s not considered in this analysis which tends to underestimate the 2-year prices in the UK relative to other countries.

¹⁹ Or a triple-play box in countries where a pure fibre broadband option isn’t offered. In these cases, none of the providers studied however charge a subscription fee for a box.

²⁰ Often they charge a shipping fee, though, something this analysis takes into account when comparing the one-time and 2 year fees

Figure 3 below compares the average monthly subscription fee²¹ of all offered consumer fibre broadband subscription plans to the maximum download throughput (if at least 100 Mbit/s) in Danish kroner (DKK)²².

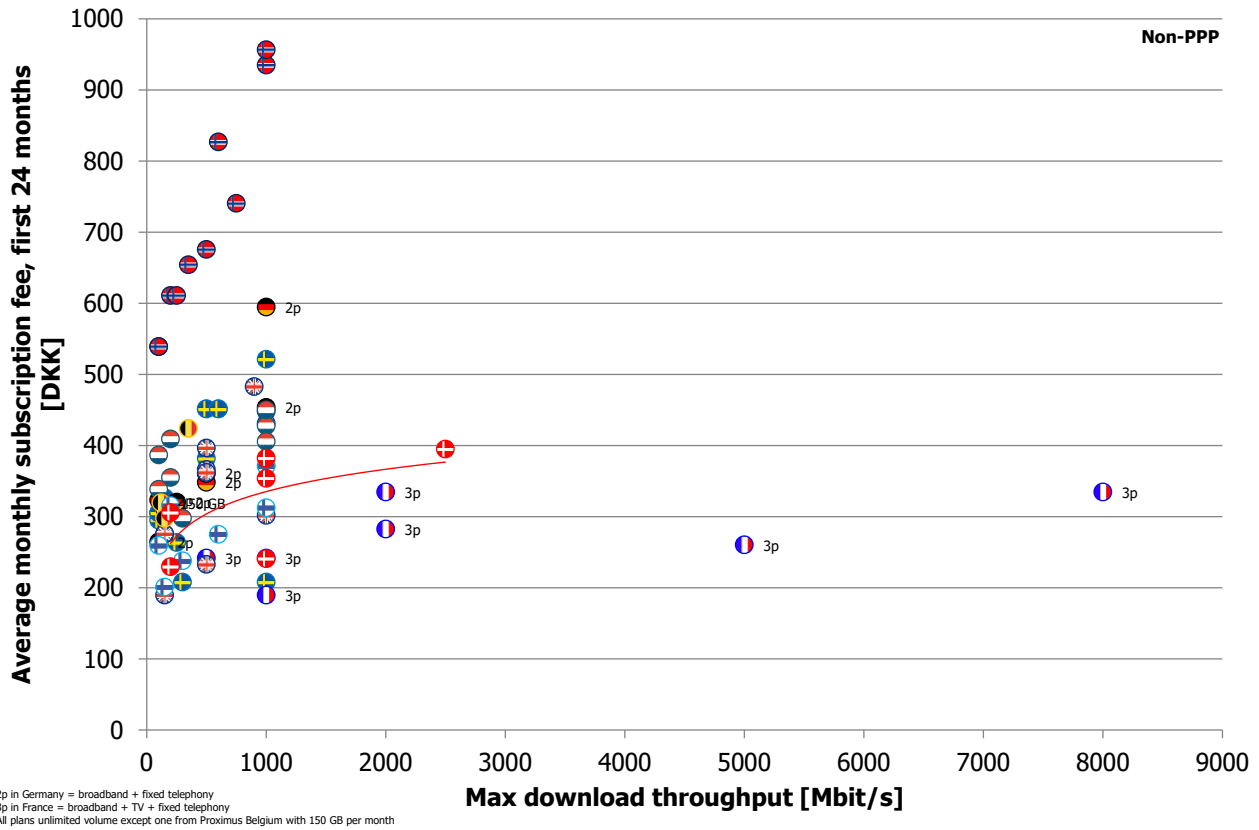


Figure 3. Comparison of the average monthly subscription fee in DKK during the first 24 months to the max download throughput in nine countries, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]

Let's first highlight that there are two French plans offering up to 5000 and 8000 Mbit/s maximum download throughput. These are both from Free and delivered with the Freebox Pop and the Freebox Delta router respectively. That throughput is shared over several ports on the router – the fastest port delivers 2500 Mbit/s. Since these two plans will decrease the readability in the part of the graph where most plans are, we will exclude them from the graphs in the rest of the report. Excluding them does not change the conclusions.

²¹ Excluding connection one-time fees, equipment one-time fees and other one-time fees (if any). The total costs will be compared later in the analysis. All prices include VAT (valid throughout the analysis).

²² Using the exchange rates of 30 June 2022: 1 NOK=0,71969 DKK, 1 SEK=0,69583 DKK, 1 GBP=8,62207 DKK and 1 EUR=7,43866 DKK

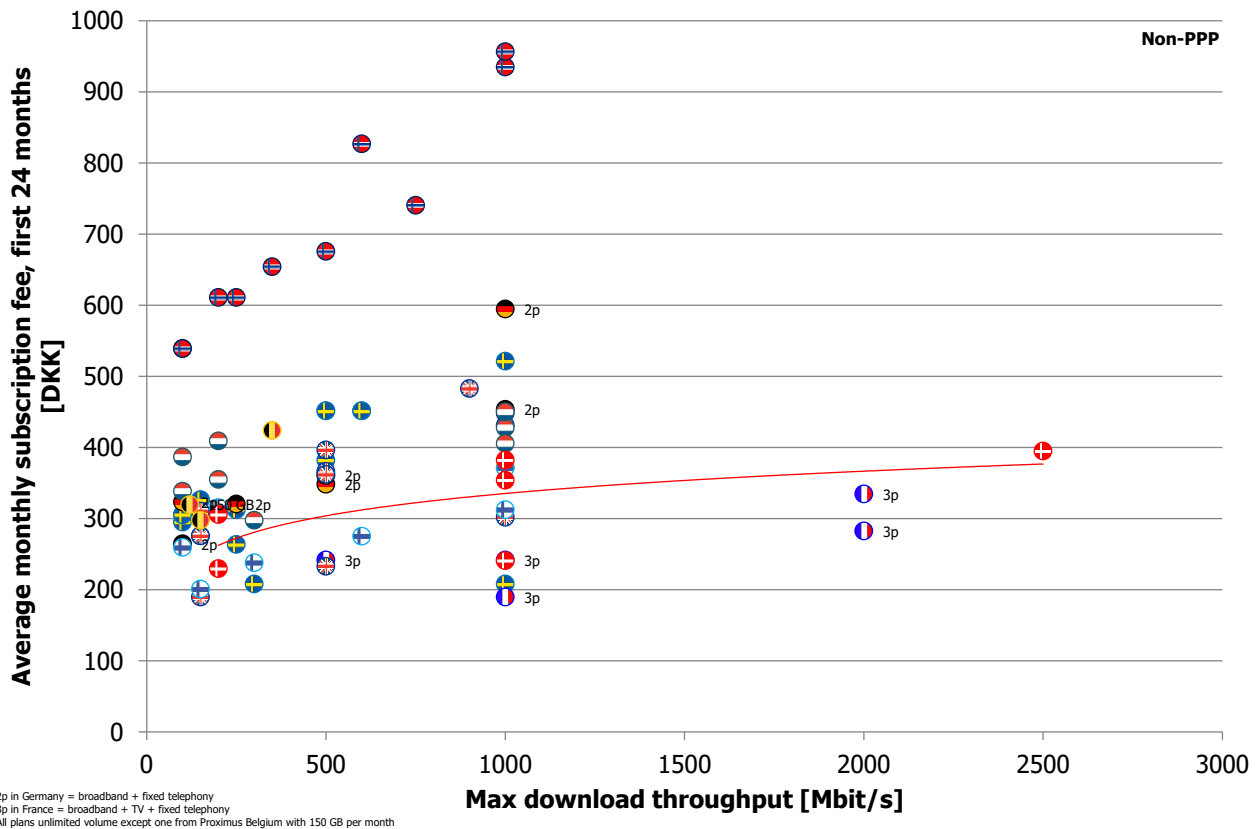


Figure 4. Comparison of the average monthly subscription fee in DKK during the first 24 months to the max download throughput (up to 3000 Mbit/s) in nine countries, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]

In the zoomed-in graph, see Figure 4, we can first conclude is that there is a significant difference in how much a fibre broadband plan averagely costs per month during the first 24 months: **Norway** is uniquely positioned with monthly subscriptions sometimes twice as costly as in the typical non-Norwegian European market. This is before purchase power adjustment.

As mentioned, pure fibre broadband plans aren't offered by the studied providers in Germany and France. All German fibre broadband plans also come with fixed telephony – these are marked **2p** in our graphs to allow us to remember that there's an additional, non-optional, element included. All French fibre broadband plans also come with fixed telephony and TV. These are marked **3p** in our graphs.

It's too early to conclude on the position of Denmark – we'd like to do purchasing power adjustments first – but we just want to point out that the **red** trend line is based on the Danish fibre subscriptions offered – to help identifying Denmark's position.

Let's now apply purchasing power adjustments to Figure 4 and see if that changes the positions of the countries. But first a bit on the methodology used. Skip the grey area if you'd like to go directly to the results.

Different countries obviously have different gross domestic products (GDP) per capita. A higher GDP per capita is most often also an indication of a higher purchasing power but using the *nominal* GDP per capita differences as adjustment doesn't take the differences in price levels into account.

A common way to deal with this is **purchasing power parity** (PPP) conversion. An introduction to PPP is given in the box below²³.

Measuring economic activity in a country is difficult, since 'the economy' is a complex system with lots of moving parts. A common way to deal with this is to focus on aggregate indicators, such as total national output: "the monetary value of all goods and services produced within a country (or region) in a specific time period". That's what economists call the Gross Domestic Product (GDP).

GDP is measured using prevailing national prices to estimate the value of output. In other words, GDP is calculated using local currency units. This means that in order to make meaningful cross-country comparisons, it is necessary to translate figures into a common currency – i.e. use a consistent 'unit of measure'.

One option is to simply translate all national figures into one common currency (for instance, US dollars) using exchange rates from currency markets. But because market exchange rates do not always reflect the different price levels between countries, economists often opt for a different alternative. They create a hypothetical currency, called 'international dollars', and use this as a common unit of measure. **The idea is that a given amount of international dollars should buy roughly the same amount – and quality – of goods and services in any country.**

The exchange rates used to translate monetary values in local currencies into 'international dollars' (int-\$) are the 'purchasing power parity conversion rates' (also called PPP conversion factors).

In this analysis we are using the quotas between **purchasing power parity (PPP)** GDP per capita as adjustment when striving to make revenue and prices comparable between countries. Figure 5 shows the differences between the countries. Denmark is having the second highest value.

²³ From Our World in Data: <https://ourworldindata.org/what-are-ppps>

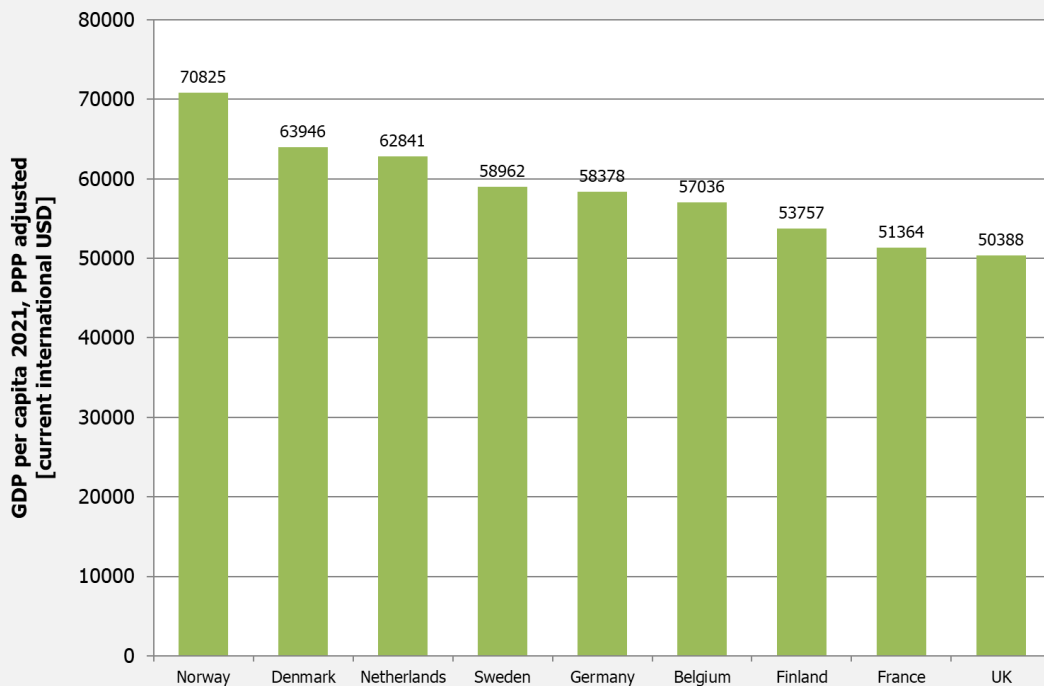


Figure 5. Comparison of purchase parity adjusted GDP per capita of our nine countries. Values are for 2021, published in April 2022, but sometimes preliminary [source: IMF]

Applying PPP on the fibre broadband pricing is, in general, a modelling attempt to make the levels more comparable between the countries. Since PPP is calculated on a *generic* basket of goods and services, it isn't developed specifically for fibre broadband. The outcome after PPP adjustments should therefore be regarded as *indicative*. You could say that the logic of applying PPP on fibre broadband pricing is "with higher general purchasing power, buyers are expected to pay as much more for fibre broadband services as they pay for goods and services in general".

With this disclaimer, let's now apply the differences in PPP on the previously shown average monthly subscription fees.

In Figure 6 below we have adjusted the prices of the other countries to the Danish purchasing power level. This means that all other country dots moved, but the Danish dots stayed in the same position.

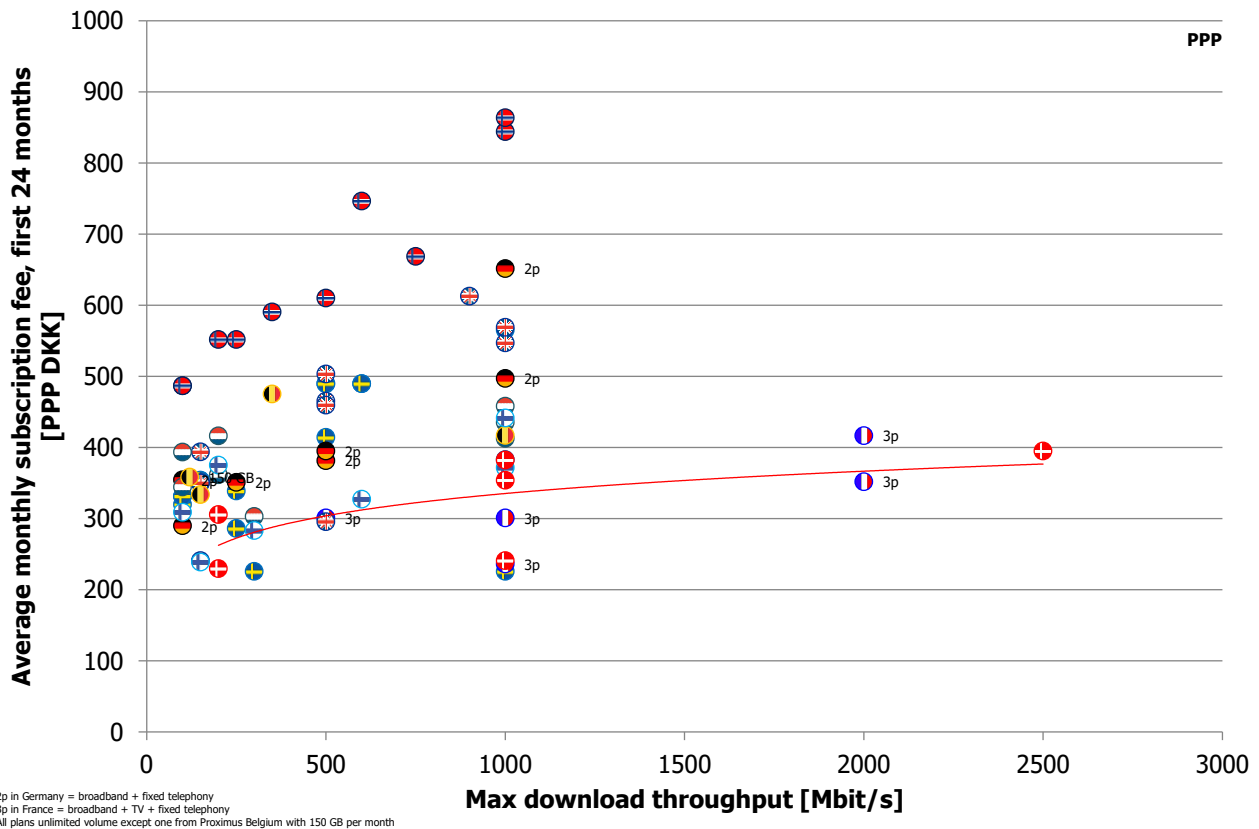


Figure 6. Comparison of the average monthly subscription fee in PPP DKK during the first 24 months to the max download throughput (up to 3000 Mbit/s) in nine countries, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

Compared to the non-adjusted graph, Figure 4, the position of Norway is now less extreme as Norway's high PPP adjusted GDP per capita 'forgives' some of the price differential to the other countries. Norway moved *downwards* in the graph as it's a country with higher PPP adjusted GDP per capita than Denmark.

All other countries – such as Sweden and France – have lower PPP adjusted GDP per capita than Denmark and have moved *upwards* in the graph as one could expect fibre broadband to be less costly there as the purchasing power is lower.

There is of course some spread in the Danish fibre broadband prices, but the red line is a best fit trend line based on the Danish fibre subscriptions offered. The slowest offered²⁴ Danish fibre broadband subscription is 200 Mbit/s and from that speed, Danish fibre subscriptions are among the more affordable after purchasing power adjustment. Also Finnish and French plans are generally affordable (alongside a few Swedish plans and occasional plans from other markets) after purchasing power adjustment.

The French subscriptions are generally the most affordable among our nine markets – considering that they are triple-play including fixed telephony and TV. [There's a fact box at the end of section 9 giving some explanation to the position of France].

²⁴ There are slower plans than that offered in Denmark, but remember that this analysis has a general minimum threshold of 100 Mbit/s

After purchase power adjustment, Danish fibre broadband subscriptions are, alongside subscriptions in Finland and France, among the most affordable among our nine European markets.

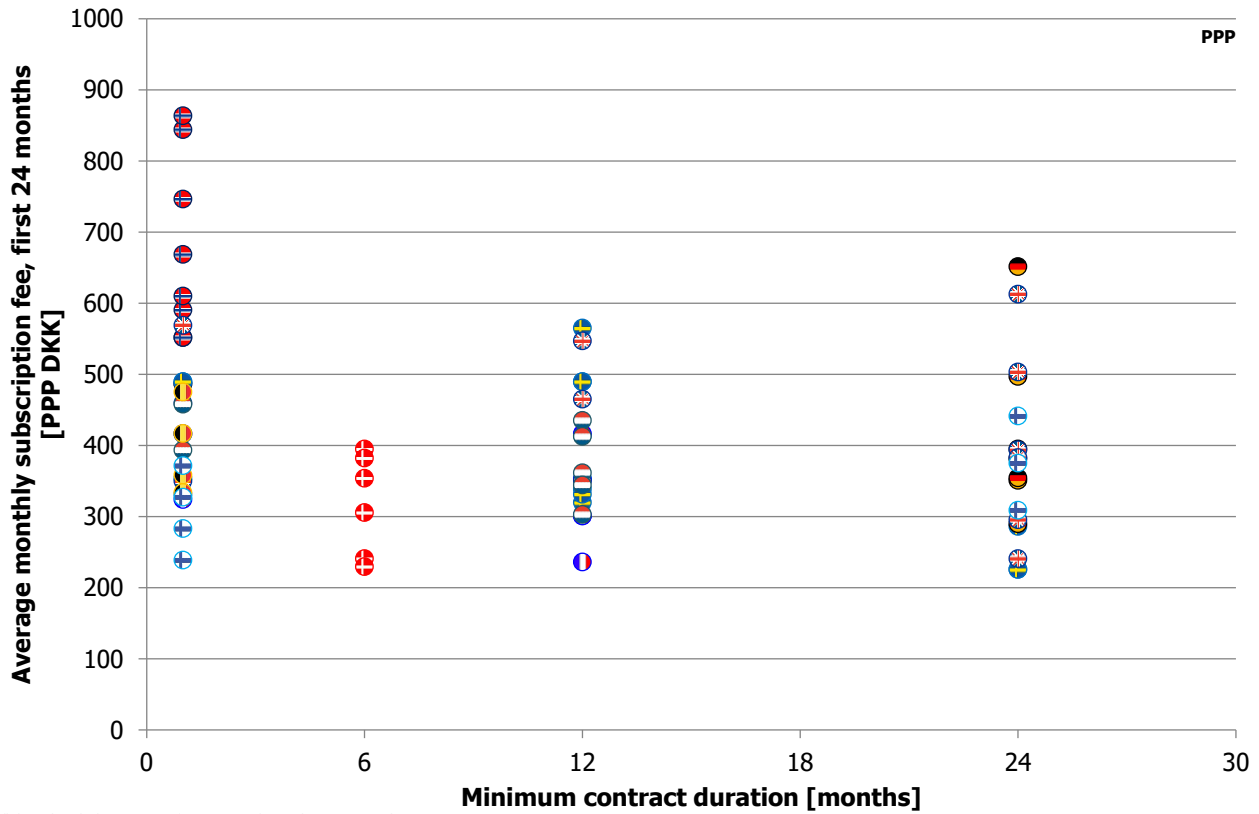
One possibly determining factor for the monthly fibre subscription price could be the minimum contract period – or **binding period**. Different providers apply different policies – even within countries.

As to **non-binding contracts** (visualised as 1 month in the following graphs), these are offered by the two largest Norwegian operators, **Telenor** and **Telia**²⁵, and by the Belgian providers **Proximus** and **Orange** as well as Finland's **Elisa**. In Sweden, **Tele2** offers a choice between non-binding and 12-24 months binding – often with a start-of-contract discount if selecting the binding alternative. **Free** in France is only offering non-binding contracts on its most expensive 5000 and 8000 Mbit/s plans. **Hyperoptic** in the UK is discounting subscriptions during a 12- or 24-months binding period, but these subscriptions are *more* expensive than the non-binding alternative from month 13/25 onwards – somewhat of a trap. Finally, **KPN** who in the Netherlands gives a 3 EUR discount for contracts with 12-month binding period compared to the non-binding options.

All other providers stipulate a set binding period; in Denmark's case always 6 months – for other countries 12 or 24 months.

In the first, 2021, version of this analysis, we thoroughly examined if the minimum contract period was a determining factor for subscription fees but concluded that there was only vague evidence for that longer contract periods result in lower subscription fees. With this in mind, we have downsized this part of the analysis to just one chart this time.

²⁵ But not by e.g. the "Altibox partner" providers that aren't covered by this analysis



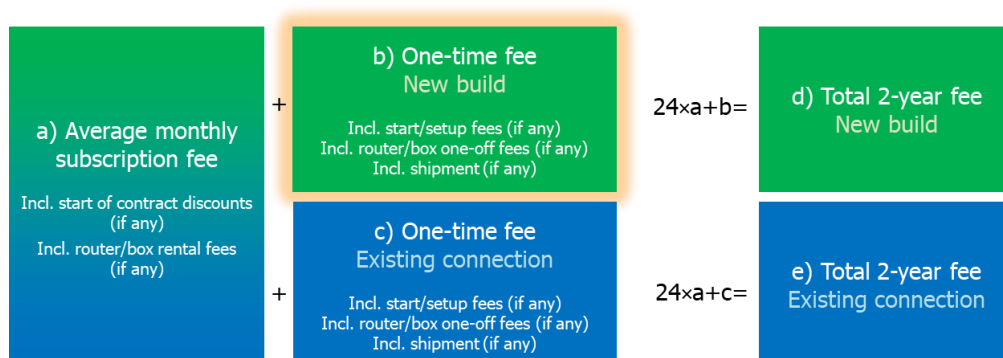
All plans unlimited volume except one from Proximus Belgium with 150 GB per month

Figure 7. Comparison of the average monthly subscription fee in PPP DKK during the first 24 months to the minimum contract duration in nine countries, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

It's hard to see any association between the monthly subscription fee and the minimum contract duration. With all the studied Norwegian plans being non-binding (shown as 1-month minimum contract duration) the eye can be fooled to think that the fee comes down with a longer contract duration, but if removing Norway, this is not the trend. No other country than Denmark operates with 6 months contract duration.

We hold onto the conclusion from the previous analysis that there's only vague evidence for that longer contract periods result in lower fees.

7. One-time fee – new build



As mentioned, new build one-time fees (for new connections into homes) are more difficult to find and track than monthly subscription fees. One reason is that they can vary according to region and neighbourhood. In all our countries, broadband providers can balance the requirement to rollout a fibre network of their own with **commercial agreements to offer internet services over partner networks**. So called open fibre networks is the norm in Sweden whereas agreements in other countries as e.g. France historically have been more bilateral between companies. Initiatives towards an open fibre concept are however currently taken in e.g. Denmark, Finland, the Netherlands, the UK and Germany.

When tracking the pricing of operators, you might also – on top of this – get a sense that the information on the new build one-time fees sometimes deliberately is kept out of the public domain. This is particularly true for Sweden and Norway. They seem to be used during negotiations to convince new customers to accept e.g. binding contracts or a subscription to a higher throughput tier.

In the cases where connection fees weren't found online, most providers did provide range or example indications on request. The graph below presents the information obtained.

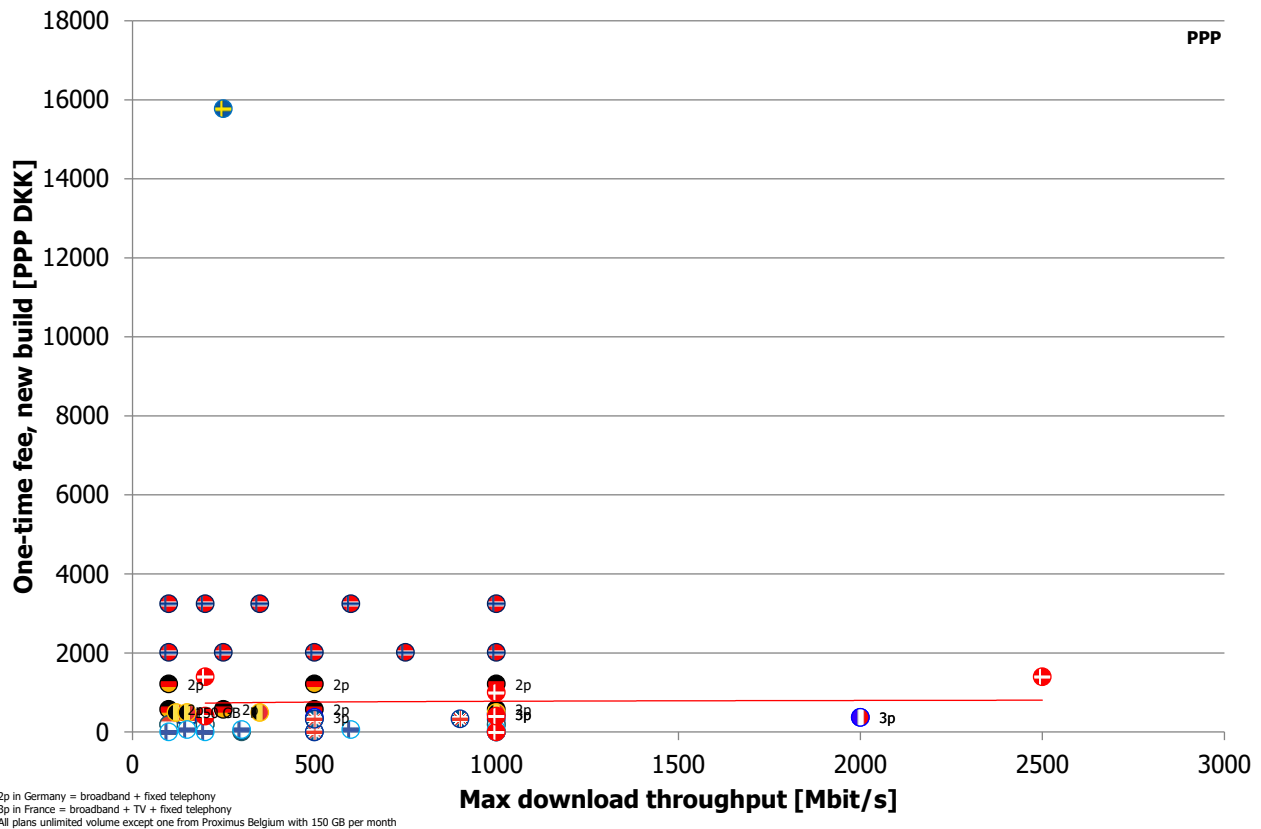


Figure 8. Comparison between one-time fees in PPP DKK for new fibre broadband into a detached home to the max download throughput (up to 3000 Mbit/s) in nine countries, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

Before looking at the position of different countries, let's first conclude that the one-time fees *don't* depend on the download throughput tier selected by a consumer – providers generally apply the same one-time fee regardless of which speed a consumer is intending to subscribe to.

Looking at the country positions, **Sweden** stands out in Figure 8 with one-time fees of about 16000 PPP DKK. The high fees are perhaps also a consequence of Sweden's high fibre availability: 78% of the fixed broadband base already subscribed to fibre in December 2021; higher than any other market analysed here. When the Swedish fibre broadband push started more than ten years ago, the one-time fees were lower. Perhaps are the high fees of today a reflection of that the unconnected parts of Sweden aren't that attractive to build?

Regardless of these explanations, Sweden is an extreme outlier in Figure 8. To improve readability, we have taken Sweden out of the comparison in Figure 9 below.

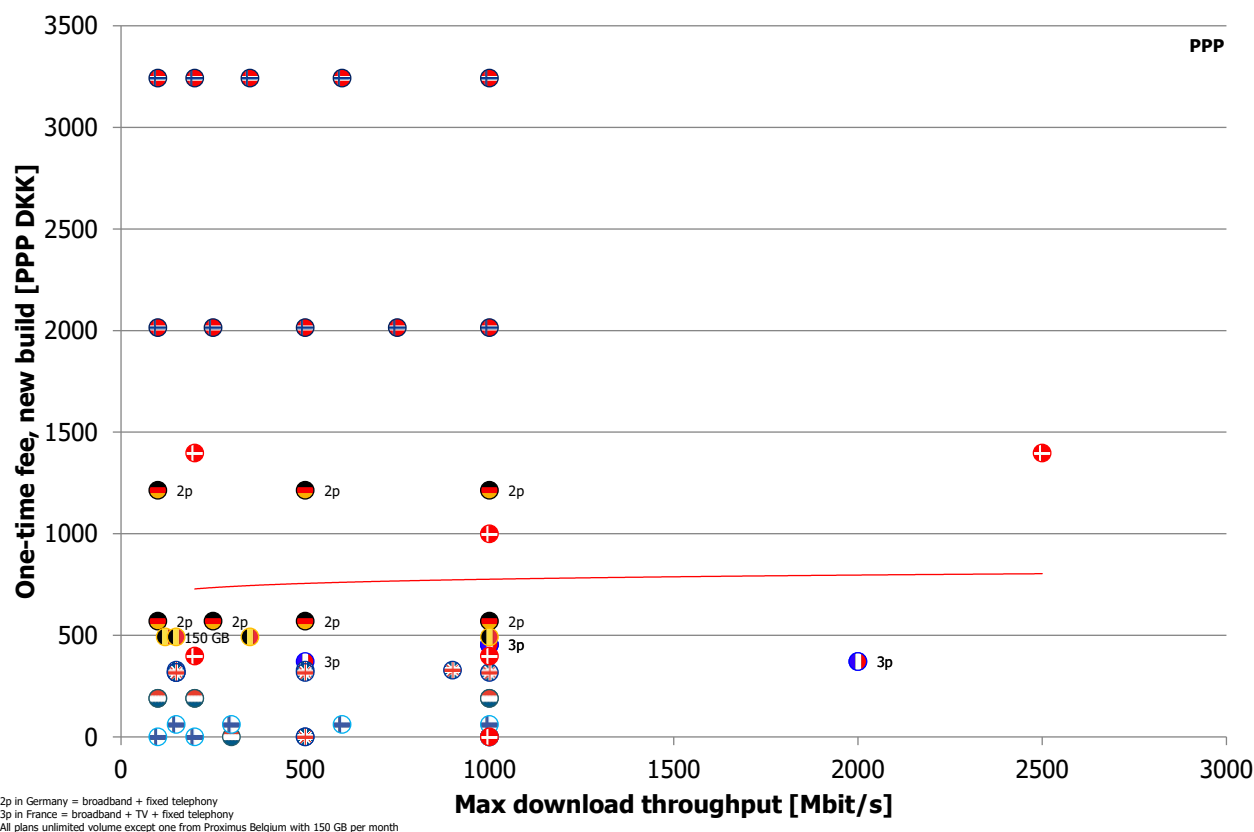


Figure 9. Comparison between one-time fees in PPP DKK for new fibre broadband into a detached home to the max download throughput (up to 3000 Mbit/s) in nine countries – Sweden excluded, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

Norway has significantly lower one-time fees than Sweden, but still higher than all other markets. Together with Germany, Belgium, the UK and France, Denmark has moderate one-time fees. YouSee's one-time fee is 1397 DKK – 999 DKK for installation (up to 30 meters) plus 299 DKK for setup plus 99 DKK for the shipping of the router. There's currently a YouSee offer which waives the latter two one-time fees, lowering the total to 999 DKK. The one-time fees of Norlys and Stofa are lower – 0 DKK and 398 DKK²⁶ respectively. Finland and the Netherlands generally have the lowest one-time fees.

After purchase power adjustment, Danish one-time fees for new build customers are moderate, in line with Germany, Belgium, the UK and France. Two Nordic countries, Sweden and Norway, operate with much higher one-time new build fees than the other seven markets.

Generally speaking, there should not be any substantial difference in the cost for a provider to connect a detached house to its fibre network between our studied markets. So how come some providers charge tens of thousands of PPP DKK – while others do not charge any one-time fees? A hypothesis is that providers operating with long **binding periods** in their consumer contracts are keener to subsidise the one-time fees – while those without binding periods need to recover their investments upfront.

²⁶ Includes 99 DKK in shipping fee which is charged only in some Stofa areas

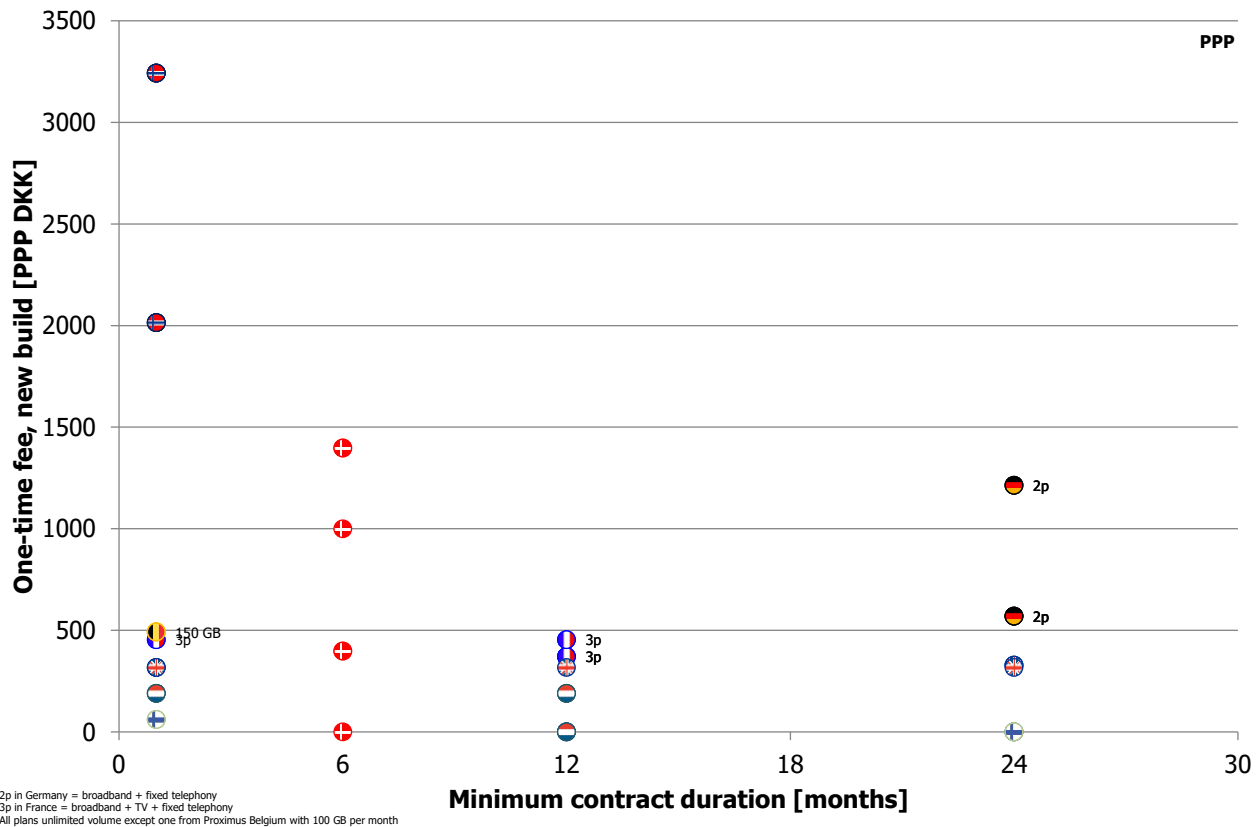


Figure 11. Comparison between one-time fees in PPP DKK for new fibre broadband into a detached home to the minimum contract duration in nine countries – Sweden excluded, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

Without Sweden, the graph is to some extent (up to 12 months) supporting the hypothesis that longer minimum contract duration lowers the one-time fee for the consumers. Norway's relatively high one-time fees e.g. come without a requirement to stay for longer than one month. On the other hand, Germany could have quite high one-time fees even though contracts have binding periods of 24 months.

Among our eight countries, it is only **Denmark** that applies a 6-month binding period.

The average binding period for all our analysed countries and offers from the providers is **10.2 months**.

Denmark's minimum contract duration of 6 months is approximately 4 months shorter than the average of all countries. From our analysis it is hard to see that the minimum contract duration has any association with the one-time fees for new builds. Sweden e.g. has the highest one-time fees and the longest binding period.

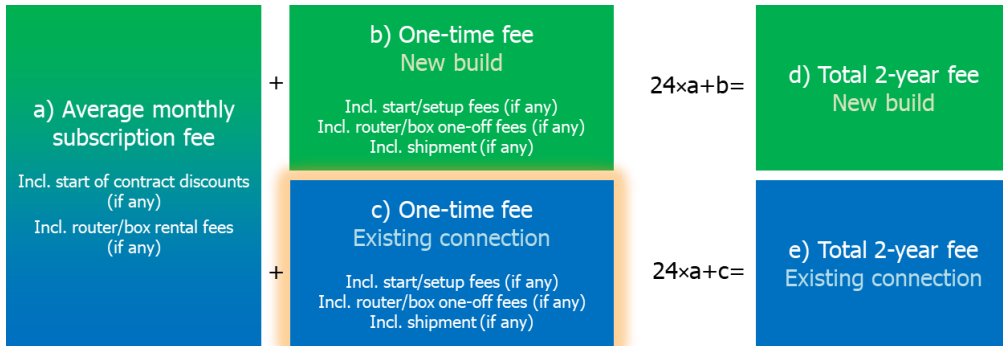
The one-time fees for new build connections are obviously very important in countries with low fibre penetration. Among our markets that's true for Germany, the UK and Belgium. In the other markets – and specifically in Sweden, Norway and Finland – a significant share of the fixed broadband base is already on fibre. Figures for December 2021 from the table in section 3:

- Denmark 44%
- Sweden 78%
- Norway 66%
- Finland 60%
- France 46%
- Netherlands 25%

This is the share of the total (B2C+B2B) fixed broadband base that *subscribes* to fibre²⁷. A larger share of that base *could have* fibre as the availability obviously exceeds the customer base.

²⁷ In reality though, many of these fibre subscriptions are delivered to apartments; the take-up in detached homes is lower since the homepass (how many homes that could get fibre would they like to) generally, due to the cost to build networks, is much lower in detached housing areas than in apartment housing areas.

8. One-time fee – existing connection



For the growing share of people lucky enough to move into a house in which fibre already is available, we in this section compare the one-time fees that comes with an *existing connection*. As no digging is required, we should of course expect to see lower one-time fees.

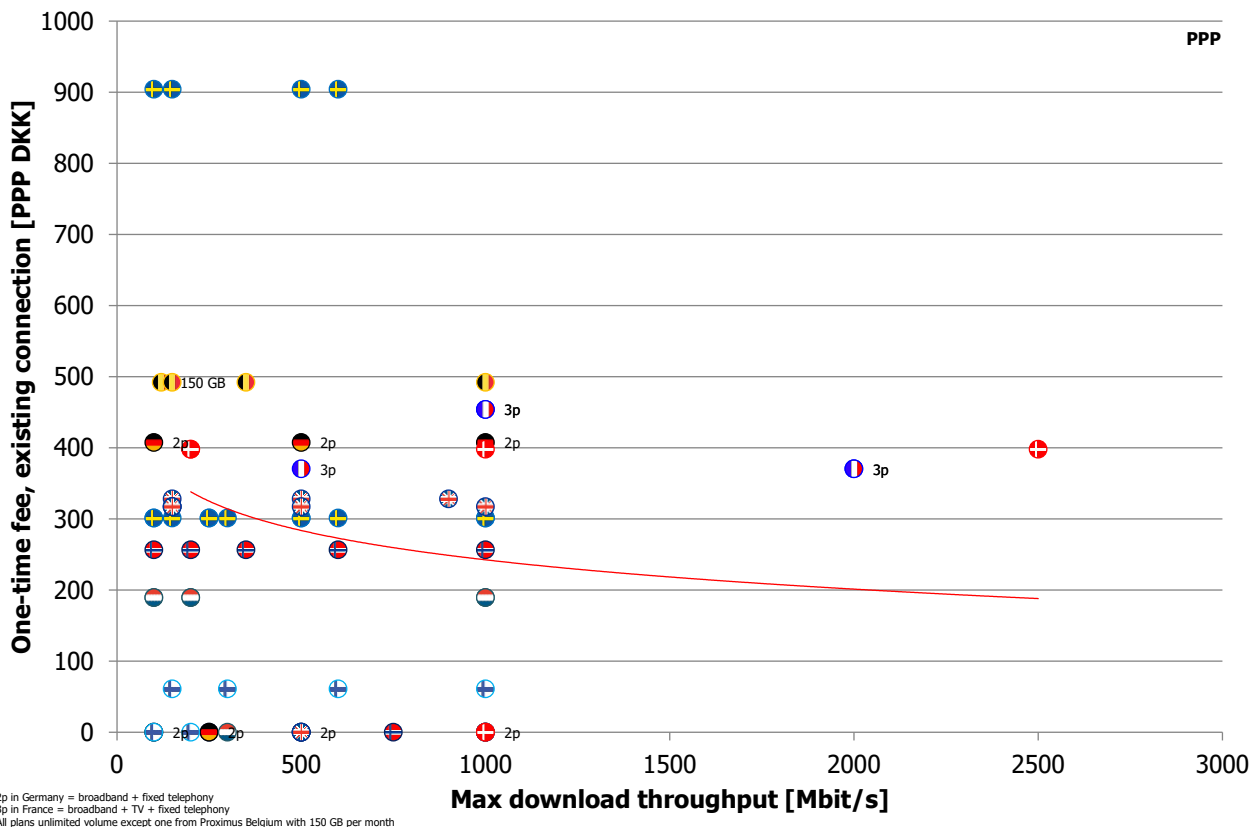


Figure 12. Comparison between one-time fees in PPP DKK for a new fibre customer on an existing connection to the max download throughput (up to 3000 Mbit/s) in nine countries, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

Figure 12 above is also showing much lower one-time fees when reconnecting an existing connection to a new subscriber – the average is around 300 PPP DKK. Some Swedish options come with much higher one-off fees; these are for Tele2 that charges 799 SEK (556 DKK) as a one-time fee for a router in case the customer selects a non-binding option.

There are several providers – across markets – that do not charge any one-time fees when taking up a fibre broadband subscription on an existing connection.

In the Danish market, the most common is that a new fibre subscriber pays 299 DKK in set-up fee (“oprettelse”) plus another 99 DKK for the shipping of the router – in total 398 DKK. Compared to most other markets, that is in the moderate-to-high range.

After purchase power adjustment, Danish one-time fees for existing connections are at the moderate-to-high range of our international spectrum. Over a longer time period, these one-time fees are however not significant.

We will soon calculate the total 2-year fees to see if this one-time fee for an existing connection has a negative impact on the total. But first an analysis of the possible effect minimum contract periods (binding periods) has on the one-time fees for existing connections:

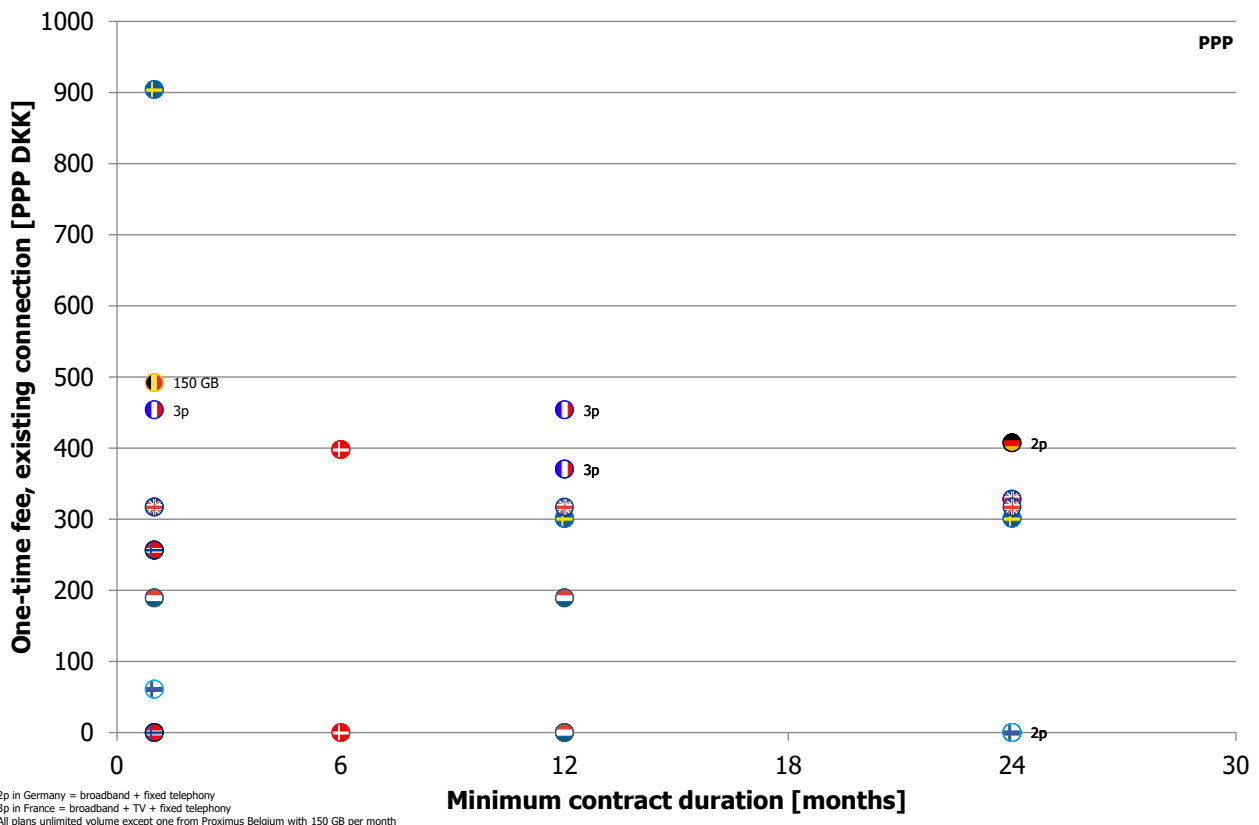


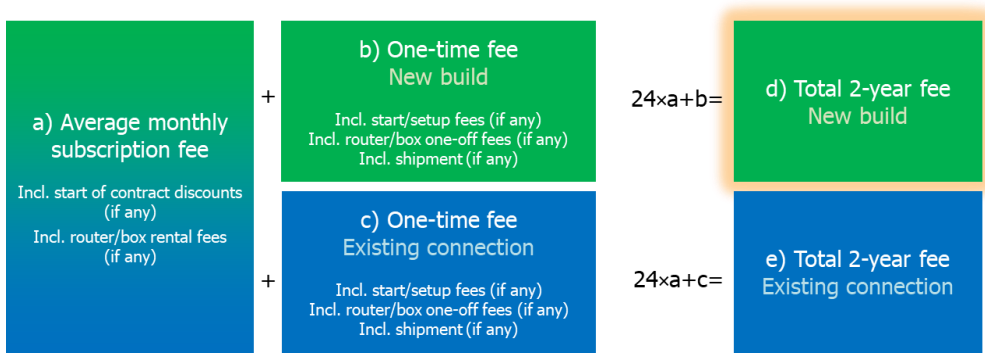
Figure 13. Comparison between one-time fees in PPP DKK for a new fibre customer on an existing connection to the minimum contract duration in nine countries, July 2022 [source: providers’ webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

Figure 13 suggests that the one-time fees for an existing connection can be a bit lower with a longer minimum contract period. The differences are small, though.

Among our eight countries, it is only **Denmark** that applies a 6-month binding period. As said previously, the average binding period for all of our analysed countries and providers is **10.2 months**.

Denmark's minimum contract duration of 6 months is approximately 4 months shorter than the average of all countries. From our analysis it is hard to see that the minimum contract duration has any major impact on the one-time fees for existing connections.

9. Total 2-year fee – new build



With focus on connecting the unconnected, we are now adding the new build one-time fees to the monthly subscription fees for 24 months to get the *total* fee for a customer that decides to install fibre into a detached home and then subscribe to a broadband service for 24 months.

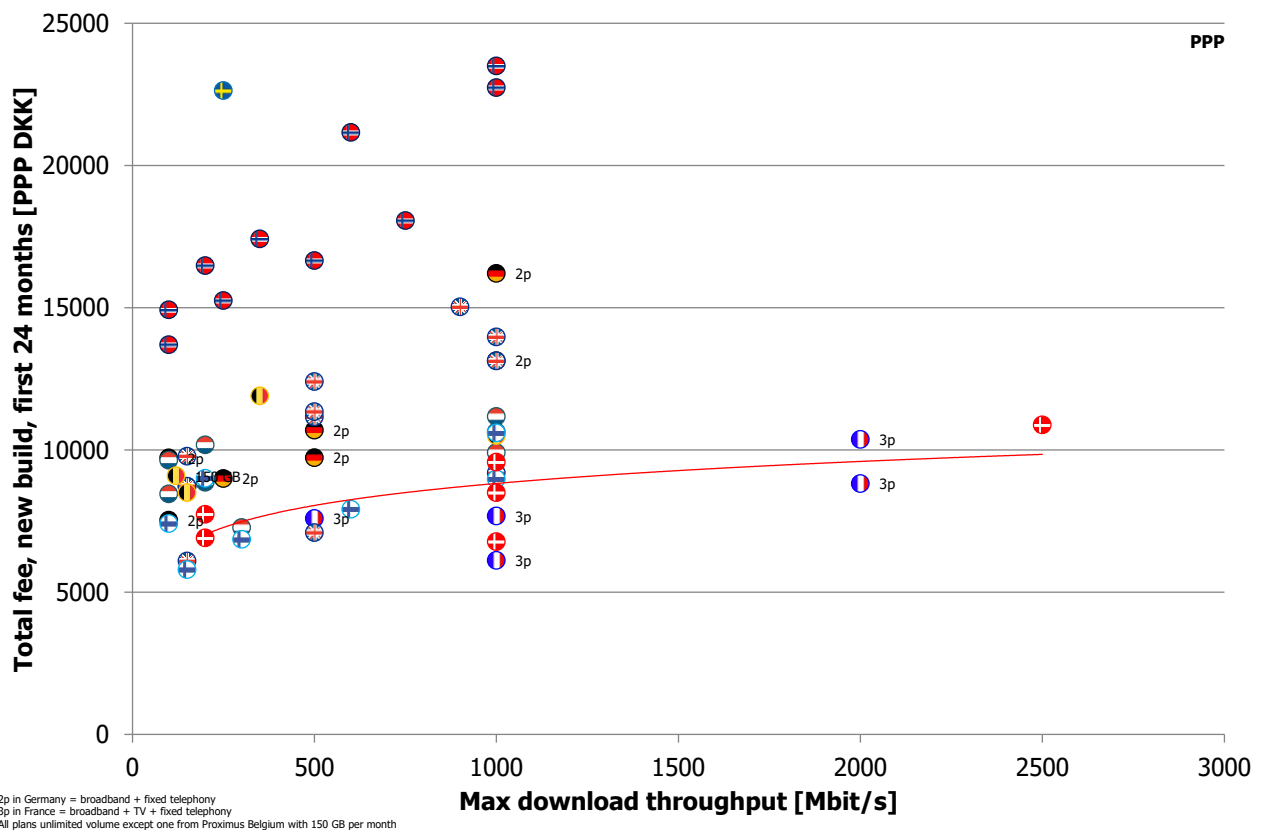


Figure 14. Comparison of the total new build fee in PPP DKK during the first 24 months to the max download throughput (up to 3000 Mbit/s) in nine countries, July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

Figure 14 shows how the very high new build one-time fees in **Sweden** (upper left) affect the total cost for the first 24 months period. **Norway** doesn't have as high one-time fees as Sweden, but expensive monthly

subscriptions – which leads to Norway becoming the second most expensive market for new build fibre customers during a two-year period. The **UK** can be seen as the third most expensive. The remaining countries are more cluttered with **Denmark** positioned at the lower end of the scale. The only market generally operating with lower total 2-year fees than Denmark after adjusting for differences in purchasing power is **France**. The position of France is quite extreme if considering that the French providers deliver a full triple-play service – including large TV packages – for that money.

After purchase power adjustment, the total 2-year new build fees for Danish fibre broadband are among the more affordable in our nine European markets. Only France is generally offering lower total fees.

Below a fact box on **France** to give some background to why the French fibre (or in their case rather triple-play) fees generally are so low²⁸.

France is one of the most competitive telecom markets in Europe with four fully fledged national integrated (i.e. fixed and mobile) operators – Orange, SFR, Bouygues and Free – offering both fixed and mobile services on their own networks.

Even since **Free** – today the second largest fixed broadband provider in France – launched its first ‘Freebox’ triple-play offer in 2002 for 29.99 EUR per month, the French market has been very price-centric. The competition followed Free into these low-price points.

Free’s disruption continued when the company launched mobile services in 2012: The 19.99 EUR per month for an essentially unlimited proposition was much lower than current market pricing – and Free also offered a limited mobile subscription for just 2 EUR per month. That subscription was even free for those with a Freebox. In six years, Free reached close to 14 million mobile subscribers.

Member of the French telecom industry has many times mentioned that the market needs consolidation. Attempts to merge SFR and Bouygues – and Orange and Bouygues – have however failed. All providers are today reporting good profitability.

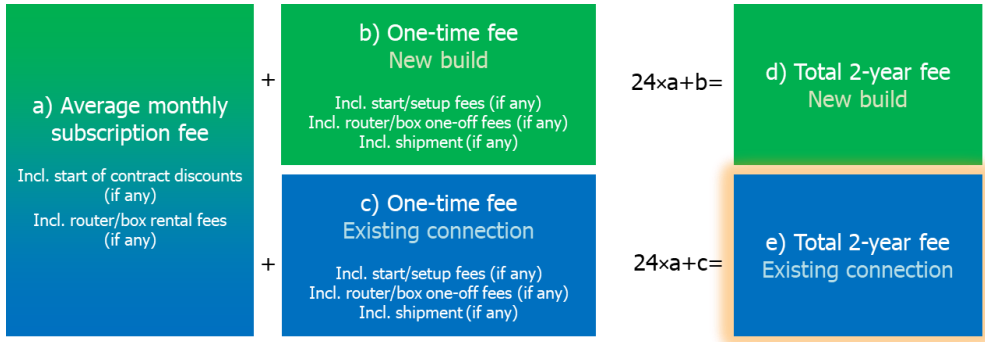
With Nordic standards, France was relatively late into fibre, but the network rollout has accelerated a lot and the fibre subscription base follows upwards. Consequently, investment levels in fixed networks have increased rapidly – when the investments in mobile have declined.

Although the French providers have built parallel fibre networks to some extent, they have had the freedom to engage in bilateral sharing agreements in areas of common interest. These agreements are not always between the same two providers; all providers mix with different partners in different areas.

As often in France, the government is involved in what happens: In 2013, the government launched the “France Très Haut Débit” plan with up to 3 billion EUR of government subsidy to support fast broadband development in all of France.

²⁸ Partly based on <https://www.arcep.fr/cartes-et-donnees/nos-publications-chiffrees/observatoire-des-marches-des-communications-electroniques-en-france/marche-des-communications-electroniques-en-france-annee-2019-resultats-definitifs.html> and <https://www.arcep.fr/demarches-et-services/collectivites/le-plan-france-tres-haut-debit-pfthd.html>

10. Total 2-year fee – existing connection



Finally, the total 2-year fee for a customer moving into a house with an **existing connection**. As mentioned in the end of section 7, a growing share of homes is already connected. The previous section made sense for the unconnected homes only – this section is for the connected homes.

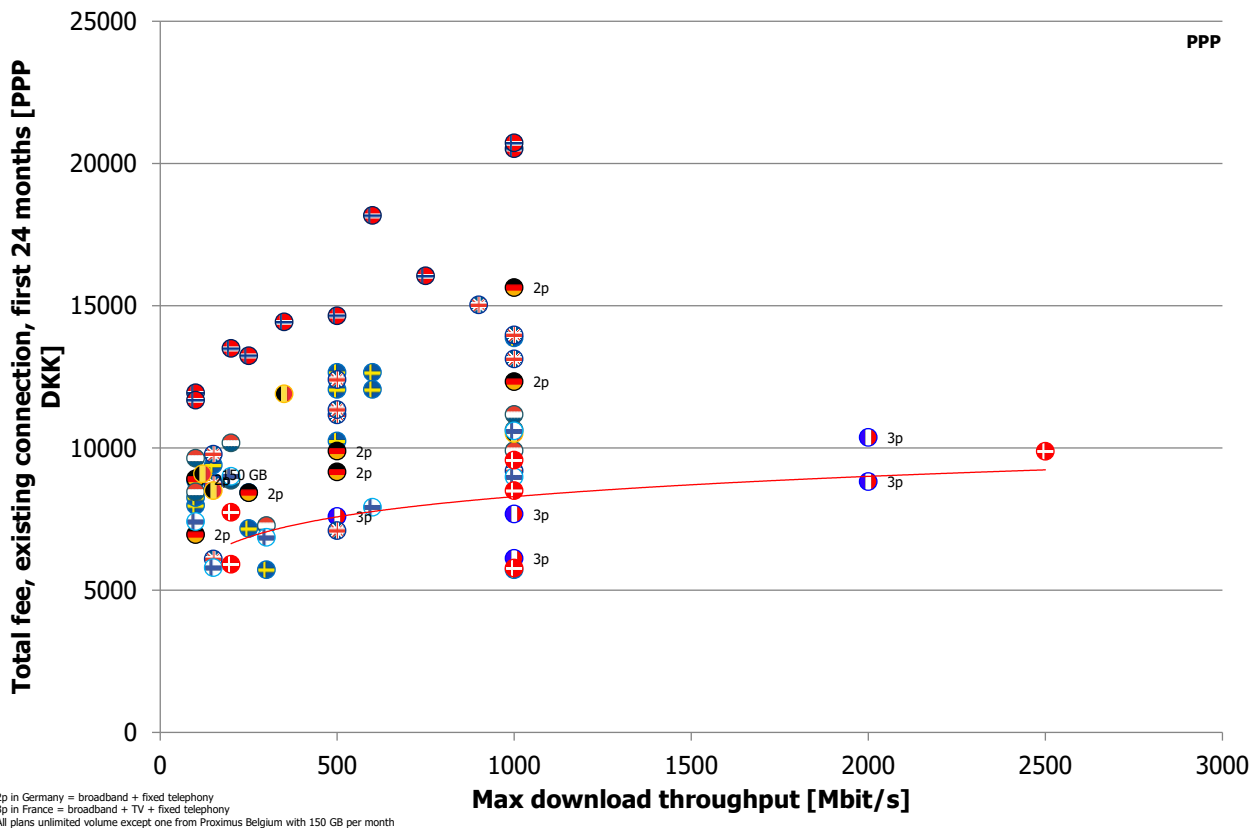


Figure 15. Comparison of the total fee for an existing connection in PPP DKK during the 24 months to the max download throughput (up to 3000 Mbit/s) in nine countries, July 2022 [source: providers’ webpages and pricelists complemented by direct emails to providers when necessary]. The PPP values are for 2021 and sometimes preliminary [source: IMF].

With an existing connection, **Norwegian** total 2-year fees are the highest among our markets. The **UK** could be seen as the second most expensive although a few Belgian, German and Swedish options mix in

among the UK's markers. **Sweden** is widely spread as Tele2 discounts certain options – with long binding periods – at the expense of others with shorter or no binding.

In section 8, we concluded that the Danish one-time fees for existing connections were at the moderate-to-high end. Despite this, Figure 15 shows that Danish total fees are quite reasonable in an international context. France is again the toughest competitor pricewise after adjustment for purchasing power – but there are also a few Swedish, Finnish, Dutch and German options that can compete with Denmark.

After purchase power adjustment, the total 2-year existing connection fees for Danish fibre broadband are among the more affordable in our nine European markets. Only France is generally offering lower total fees.

11. Development in 2-year fees from 2021 to 2022

Since this is an update of the [original analysis](#), it allows us to compare how the 2-year fees developed during the thirteen months between June 2021 to July 2022. The comparisons are done for the original eight countries (i.e. all but Finland) and for the plans that have the same – or comparable²⁹ – throughput.

To make sure currency fluctuations are not behind the trends, the comparisons are done in local currency (LC) and, here, without adjustments for differences in purchasing power.

Let's first look at the total new build fee, see Figure 16 below.

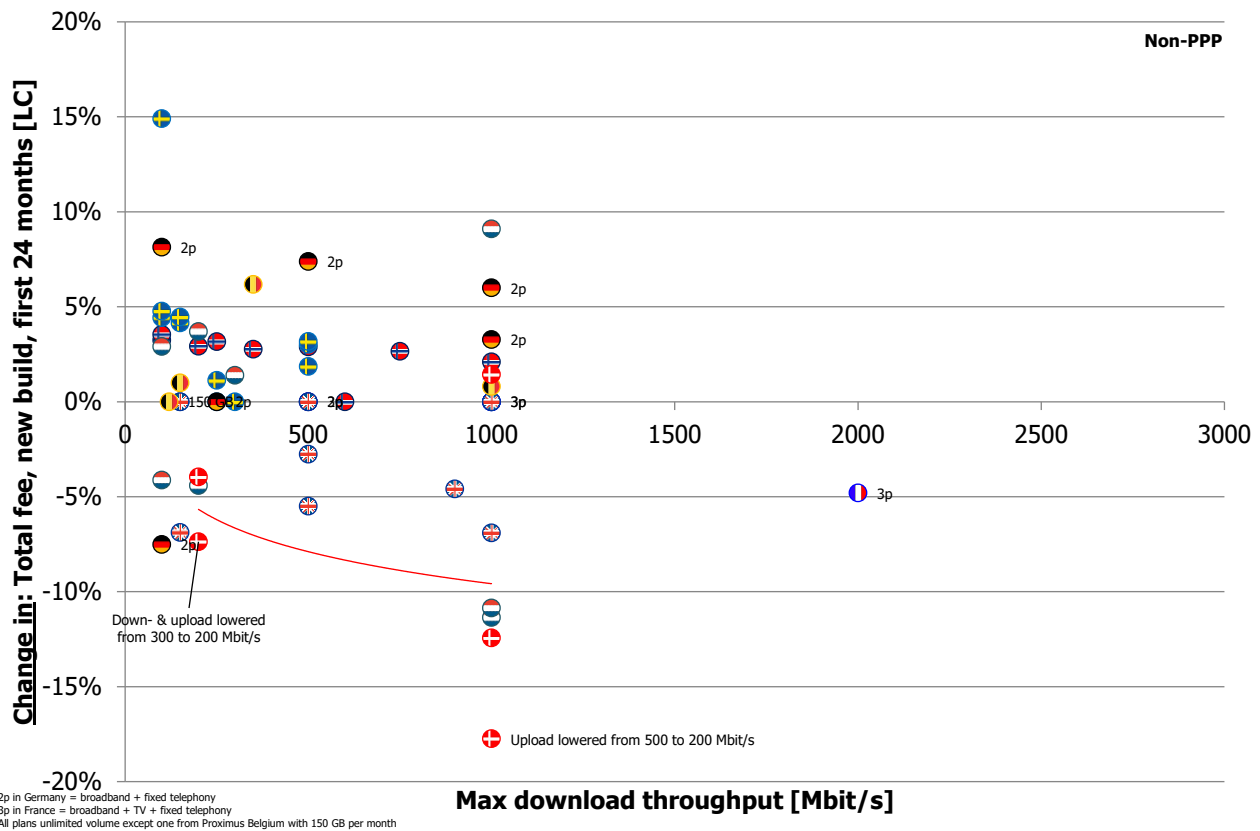


Figure 16. Comparison of the total new build fee in local currency during the 24 months to the max download throughput (up to 3000 Mbit/s) in eight countries, development from June 2021 to July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary].

The comparable base consists of 61 plans in total. Of these 29 (48%) became more expensive, 15 (25%) became less expensive and for the remaining 17 (28%) there was no change in the 2-year fee. In Denmark,

²⁹ All the plans that are considered comparable although they are not identical are: One 1000/500 Mbit/s plan from YouSee (download/upload) which is now 1000/200 Mbit/s. One 300/300 Mbit/s plan YouSee which is now 200/200. One 1000/250 Mbit/s plan from Vodafone Germany which is now 1000/500 Mbit/s. One 500/150 Mbit/s plan from Vodafone Germany which is now 500/250 Mbit/s. One 400/400 Mbit/s plan from Orange France which is now 500/500 Mbit/s. One 300/49 Mbit/s plan from BT which is now 500/73 Mbit/s. Two 900/900 Mbit/s plans from Hyperoptic which is now 1000/1000 Mbit/s. Two 1000/500 Mbit/s plans from KPN which are now 1000/1000 Mbit/s. One 250/250 Caiway plan which is now 300/300 Mbit/s. One 100 GB limited plan from Proximus which is now limited to 150 GB. One 100/10 Mbit/s plan from Orange Belgium which is now 150/15 Mbit/s.

four out of five (80%) comparable plans became less expensive³⁰. The only other market than Denmark that seems to generally have moved towards lower 2-year fees is the UK.

If comparing the total 2-year fees for an *existing* connection, the graph doesn't change much.

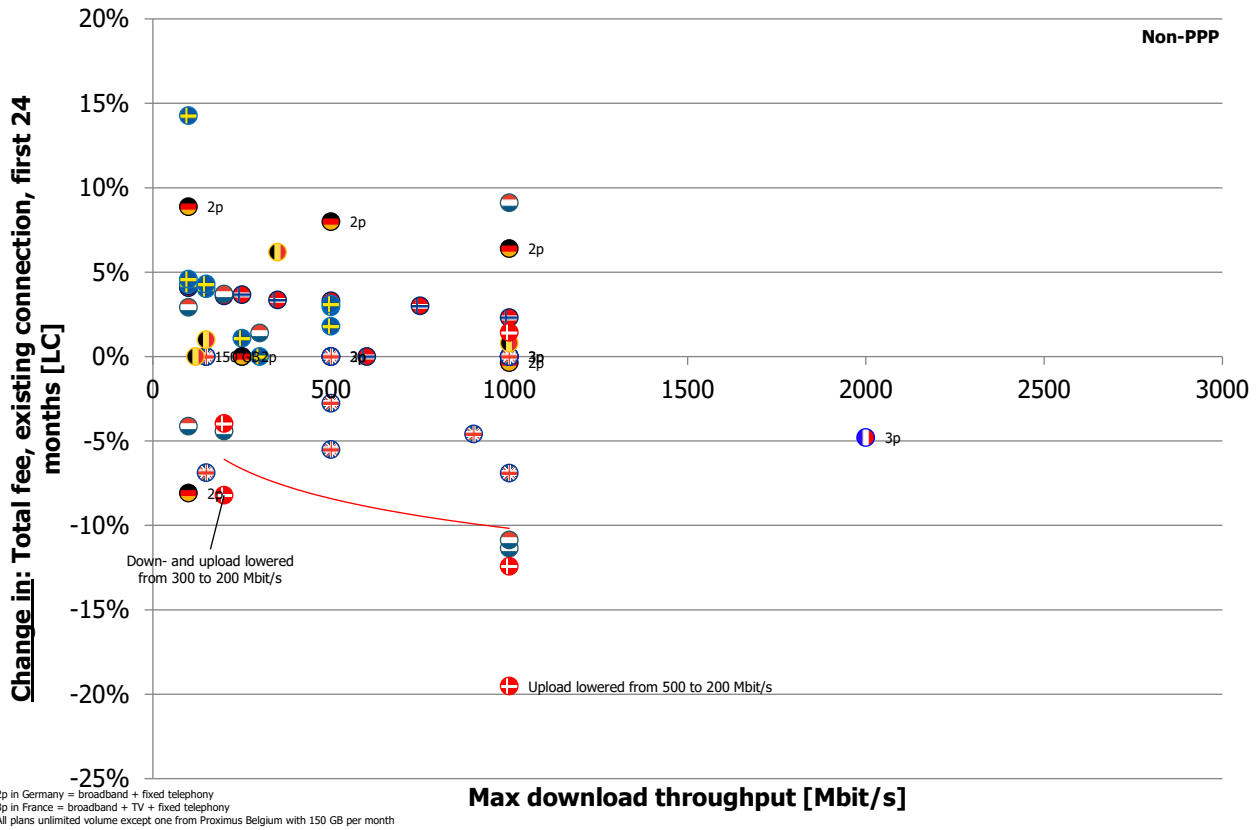


Figure 17. Comparison of the total fee for an existing connection in local currency during the 24 months to the max download throughput (up to 3000 Mbit/s) in eight countries, development from June 2021 to July 2022 [source: providers' webpages and pricelists complemented by direct emails to providers when necessary].

The comparable base consists of 61 plans in total. Of these 28 (46%) became more expensive, 16 (26%) became less expensive and for the remaining 17 (28%) there was no change in the 2-year fee. In Denmark, four out of five (80%) comparable plans became less expensive³⁴. The only other market than Denmark that seems to generally have moved towards lower 2-year fees is the UK.

In the thirteen months between June 2021 and July 2022, 46-48% of comparable 2-year fees increased across eight markets. 25-26% decreased and 28% didn't change. Two markets bucked the trend to instead develop towards lower 2-year fees: The UK and Denmark.

³⁰ Note that two YouSee plans, as highlighted in the graph, were downgraded in maximum speed, though.

12. Fixed broadband: Actual throughput

We have now analysed pricing in depth and seen if it relates to binding policies. Let's now take look at the actual throughput that the median³¹ fixed broadband customer in our countries get. Note that this is wider than just fibre broadband – also DSL technologies and hybrid fibre coax (HFC) broadband are included. Since fixed broadband almost exclusively is priced based on throughput, the median throughput is the result of two factors:

- What the broadband connections technically deliver
- How much the customers have been willing to pay for their connections

A hypothesis could be that the cheaper fibre broadband that exists in a market, the better the average throughput would be as more households could afford it.

For comparable data, we turn to Ookla Speedtest. Ookla uses crowdsourced data based on tests actively done by broadband users. The drawback is that we don't know how representative these tests are. In addition, the throughput measured by these tests is affected by the throughput tier paid for by the customers.

With these words of caution, let's compare the latest available median download throughput in our nine countries:

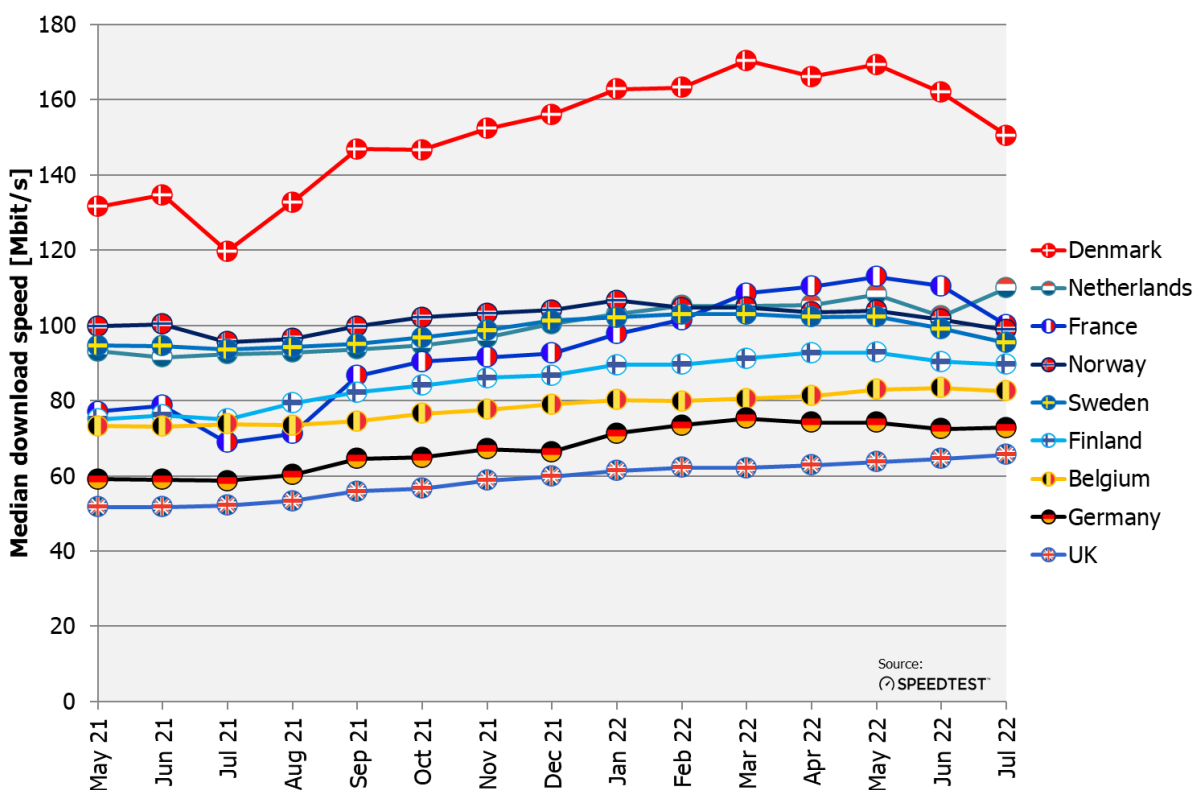


Figure 18. Median fixed broadband download speed per month May 2021-July 2022 per country [source: Ookla Speedtest]

³¹ Ookla Speedtest have changed from average to median throughput as their primary metric

Perhaps surprisingly – Denmark doesn't have the highest share of fibre connections – it's **Denmark** where the median fixed broadband user has the highest download throughput although holiday relocations typically lead to lower median throughput in July. A plausible explanation is that high download speeds – as shown in this analysis – are quite affordable in Denmark. There's a large gap to second-placed the Netherlands and third-placed France. France is, like Denmark, a market where the median download throughput has increased considerably. As we've seen, France has consistently been among the cheapest markets of our nine. Similar to Denmark, there's not much of a cost reason not to buy fast broadband.

The four countries with the lowest share of fixed broadband base in fibre also have the lowest average speeds: The UK, Germany and Belgium.

Denmark has the fixed broadband networks with the highest median throughput according to Ookla Speedtest data. As Denmark generally has low fibre broadband subscription fees, this could have contributed to a willingness to purchase higher speed subscriptions.

13. Pandemic and war effects on inflation and costs

The access to broadband was crucial in most societies during the COVID-19 lockdowns and other periods with pandemic restrictions. Work-from-home and home schooling could not have happened without broadband. Most social contacts had to be maintained over the phone or using online collaboration tools.

The pandemic strained the global supply chains and created shortage of certain material, components and resources. This obviously affects the fibre industry. Already before COVID-19, human resources capable of rolling out and installing fibre were scarce in some local markets. Rollout of fibre networks could be delayed – or the associated costs might rise. Day-to-day operations and maintenance can also be more challenging or costly.

On top of this, Russia's war on Ukraine led to a significant increase in market prices for energy, driving inflation to levels not seen in thirty years.

This chapter attempts to assess these challenges – inflation, workforce and subcontractor availability, material cost, energy cost and delivery times – and the financial impact these could have on providers of fibre broadband. Latest available publicly available data from the European Central Bank has been used as input.

13.1. Cost structure

In order to project the effects of inflation on fibre providers, we would first need to establish what the **cost structure** typically is. Tefficient has analysed the public financial reporting for 2021 from ten Danish fibre providers and found a few common traits although their business is different in size and sometimes in scope. We have had the opportunity to discuss and substantiate these observations and assumptions with one of the larger providers analysed.

OPEX structure

Our analysis gives that a fibre provider typically in 2021 used **60%** of its revenue on its operational expenditures (OPEX).

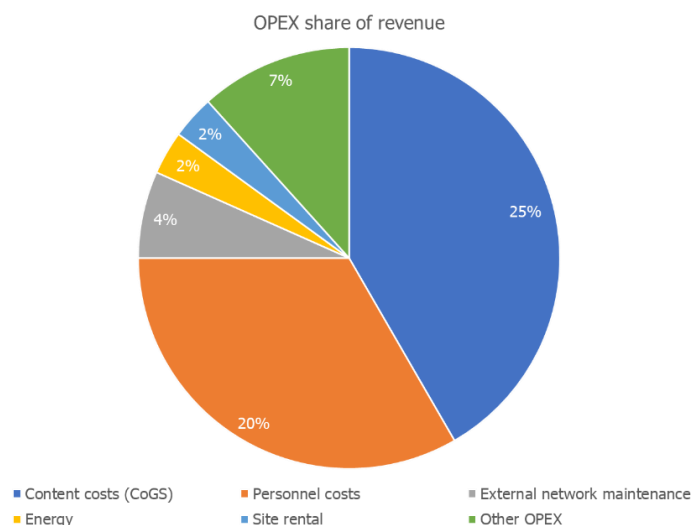


Figure 19. Share of revenue typically used on different OPEX items, 2021

The largest OPEX item is what often is reported as **cost of goods sold** (CoGS for short). For a fibre provider, this is almost exclusively the cost for the TV and video content that the fibre provider distributes to the share of its customers that subscribe to TV services. Content costs typically represents 25% of total revenues and fibre providers tend to have multi-year contracts capping the costs. The trend is clear, though: Content costs are growing globally, and distributors can be squeezed to accept higher costs when contracts are renegotiated. If not, distributors might risk so called blackouts where the content owners simply cease to broadcast their content until a new agreement is reached.

The second largest OPEX item is **personnel costs**. This can vary depending on the sourcing strategy of the fibre provider. Some might have outsourced more of its operation than others, but the 20% of total revenues resonates with fibre providers that predominantly rely on own employees in sales, customer service, central technical operations and support functions. Although competition for the same human resources can result in growing personnel costs, most of the cost increase is following annual or multi-year agreements between employers and the employees (or employee unions). The level of inflation will be a key input to such negotiations. As to the rollout of fibre networks, the personnel and/or subcontracting cost is almost always capitalised meaning that the sourcing strategy in rollout doesn't affect the personnel OPEX.

Most fibre providers rely on partners for field maintenance. In our OPEX distribution, we have assumed that 4% of revenues are related to **external network maintenance**.

Since fibre networks are very energy efficient compared to other, older, broadband technologies such as DSL or HFC, only 2% of revenues are used on **energy**. Since the inflation currently is fastest in energy prices, this low share is of course positive in a competitive broadband context.

Site rental – the rents fibre providers pay to property owners to house equipment or use their land for e.g. cabinets – also corresponds to 2% of the revenues.

All **other OPEX** typically consumes 7% of the revenues.

CAPEX structure

The capital expenditures (CAPEX) will very much be affected by how much rollout the fibre provider currently does. Influenced by the status in Denmark as of today where rollout still happens at high pace³², we have chosen to assume that a fibre provider in 2021 typically used **100%** of its revenue on CAPEX.

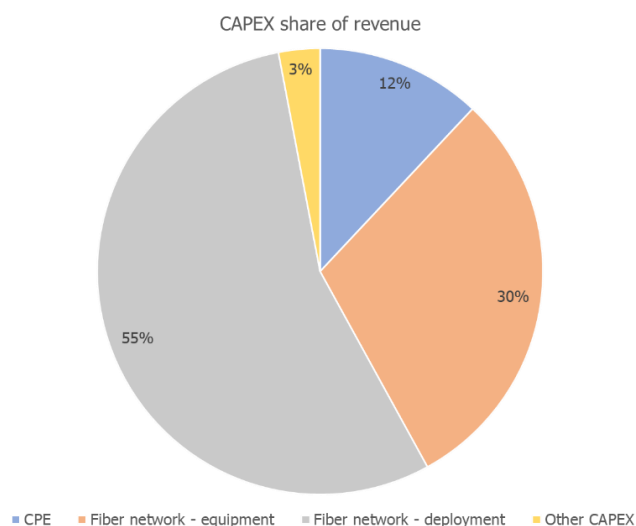


Figure 20. Share of revenue typically used on different CAPEX items, 2021

The largest CAPEX item – estimated to 55% of revenue – is the **deployment of the fibre network**. Most of this is capitalised labour related to e.g. excavation and trenching, pipe laying, backfilling and reinstatement, cable blowing and equipment installation. It is typically subcontracted. Most fibre providers have their subcontractors bound by multi-year contracts, capping much of the cost. Some material costs are though variable and fibre providers have thus seen some price increases. On top of that, there is of course a risk that subcontractors will require higher compensation once existing contracts are to be renewed. Fibre providers assess that the cost of subcontracting mainly is explained by headcount related costs.

The second largest CAPEX item is tightly coupled to the deployment of the fibre network. The **equipment related to the fibre network** is estimated to 30% of revenue. This is mainly the cost for the pipes, the actual fibre and the equipment required such as central nodes, distribution nodes and cabinets. A global shortage of equipment and components could drive costs in this category, but fibre providers have only seen some component prices go up – luckily at a much lower rate than e.g. energy.

CAPEX related to **customer premises equipment** (CPEs) represents 12% of revenue. This is the terminal equipment mounted in the customer's home or premise. Although CPEs might need to be replaced and modernised at some point in time, the need for CPEs mainly follows with the rollout, so also this CAPEX item is coupled to the previous CAPEX items. Fibre providers have sensed some shortage in CPEs from time to time during the pandemic.

All **other CAPEX** typically consumes 3% of the revenues.

³² According to the Danish regulator, SDFI, the investments in fixed networks increased 3.2% in 2021 to a level of 53% of total fixed broadband and fixed telephony revenues – although the level in 2020 was exceptionally high

13.2. Applying projected inflation

We now have a model for how costs – OPEX and CAPEX – are distributed for a typical fibre provider. Let's now apply projected inflation rates on the different cost items.

There is a magnitude of different inflation projections done by e.g. central banks, government institutions and commercial banks. Since this analysis mainly covers countries in the European Union, we have chosen to rely on data from the **European Central Bank (ECB)**. Although the ECB publishes data also for non-Euro countries like Denmark, the level of detail and reporting frequency in the inflation index [HICP](#) (Harmonised Index of Consumer Prices) is the highest for the Euro area which therefore is used as our input.

HICP inflation rate - Overall index

Euro area



Figure 21. Development in HICP inflation rate for the Euro area – up to July 2022 [source: ECB]

As seen in Figure 21, the actual inflation has really increased since December 2020. In July 2022, the currently last published update, the overall annual inflation rate in the Euro area was 8.9%. The differences between the Euro countries can be seen below.

The current HICP has a relatively high level of granularity which we have applied to the typical cost structure of a fibre provider according to the table below. Since labour costs aren't covered by the HICP, we have here used ECB's unit labour cost from its [macroeconomic projections](#), issued four times a year.

Euro area	Cost classified as a part of	Annual inflation rate, July 2022	Annual inflation rate, June 2022
OPEX			
Content costs (CoGS)	HICP – recreation and culture	4.4%	
Personnel costs	Unit labour costs		3.3%
External network maintenance	HICP – services	3.7%	
Energy	HICP – energy	39.6%	
Site rental	HICP – housing	17.7%	
Other OPEX	HICP – services	3.7%	
CAPEX			
CPE	HICP – household equipment	6.9%	
Fiber network – equipment	HICP – non-energy industrial goods	4.5%	
Fiber network – deployment	Unit labour costs		3.3%
Other CAPEX	HICP – non-energy industrial goods	4.5%	

It's obvious that the inflation rates are very different depending on what category they cover with energy inflation contributing much to the overall inflation.

The figures in the table above can be directly applied to our assumed OPEX and CAPEX distribution for 2021. The ECB is however not doing projections for the HICP *components* – just for the HICP as a whole³³. The following table summarised the projections done in June 2022:

³³ Projections are though also done for HICP excluding energy, excluding energy and food and excluding energy, food and changes in indirect taxes. See https://www.ecb.europa.eu/pub/projections/html/ecb.projections202206_eurosystemstaff~2299e41f1e.en.html.

Euro area – projection done in June 2022	2022	2023	2024
HICP	6.8%	3.5%	2.1%
Unit labour cost	3.3%	2.7%	2.0%

In order to model the development of the HICP *components* we have prorated the components according to the changes in the overall HICP. Example: The overall HICP as projected in June 2022 is 6.8% and the projected overall HICP for 2023 is 3.5%. So as, to take an example, "HICP – recreation and culture" was 4.4%, the prorated inflation rate for this category is $3.5\%/6.8\% * 4.4\% = 2.26\%$ for 2023.

As to the unit labour costs, these are already projected by the ECB (see table above) and thus don't need any prorating.

It goes without saying that the modelling and assumptions create uncertainties. The whole task of projecting inflation while Europe experiences a pandemic and a war is very uncertain in itself, though. There have been significant swings in the projected inflation rates and only future will show if the current projections are better than the projections of the past.

13.3. Outcome

Our model said that in 2021, 60% of revenues were used on OPEX. The graph below shows how the OPEX to revenue is projected to develop into 2022, 2023 and 2024 for the typical fibre provider. The graph is indexed so that the revenue of 2021 is 100.

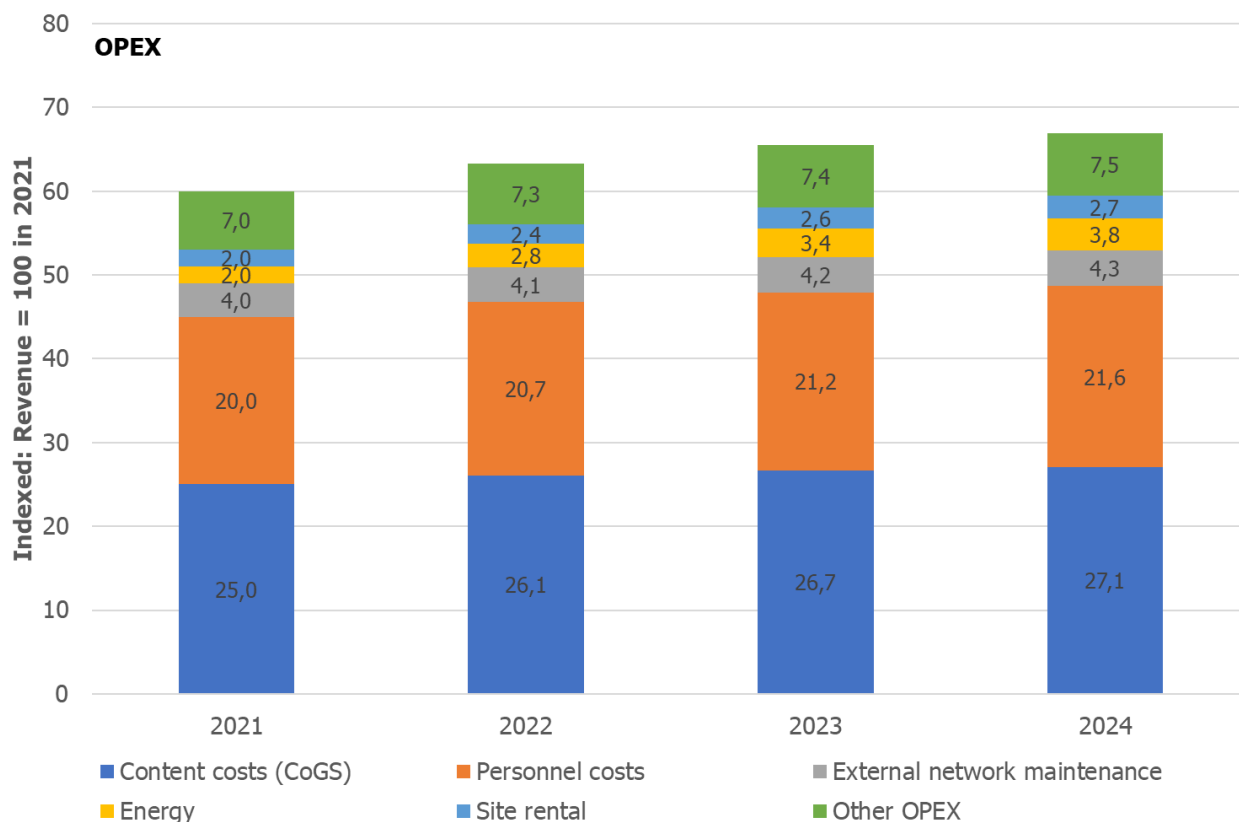


Figure 24. Projected development in OPEX to 2021 revenue for the typical fibre provider. Indexed: Revenue = 100 in 2021.

If summing up the OPEX components, the typical fibre provider should in 2022 expect to use **63%** of its 2021 revenue on OPEX. In 2023, it should expect **65%** of its 2021 revenue. Finally in 2024, it should expect to use **67%** of its 2021 revenue on OPEX.

This expansion of OPEX is explained by the inflation.

The development of the CAPEX – visualised in the same way with the revenue of 2021 indexed to 100 – is shown in the graph below.

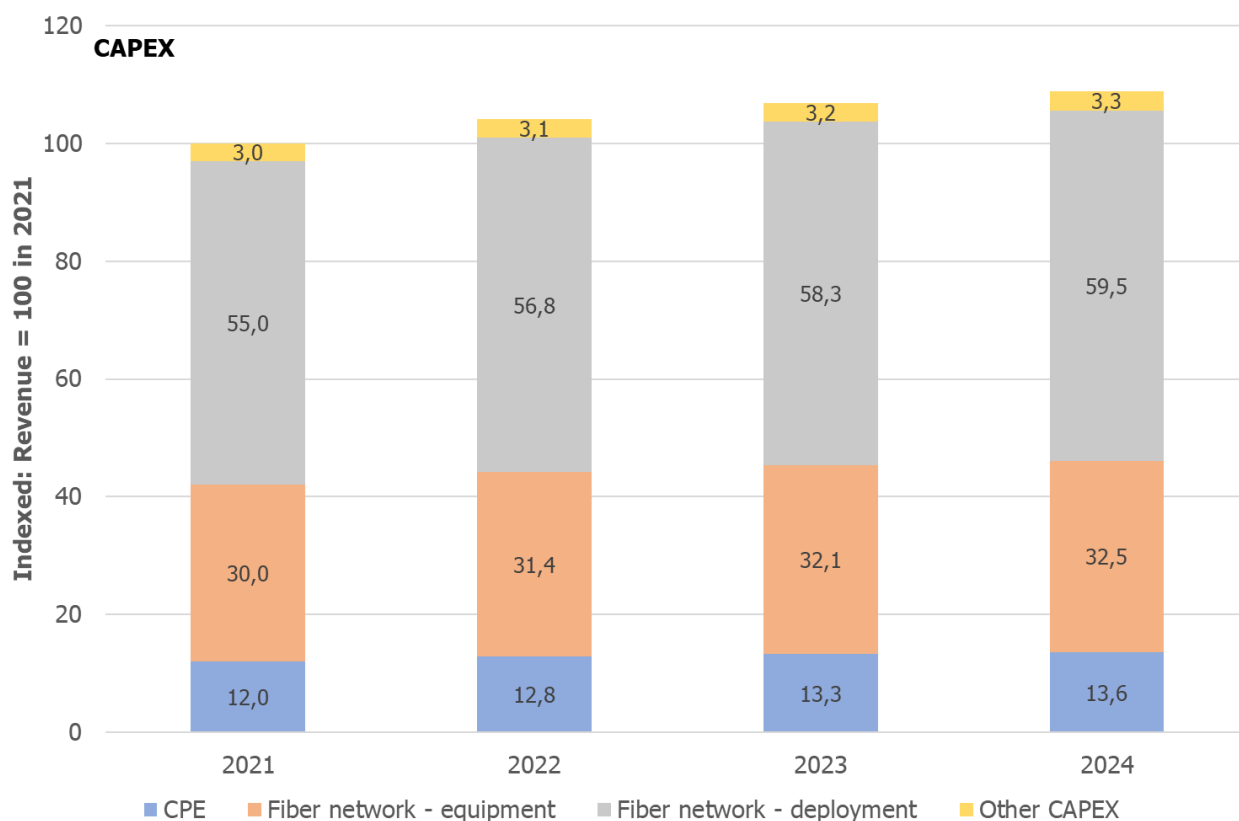


Figure 25. Projected development in CAPEX to 2021 revenue for the typical fibre provider. Indexed: Revenue = 100 in 2021.

If summing up the CAPEX components, the typical fibre provider should in 2022 expect to use **104%** of its 2021 revenue on CAPEX. In 2023, it should expect **107%** of its 2021 revenue. Finally in 2024, it should expect to use **109%** of its 2021 revenue on CAPEX. All this of course based on the assumption that the rollout ambition is the same during the years.

This expansion of the CAPEX is explained by the inflation.

Since most fibre providers fund their CAPEX with loans, the general increase in **interest rates** globally will – when loans should be renewed – affect the finance cost of fibre providers negatively. This will likely hold some fibre providers back when it comes to future CAPEX, adding to the effect on inflation.

If summing up OPEX and CAPEX, the table below shows the total cost implications of the projected inflation.

	2021	2022	2023	2024
OPEX of 2021 revenue [%]	60	63	65	67
CAPEX of 2021 revenue [%]	100	104	107	109
OPEX+CAPEX of 2021 revenue [%]	160	167	172	176
		³⁴ +5%	³⁴ +8%	³⁴ +10%

The total cost – OPEX and CAPEX – is projected to increase **5%** from 2021 to 2022, **8%** from 2021 to 2023 and **10%** from 2021 to 2024.

³⁴ Vs. 2021

14. Summary and conclusion

The extensive pricing research done for this analysis shows that Danish fibre broadband often, but not always, is **less expensive** than in the peer group countries. France is the only country that systematically have lower prices – after adjustment for purchasing power – than Denmark.

Denmark's low-price position is explained by:

- **Affordable** fibre broadband monthly subscriptions – alongside subscriptions in Finland and France
- **As low** one-time fees for *new builds* as in Germany, Belgium, the UK and France – and significantly lower than in Sweden and Norway
- One-time fees for *existing connections* at the **moderate-to-high range** of our international spectrum

These characteristics result in Denmark having:

- **Among the more affordable** total 2-year fees for a new build fibre customer
- **Among the more affordable** total 2-year fees for an existing connection fibre customer

The favourable price position of Denmark comes even though Danish fibre broadband contracts have **minimum contract duration** of 6 months – about 4 months shorter than the average of all markets.

Since this is an update of a similar analysis done in 2021, it also examines how the fibre pricing developed in the year from June 2021 to July 2022. During these thirteen months – for the eight markets analysed also in 2021 – 46-48%³⁵ of comparable 2-year fees increased, 25-26% decreased and 28% didn't change. **Two markets bucked this trend to instead develop towards lower 2-year fees: The UK and Denmark.**

Denmark is, according to Ookla Speedtest data, providing the **fastest median download experience** in its fixed broadband networks.

The COVID-19 pandemic strained the global supply chains and created shortage of certain material and resources which has had an impact on the speed and the cost associated with the fibre rollout. On top of this, Russia's war on Ukraine led to a significant increase in market prices for energy, driving inflation to levels not seen in thirty years. This analysis assesses the impact on the fibre providers. **Both OPEX and CAPEX will be negatively influenced by inflation.**

³⁵ Depending on if the new build or the existing connection case