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MERCADOS Y LA COMPETENCIA



# Telecommunications and Audiovisual Sector Economic Report

**2018**

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## HIGHLIGHTS OF 2018

### Global figures for the telecommunications and audiovisual sector

- **The total turnover of the sector increased by 0.7% compared to 2017 to stand at €34,516 million.**

Revenue from the sale of retail services remained almost unchanged from the previous year, at €25,240 million, while wholesale revenue - corresponding to the services provided between operators - increased by 3.2% to €9,276 million.

Among retail services, mobile broadband was the one with the fastest growth, with a growth rate of 12.7% to stand at €5,275 million.

In terms of wholesale services, the strongest growth was seen in revenue from fixed broadband (an increase of 14.6% up to €917 million) and audiovisual content (7.3% increase up to €3,464 million). At the other extreme we have revenue from fixed and mobile interconnection services which fell by 7.5% and 5.4% respectively, to €899 million and €1,466 million.

- **The penetration of all retail services increased, except for fixed telephony**

The penetration of mobile broadband increased by five percentage points, up to 98.6 lines per 100 people, and fixed broadband reached 32.5 lines per 100 people. Pay television grew by 3.1%, up to 14.8 lines per 100 people, and so did mobile telephony, up to 116.1 lines per 100 people. The penetration of fixed voice was the only one to see a decline, falling to 42 lines per 100 people.

- **Greater degree of bundling of services, mainly due to the increase in bundles including pay television**

The degree of bundling of pay television stands out for the third year running, as 91.3% of subscribers receive it under joint offers with other services. This is 30 percentage points higher than in 2014, when quintuple-play bundles (fixed and mobile voice, fixed and mobile broadband and pay television) started to become significant. Fixed telephony and fixed broadband saw 75% and 97% of lines being bundled, respectively.

- **Quintuple-play bundles were the only ones to grow significantly**

Quintuple-play bundles saw the most significant growth again this year with almost half a million new subscribers, increasing to 5.9 million. This compares to quadruple-play bundles which added 100,000 units and finished the year at 6.3 million.

- **Household spending on quintuple-play and quadruple-play bundles fell in 2018**

At the end of 2018, households with quadruple-play bundles (fixed and mobile voice and fixed and mobile broadband services) spent an average of €53.20 a month - slightly less than at the end of 2017. Furthermore, households with a quintuple-play bundle spent €77.30, almost two euros less than in 2017.

- **Investment in the sector exceeded €5,300 million**

Total investment in the sector stood at €5,340 million. This figure includes the investment in spectrum, which stood at €494 million in 2018.

Leaving out the cost of acquiring spectrum, investment in the telecommunications and audiovisual sector in 2018 was 3.8% higher than in 2017, due to the rollout of their fibre optic networks by the main telecommunications operators, and also to the rollout by the mobile operators of their 4G networks (Long Term Evolution).

- **Extensive rollout of Next Generation Access (NGA) networks**

By the end of the year, NGA networks accounted for 57 million lines, of which 46.7 million corresponded to fibre and 10.3 million to HFC DOCSIS 3.x. These figures represent almost 8.3 million new lines compared to the previous year, corresponding entirely to FTTH (Fibre to the home).

- **The three main operators accounted for 77.1% of total retail revenue**

The market share of the three main operators in this sector (Movistar, Orange and Vodafone) stood at 77.1% of the retail revenue, almost 10 percentage points more than in 2013, the date marking the start of the concentration process taking place in the sector in recent years. The MASMOVIL group accounted for 5.7% and Euskaltel (which includes R and TeleCable), for 2.6%.

## Fixed communications

### FIXED TELEPHONY

- **The trend in the number of fixed lines changed after three years of growth**

The total number of fixed lines fell by about 100,000 lines, down to 19.5 million, and penetration fell by three tenths to 41.8 lines per 100 people.

Likewise, voice revenue from fixed telephony fell by 7%, down to €2,244.4 million.

- **In 2018, the average traffic per fixed line fell significantly, albeit at a lower rate than in previous years**

Voice traffic originating from fixed networks fell by 12.9%, mainly due to the decrease in the average consumption per fixed line, which fell by the same proportion. In contrast, traffic originating on mobile networks grew by 3%.

- **The number of fixed lines bundled with mobile services has increased**

At the end of 2018, 75.3% of all fixed lines were bundled, two percentage points more than in the previous year. 63% of the total were included in a quadruple-play or quintuple-play bundle, compared to 60% in 2017.

- **In terms of fixed lines, the combined market share of the three main operators was 89.5%**

The alternative operators continued gaining ground and reached a fixed line market share of close to 55%, whereas the incumbent Movistar lost 1.5 percentage points during the year to see its share fall to 45.3%. If we add the MASMOVIL group and Euskaltel to the three main operators, the market share of the five taken together is 98%.

## FIXED BROADBAND

- **Broadband connections reached 15.2 million lines**

Fixed network broadband lines increased by 3.5% in the past year, up to 15.2 million. This volume of lines resulted in penetration of 32.5 lines per 100 people.

However, revenue fell by 1.3%, down to €4,411.2 million.

- **Active FTTH lines accounted for more than half of all broadband**

Lines with xDSL technology continued to fall. In 2018, these lines fell by 26%, while FTTH connections grew by 30.2% to stand at 8.7 million, a figure which represents 58% of all broadband lines.

- **9 million lines with a connection speed of 100 Mbps or greater**

The improvement in access networks led to an increase in the speed of the broadband lines provided. 74.2% of lines had a speed equal to or greater than 30 Mbps, compared to 64.8% in the previous year. The percentage of lines with a speed of 100 Mbps or greater reached 58.7%.

- **The MASMOVIL group saw the greatest increase in fixed broadband lines**

509,000 new broadband lines were added to the market. The MASMOVIL group added 478,000 lines in 2018. Movistar ended last year with an increase of 123,000 lines and a share of less than 40%; Orange added just over 26,000 lines and the number for Vodafone fell by 140,000.

- **An increase in convergent bundles offering fixed and mobile services**

96.6% of broadband lines were bundled with another service. Quadruple-play and quintuple-play bundles accounted for 83.5% of all bundles that come with fixed broadband.

- **The local loop unbundling wholesale service continued to decline**

The local loop unbundling service fell by more than 778,000 lines, down to 1.58 million. As the rollout of their FTTH networks continues, the main alternative operators have less need for this wholesale option to serve their final customers.

- **Indirect access and Virtual Unbundled Local Access (known as NEBA Local) services grew significantly**

The new service of virtual access to the fibre network (NEBA Local) ended the year with a total of 632,000 lines. Demand for Telefónica's wholesale indirect access broadband ethernet service (NEBA FTTH) increased slightly and ended the year with 890,000 lines. Furthermore, the increase in the purchasing of wholesale services from the alternative operators stands out. Orange and Vodafone had more than 678,000 indirect access lines between them, a figure which represents a 32.8% increase compared to the previous year.

## Mobile communications

### MOBILE TELEPHONY

- **The number of mobile telephone lines increased to stand at 54.2 million**

Mobile telephony added 1.7 million new lines thanks to the increase in the number of people signing up for a contract which, with 2 million new contracts, offset the reduction of 306,000 in prepaid lines. Penetration at year-end stood at 116.1 lines per 100 people.

However, revenue for retail mobile telephony services - which include voice and message services - fell to €4,136 million, despite the volume of voice traffic generated growing by 4.4%.

- **The prices of mobile phone calls fell by 11.4%**

The average revenue from voice services fell once again. In 2018 there was an overall fall of 11.4% meaning that the average revenue is 3.8 euro cents per minute of conversation.

## MOBILE BROADBAND

- **Mobile broadband services maintained their growth trend in 2018**

A total of 46 million mobile lines accessed the Internet through mobile communication networks in 2018, 2.4 million more than in 2017. Most of these lines, 44.4 million of them, connected to the Internet through their mobile phone.

Meanwhile, revenue grew by 12.7% to stand at €5,274.6 million.

- **The dominance of 4G technology increased in the mobile broadband market**

68.4% of lines accessing mobile broadband services did so using 4G technology. Likewise, 70% of the total data traffic registered in 2018 did so through these high-speed networks.

- **Wholesale mobile communication services experienced an overall fall in revenue for the second consecutive year**

Total revenue for the wholesale market was €1,465.8 million, a figure which represents a 5.4% fall compared to the previous year. The wholesale service with the highest turnover, the national call termination service, registered a fall in revenue of 19.2%. This fall was mainly due to the implementation of the new voice termination prices established by the CNMC as of February 2018.

## Audiovisual services

- **2018 was a stable year without significant changes in the main figures for the audiovisual services sector.**

The advertising revenue obtained by radio and television operators stood at €4,338.3 million, experiencing a slight decline (of just 0.3%) compared to 2017.

The segment with the highest revenue was pay television, with an overall turnover of €2,162.1 million, followed by free-to-air television, with €1,797.5 million in revenue, and radio services with €378.7 million.

Meanwhile, total subsidies stood at €1,824.5 million, with year-on-year growth of 0.3%.

If the subsidies received by operators from the various public bodies are added to turnover, the total income of the sector stood at €6,162.9 million.

- **Increase in the number of pay television subscribers**

The significant progress seen in Spain in recent years in the penetration of pay television services continued in 2018.

The number of subscribers grew by 3.4%, which resulted in a net figure of 227,276 new subscribers, to stand at 6.9 million subscribers by year end. This growth was exceeded by that seen in the take up of offers bundled with television (379,000 new bundles with TV). This means that some of those who had subscribed to pay television services individually have chosen to move to a bundle of services.

- **Pay television and bundles**

At the end of 2018 there were almost 6.9 million subscribers to pay television and almost 6.3 million bundles that included the pay television service. These figures represent an increase of almost 2.8 million subscribers in the last 5 years and more than 4 million pay television bundles in the same time frame.

- **Dominance of IPTV services through xDSL/FTTH networks**

The improvement in high-speed telecommunications networks and the increase in bundling has led to IPTV - broadcast over XDSL and FTTH networks through a reserved bandwidth - positioning itself as the dominant technology for the supply of pay television services.

In 2018, these services represented 66.3% of pay television revenue and 66.4% of all subscribers.





## 1. THE TELECOMMUNICATIONS AND AUDIOVISUAL SECTOR

### 1.1 Introduction

#### Electronic communications sector

The year 2018 came to a close with the approval of the European Electronic Communications Code which introduces significant new features compared to the current regulatory framework. Member States are now responsible for transposing this into national legislation.

In terms of the Spanish market, the trends seen in previous years have generally continued.

The fixed broadband market continued growing in terms of the coverage of new generation access networks (and more specifically fibre) and the take-up of broadband services. So, in 2018, fibre networks reached more than eight million new homes and businesses, and there were more than fifteen million operational broadband lines, 73.6% of which were provided over NGA networks (fibre or cable).

Spain is in the group of European Union countries with the greatest fibre coverage in terms of fibre-to-the-home (FTTH). The fibre networks of Movistar and Orange are the largest in Europe, passing 22 and 14 million homes and businesses respectively. The penetration of ultrafast broadband connections, of over 30 Mbps, continued its upward trend. It is worth noting the noticeable proportion of connections with speeds of over 100 Mbps, which account for 58.7% of the fixed broadband market.

As a new development, it is worth mentioning that fixed broadband revenue has fallen for the first time since 2014, albeit by less than 2%. This ends a four-year period of positive annual growth rates, which reached its highest point in 2016 with an annual growth rate of over 10%.

Almost 88% of the fixed broadband market continues to be served by Movistar, Vodafone and Orange. The combined share of these three operators in the mobile communications market is 78.4%.

However, in this competitive environment it is also worth noting that Movistar's share of the fixed broadband market is only around 40%, whereas in mobile telephony it is around 30%. Also worth noting is that in 2018 the MASMOVIL group has cemented its position as the fourth largest convergent operator on a national level. In less than three years, since it started the joint marketing of fixed and mobile communication services in mid-2016, it has attracted almost a million clients and achieved a fixed broadband market share of close to 7%. Its relative share of the mobile market, where its various brands are better established, is higher, standing at 12.4%. Throughout this year, the MASMOVIL group has continued with its high level of investment and by late 2018 it had its own fibre network passing 5.8 million homes and businesses.

Furthermore, the turnover for mobile services has increased by around 3% compared to 2017, boosted once again by the mobile broadband service. In 2018 the figure of 44 million mobile lines with mobile broadband was exceeded, now representing 82% of all mobile devices. The penetration of mobile broadband (in terms of people) is 98.6%.

The mobile electronic communications services markets are concentrated and characterised by a small number of operators. In the last few years this trend has become more pronounced as a result of a combination of factors that include the strong investment made by the operators to roll out their proprietary networks, the mergers taking place, the sales strategies focused on the joint marketing of a growing number of services and the acquisition of premium audiovisual content.

As in previous years, convergent bundles, which include fixed and mobile communications, account for 81% of the fixed broadband market; and half of these also include the television service. The pay television market has continued with its growth and has reached almost 7 million customers. In any event, the consumption of free-to-air television through DTT (digital terrestrial television) is still high, at 75%, and co-exists with alternative audiovisual services: OTT platforms, video-streaming, etc.

Vodafone made the important decision in 2018 not to broadcast Champions League football matches or the “El Partidazo” programme showing games from the Spanish football league. This strategic decision led to a noticeable increase in the promotional activity of all operators from August, with significant discounts (for example, 50% for one year), mainly aimed at attracting the customers with convergent bundles including television to other operators.

This situation, coupled with the success of the MASMOVIL group’s strategy of marketing convergent services without television and the subsequent reaction of the “traditional” operators in launching products, through secondary brands, aimed at this market segment, has contributed to increasing the downward pressure on prices in the fixed broadband market. At the end of 2018, the spending of the households taking up convergent offers without television fell by 0.7% compared to the same period in the previous year. Furthermore, households with convergent offers with television also reduced their spending by 1.8%.

The evolution of this competition between alternative infrastructures and the current regulatory framework, as a result of which Telefónica must offer virtual unbundled access to its fibre network (its “NEBA local” service) and the 30 Mbps limit on wholesale broadband services (NEBA services) has been lifted, have led to the signing of wholesale access and co-investment agreements between competitors. Thanks to these agreements, the three major operators have a similar geographical reach in terms of the commercial supply of NGA services, around 22 million homes and businesses, while that of the MASMOVIL group is around 15 million. Likewise, there has been a very noticeable increase in the fibre NEBA local and NEBA FTTH wholesale services, which account for more than 1.5 million lines.

## **Audiovisual sector**

The audiovisual sector is undergoing a dynamic transformation process characterised by digitisation and convergence, which has resulted in significant changes in consumption patterns and in the production and making available of content, the latter through a series of technologies which, in the case of Spain, are mainly digital terrestrial broadcasting, fibre optics and HFC cable networks.

The main trend seen in the sector is the gradual decrease in the consumption of content through traditional linear television, mainly due to people spending more time consuming on-demand content and using the Internet to access the social networks.

However, the consumption of traditional television is expected to maintain relatively high figures, around three quarters of the total, due to the appeal of its general and themed content (sports, drama, news, children, etc.), and the free and universal coverage of DTT. To this we must add that the decline in the consumption of traditional television is not as pronounced as one might have expected given the decline in linear consumption. This is due to the growth of on-demand consumption (catch-up in the 7 days after the linear broadcast), which in 2017 already represented a significant part of the time spent watching television in some countries (14% in the United Kingdom and 9% in France), and accounts for 3% in Spain.

The organisations operating in the sector fund their activities in very different ways, either through direct income derived from the sale of their contents to users or through income obtained from supplementary activities such as the broadcasting of advertisements.

In terms of the advertising income received by free-to-air television, which funds this service, in Spain this remains at around 40% of the total advertising investment in traditional media, compared to 29% for the Internet (Source Infoadex). However, between 2016 and 2017 advertising investment in television only grew by 1%, compared to growth in total advertising in non-conventional media of 2.3% and in advertising on the Internet of 10%. According to the European Audiovisual Observatory, since 2016, the Internet has become the most important medium for the broadcasting of advertising in Europe, with a 40% share in 2017.

In Spain, the number of households signing up for pay television services continues to grow, mainly marketed through IPTV and to a lesser extent through cable or satellite. These make it possible to access premium content, such as series, motion pictures or sports competitions. If we take into account the penetration of these services in other countries, there is still room for growth for pay television in Spain.

Together with the online audiovisual content providers which are also electronic communications operators (Movistar+, Vodafone TV and Orange TV), the Netflix platform continues increasing its number of customers, followed at some distance by Amazon Prime and HBO. Among the national OTT providers, Rakuten, Filmin, Flixolé and Cineclick stand out.

Together with these general or film-based organisations, new themed providers are appearing focused on sporting competitions, such as LaLiga and DAZN.

Likewise, DTT providers are focussing on on-demand content. As well as access to content through Atresplayer, Mitele and Playz, they are trying to combine the broadcasting of their programmes with on-demand access using television broadband connections, through technologies such as HBBtv, on which the LovesTV initiative, launched jointly by CRTVE, Mediaset and Atresmedia is based. These initiatives by the DTT providers have still not had the predicted success.

Furthermore, it is worth mentioning the strong position of audiovisual productions in Spain, as has been confirmed by the latest report published by the CNMC on the obligations to financially contribute to the production of European works. In 2017, €410 million was invested, which is three times higher than the required investment amount of €133 million. It is for the production of series that the market is most strongly exceeding the investment required by the sector's regulations (these figures take into account investments in Europe, not just in Spain, by organisations established in our country).

Also worth noting is the concentration of this investment: 90% of the obligation to finance European works in advance is accounted for by four major groups: Atresmedia, Mediaset, CRTVE and Telefónica. The remaining 16 organisations account for the remaining 10% of the obligation, with individual contributions ranging between 0.1% and 1.5% of the total.

The talent and technical skills shown by the Spanish audiovisual industry mean that, in addition to the providers established in Spain, other important audiovisual production companies are strongly investing in productions in our country. According to the European Audiovisual Observatory, citing figures from Ampere's Commissioning Analytics, Spain is ranked fifth in the number of projects being developed or produced: Mediaset 19 projects, Netflix 15, Atresmedia 13, CRTVE 13, Telefónica 12.

Lastly, the transposition of the Audiovisual Media Services Directive, which is expected to take place in 2020, will allow for the establishment of protection against illegal content for users in

general, and protection against unsuitable content for minors in particular, which will be standardised for all providers, bringing linear and on-demand services into line, so that the degree of protection is the same regardless of the way in which the audiovisual content is being accessed at any given time. It is worth noting that with the new possibilities being offered to the public, such as access to linear television content on demand, users will not be aware of whether they are in a linear or on-demand reception mode, which is why it is important to make the level of protection the same for both options.

In addition, the application of similar regulations in relation to both the protection of minors and advertising to bodies competing in the same market is essential in order to develop a balanced competitive system.

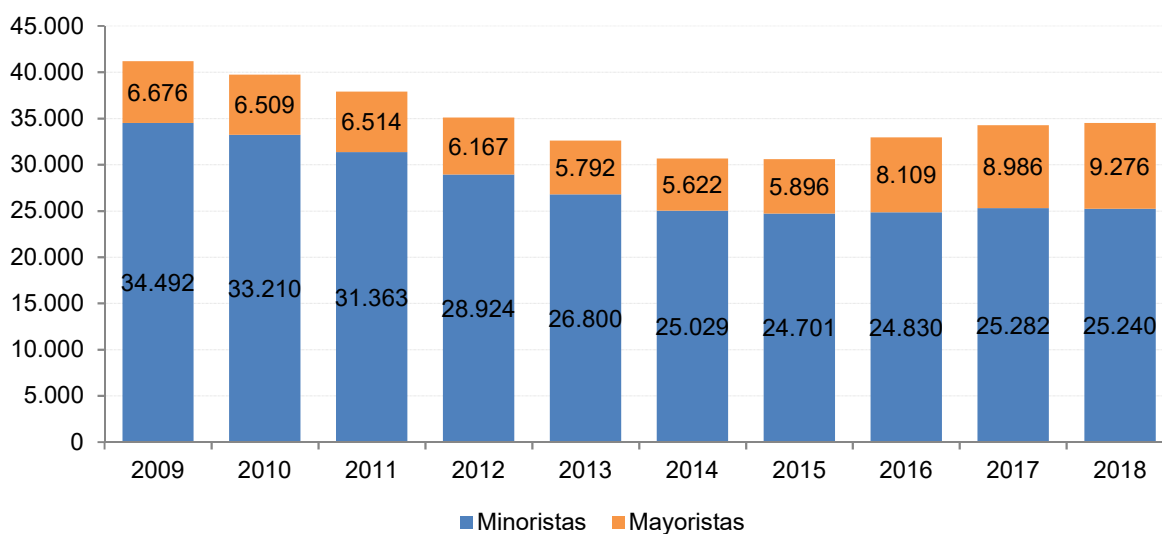
## 1.2 Revenue

In 2018, retail revenue remained practically unchanged from the previous year, whereas wholesale revenue grew for the fourth consecutive year, albeit at a slower rate this year. The three main operators accounted for 77.1% of retail revenue, slightly lower than in 2017. This percentage increases to 85.5% if we add the MASMOVIL group and Euskaltel operators.

MASMOVIL group, which in late 2018 acquired the customer portfolio of the Mobile Virtual Network Operator (MVNO) Lebara, strengthened its position as the fourth largest provider, with growth in its retail revenue of 22.63% and the addition of almost a million fixed broadband lines and more than 6.7 million mobile lines (12.4% market share).

In terms of the sales strategy, Movistar continued to focus on pay television content, as did Orange, while Vodafone decided not to include some of the football rights (Champions League and El Partidazo) in its offers, as it did not believe it was a profitable business. This led to Vodafone losing more than 100,000 subscribers over the last year, while Movistar increased its pay television base to more than four million subscribers, despite a decrease in the satellite business from DTS. Orange also grew to around 700,000 subscribers. Furthermore, the three main operators included access to the content of some of the most popular OTTs (Netflix, HBO, etc.) in their television offers, with special offers in some cases and billing of the final customer. At the end of the year, the three main operators accounted for 88% of pay television subscribers, the same figure as in 2017.

Evolution of the sector's total revenue (€ million)



Source: CNMC

In terms of revenue for the provision of retail services, those for mobile broadband increased, while those for fixed broadband<sup>1</sup> and audiovisual services (excluding the subsidies received by public operators) fell slightly, in contrast to the trend seen over the last three years.

#### Revenue from retail services 2017-2018 (€ million and percentage)

	2017	2018	Variation 2017/2018
<b>Fixed communications</b>	<b>8,330.18</b>	<b>8,119.93</b>	<b>-2.5%</b>
Fixed telephony	2,412.05	2,244.39	-7.0%
Fixed broadband	4,468.67	4,411.24	-1.3%
Business communications	1,432.56	1,453.01	1.4%
Telephone information	16.90	11.29	-33.2%
<b>Mobile communications</b>	<b>9,131.01</b>	<b>9,410.68</b>	<b>3.1%</b>
Mobile telephony	4,451.85	4,136.06	-7.1%
Mobile broadband	4,679.16	5,274.62	12.7%
<b>Audiovisual services</b>	<b>4,350.18</b>	<b>4,338.33</b>	<b>-0.3%</b>
<b>Other</b>	<b>3,470.23</b>	<b>3,371.03</b>	<b>-2.9%</b>
<b>TOTAL</b>	<b>25,281.59</b>	<b>25,239.97</b>	<b>-0.2%</b>

Source: CNMC

In 2018, we saw the continuation of the downward trend seen in previous years in terms of the proportion accounted for by voice services, in both fixed and mobile networks<sup>2</sup>, while

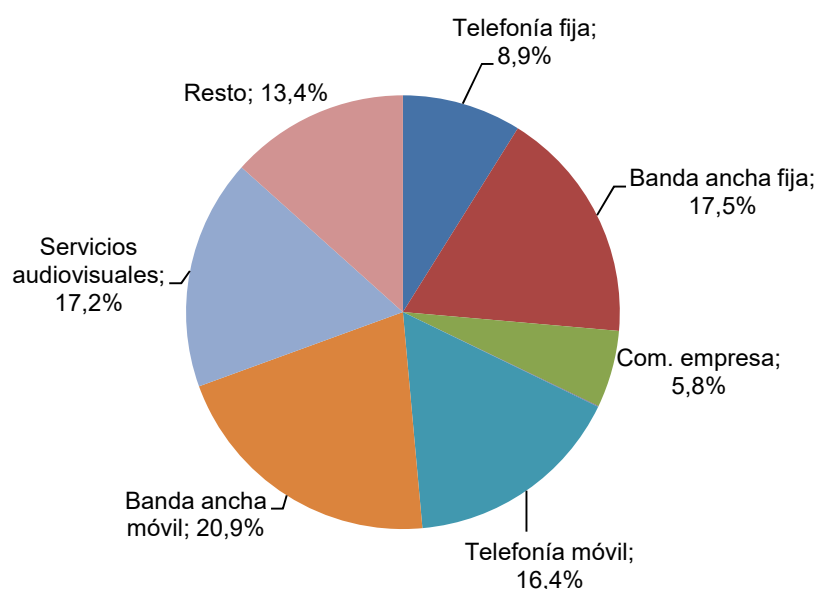
<sup>1</sup> The fall in revenue from fixed broadband is the result of a change in the way that Movistar allocates income between this service and mobile broadband.

<sup>2</sup> This includes messaging services.

broadband services increased their contribution to total retail revenue. Broadband represented 38.4% of total retail revenue, two percentage points more than in 2017, while voice services decreased their contribution to 25.3% of the total. The revenue decreases seen for fixed and mobile voice services were very similar, at around 7%. As a whole, broadband was close to an annual figure of €9,700 million, 5.9% higher than in the previous year.

Audiovisual services saw an end to the upward trend of the past four years and recorded practically the same revenue as in 2017. The reason was the decrease in the free-to-air television business (-1.9%), which was not offset by the limited growth in pay television (0.4%).

Distribution of revenue from retail services in 2018 (percentage)



Source: CNMC

In contrast, revenue from wholesale services continued growing, by 3.2%, although at a slower rate than in 2017<sup>3</sup>, when the increase was 10.8%.

The revenue from interconnection services as a whole fell by 6.2%, with falls in both fixed network services and mobile network services, where the MVNO third-party operator access service declined for the second year running.

In terms of the revenue from wholesale fixed broadband services, the 14.6% increase was the result of growth in three services; two of them provided by Telefónica, specifically the new broadband ethernet service (NEBA) and NEBA Local (VULA), and the third, the IP concentration indirect access service, provided by other operators (specifically that provided by Orange to the MASMOVIL group on fibre and copper pair).

<sup>3</sup> Wholesale revenue includes sales to third-party operators and sales to companies in the same group. Also included is revenue from the sale of audiovisual content.



NEBA local (VULA) was easily the service that grew the most, gaining over 630,000 lines in just one year. In contrast, demand for the NEBA indirect service stagnated, registering almost the same number of lines as in 2017 (close to one million). The IP concentration indirect access service grew for the second consecutive year, mainly due to the commercial wholesale service Orange provides to the MASMOVIL group so that the latter can offer fixed telephony and broadband services to its end customers. In contrast, the fall in demand by alternative operators for the local loop unbundling service seen since 2014 has continued as they progress with the rollout of their fibre optic access networks, and also due to the local NEBA (VULA) product.

Revenue for audiovisual content (essentially rights for football, series and the commercialisation of own productions) grew again this year, although when subtracting the amount for sales between companies in the same group<sup>4</sup> the figure is €1,452 million, practically the same as in 2017.

#### Revenue from wholesale services 2017-2018 (€ million and percentage)<sup>5</sup>

	2017	2018	Variation 2017/2018
Fixed interconnection	971.13	898.60	-7.5%
Mobile interconnection	1,549.66	1,465.78	-5.4%
Leased lines	804.34	785.71	-2.3%
Data transmission	219.38	230.72	5.2%
Fixed broadband	799.82	916.53	14.6%
Transport and broadcast	352.93	351.44	-0.4%
Audiovisual content	3,227.94	3,464.38	7.3%
Other services	1,060.37	1,163.32	9.7%
<b>Total</b>	<b>8,985.57</b>	<b>9,276.49</b>	<b>3.2%</b>

Source: CNMC

In relation to retail revenue per operator, Movistar and Orange had practically the same revenue as in 2017, whereas Vodafone's revenue fell by 5.3%. The MASMOVIL group<sup>6</sup>, which includes Mas Móvil Telecom, Yoigo, Pepephone and the fixed operator focussing on companies called Xtra Telecom, was in fourth spot in terms of revenue, with very noticeable

<sup>4</sup> Revenue corresponding to payments between companies that belong to the same group, mainly from the sale of contents between DTS and Telefónica de España.

<sup>5</sup> Vodafone and Ono continue reporting their data separately and therefore declaring the wholesale revenue from the services they provide to each other. This is also the case for Euskaltel, R and TeleCable. In contrast, Orange and Jazztel have declared their figures jointly since 2016.

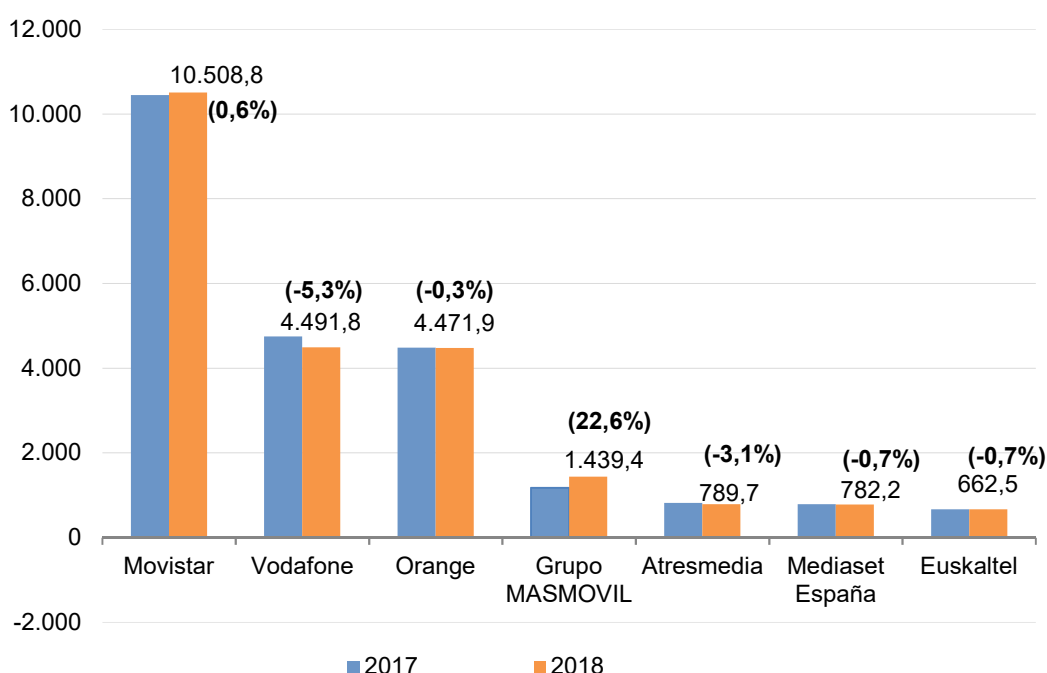
<sup>6</sup> The MASMOVIL group has included the MVNO LlamaYA since 2017 and the MVNO Lebara since the final quarter of 2018.



growth of 22.6%. Meanwhile, Euskaltel's revenue was practically unchanged from the previous year, after acquiring TeleCable in late 2017<sup>7</sup>.

In terms of the two main free-to-air television operators, both registered falls; Mediaset, by 0.7%, while Atresmedia lost 3.1%, in line with the evolution of their advertising revenue, which for both represents more than 95% of their total turnover.

Retail revenue by operator, and in brackets the year-on-year rate of change (€ million and percentage)<sup>8</sup>



Source: CNMC

The concentration process that the sector has been experiencing in recent years has created a scenario where the three main operators account for a large proportion of total revenue. Specifically, in 2018 they accounted for 77.1% of the total, almost 10 percentage points more than in 2013.

The purchase of Ono by Vodafone in 2014 led to the latter gaining an additional four percent of market share, strengthening its position in the market and distancing itself from Orange. However, in 2015, Orange, after acquiring Jazztel, also added four percent to its market share,

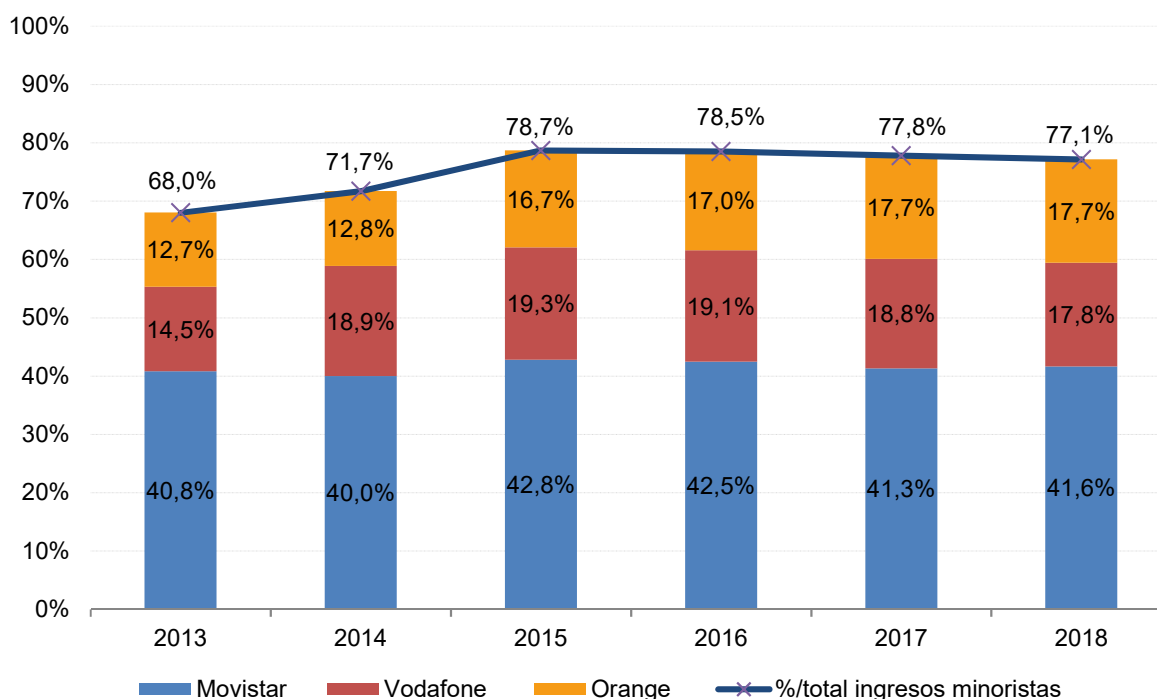
<sup>7</sup> The variation in revenue is calculated by combining the revenues of TeleCable and Euskaltel for the whole of 2017, despite the purchase being completed in the third quarter of that year.

<sup>8</sup> The revenue of the mobile network operators includes the amounts corresponding to the MVNOs and commercial brands they own.

to stand at 16.7% of the total, while Movistar strengthened its leading position after acquiring DTS in that same year.

In 2018, the MASMOVIL group represented 5.7% of retail revenue compared to 4.6% in the previous year, and Euskaltel, after purchasing R in 2015 and TeleCable in 2017, occupies fifth place among the telecommunications operators with 2.6%. As a result, the five largest operators accounted for 85.5% of the sector's retail revenue.

Market shares of the three main telecommunications operators by retail revenue and their percentage of total retail revenue in the sector<sup>9</sup>



Source: CNMC

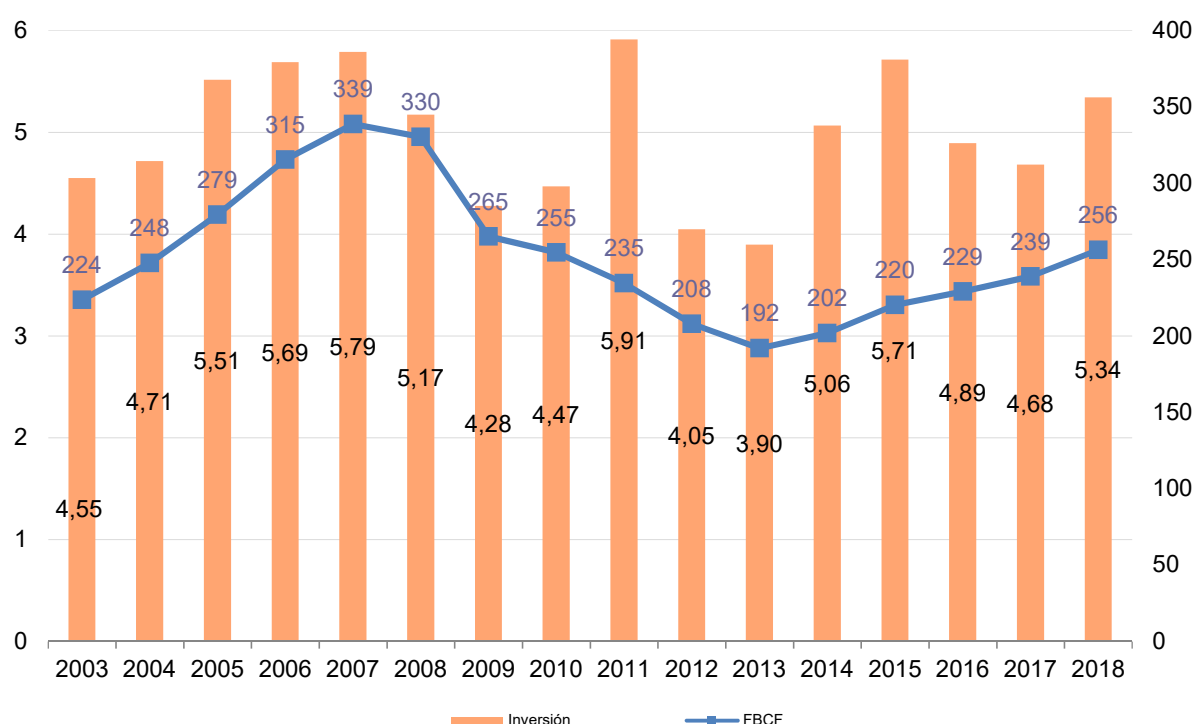
### 1.3 Investment and employment

<sup>9</sup> In 2014, Vodafone's revenue includes that of Ono for the entire year. In 2015, Orange's revenue includes that of Jazztel, and Movistar's includes that of DTS for the entire year, although the takeover operations took place in the third and second quarter of 2015, respectively.

The total investment in the sector in 2018 stood at €5,340.3 million, including the amount corresponding to audiovisual operators. This figure includes investment in spectrum, which in 2018 stood at €494 million, most of which corresponds to the acquisition of the 5G spectrum by the three main operators. Excluding the amount accounted for by spectrum, the change in investment was positive, being 3.8% higher than in 2017.

As in previous financial years, the main driving force for investment continued to be the rollout by the main operators of their new generation access networks and their mobile networks.

Total investment in the sector and gross fixed capital formation<sup>10</sup> (€ billion)



Source: CNMC and INE (National Institute of Statistics)

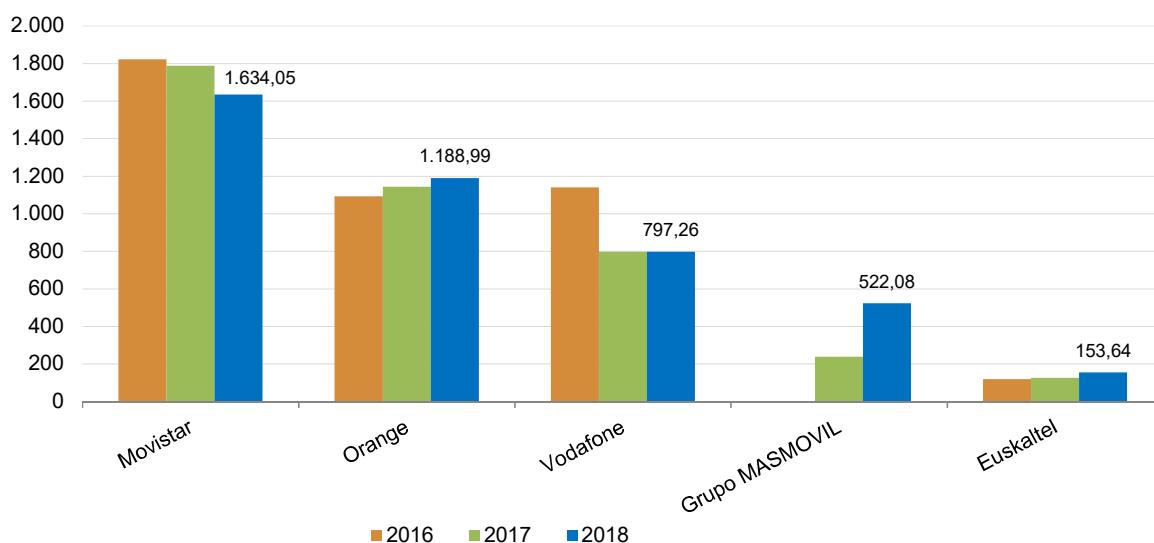
The investment figures on an individual level<sup>11</sup>, excluding the amount spent on spectrum, show that, of the three main operators, Orange was the only one that increased its investment in

<sup>10</sup> Gross Fixed Capital Formation represents the increase in value of the fixed tangible or intangible assets of producers resident in Spain. These assets are used together with other factors of production to produce goods and services. An asset is considered fixed when it is used in production for more than one year.

<sup>11</sup> The year-on-year variation for each operator is calculated without taking into account investment in spectrum. To obtain a significant variation rate, the investment of all operators that comprise a group are compared, regardless of the moment when the purchase became effective. For Movistar, the investment in the fixed business (Telefónica de España), the mobile business (Telefónica Móviles)

2018, by 4%. Movistar reduced its investment by 8.6%, especially due to the slowdown in the rollout of its fixed access network, while it maintained its investment in the mobile business. Finally, Vodafone maintained its level of investment. The MASMOVIL group occupies fourth position among the telecommunications operators, and more than doubled its investment compared to 2017. Lastly, Euskaltel<sup>12</sup> increased its investment by 23% after acquiring R in late 2015 and TeleCable in 2017.

Evolution of investment in the sector by operator, excluding spectrum (€ million)



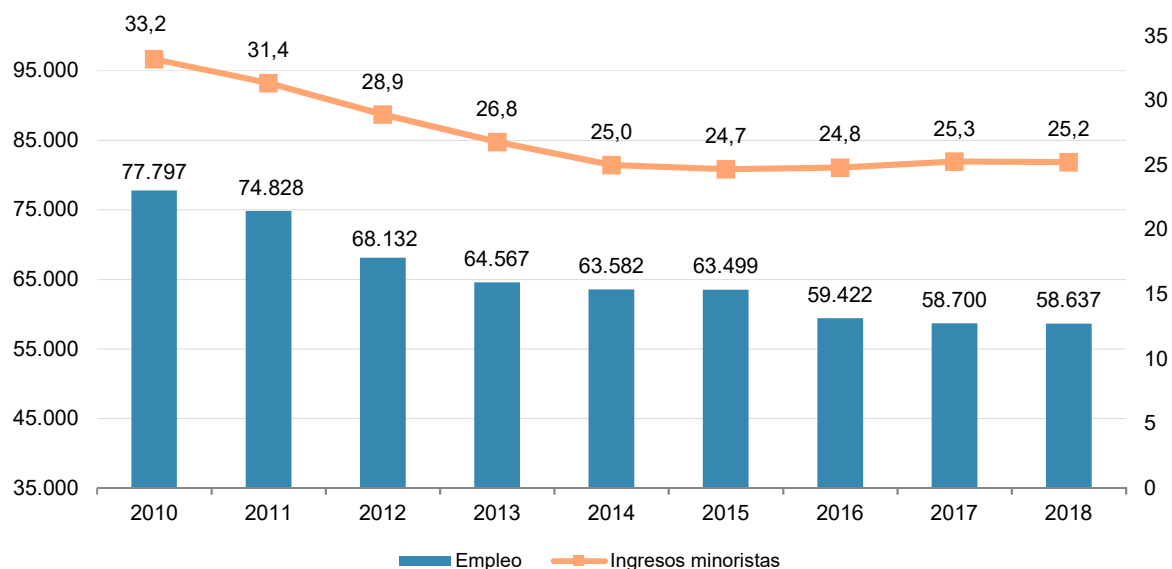
Source: CNMC

The number of employees in the sector, including those in the audiovisual segment, remained unchanged from 2017. The effects of the various merger processes taking place in the last few years were not as strong, which led to the number of employees again being very close to 59,000. Movistar reduced its workforce by 6.8%, while Orange and Vodafone increased theirs by around 3%, although the latter operator announced a workforce adjustment plan in November 2018 which could affect around 25% of its workforce.

and the audiovisual business (DTS and TAD) have been included. The investment of the mobile network operators includes that of the virtual mobile operators they own.

<sup>12</sup> Euskaltel includes the investment of TeleCable for all of 2017 despite the purchase operation being completed in the third quarter, and TeleCable is included for 2016 to calculate the year-on-year variation.

Evolution of employment in the sector and revenue for retail services (number of employees and € billion)



Source: CNMC

## 1.4 Infrastructure

### • Fixed network infrastructures

The rollout of fibre-to-the-home (FTTH) networks by Movistar and the main alternative operators continued, with significant progress being made. The investment in the rollout of NGA networks over the last few years, to offer services through fibre lines instead of the traditional xDSL lines, has left the percentage of FTTH lines at 65% of total lines installed.

Specifically, FTTH lines installed stood at almost 46 million<sup>13</sup>, compared to 37.6 million in 2017, a figure which represents a 22.2% increase. It is worth mentioning that FTTH lines were the most used, both by the incumbent as well as by the main alternative operators that do not use HFC lines to offer voice and data services.

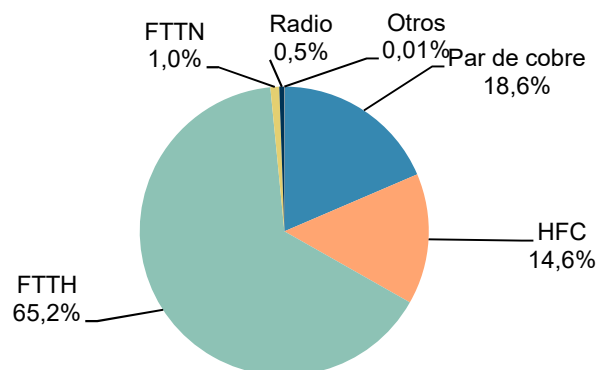
Furthermore, the number of HFC lines (fibre to a node and coaxial cable to the home) was practically unchanged at 10.33 million lines. Of this figure, almost all of the lines are installed in nodes with DOCSIS 3.x technology, which allows for speeds greater than 100 Mbps.

<sup>13</sup> This figure corresponds to the number of homes and businesses covered by the lines. Furthermore, this figure is the sum of all the operators' lines. In this sense, it is worth noting that there is a percentage of overlap in these lines because one or more operators may have lines installed in the same building, therefore covering the same homes/businesses.

Installed lines over copper pairs continue with the downward trend of recent years. In late 2018, the number of copper lines stood at 13.1 million<sup>14</sup>, with a fall of 5.1% over the last year.

Finally, lines using the remaining technologies did not show any noticeable changes and continued to account for a relatively insignificant percentage.

Installed lines by technology (percentage)

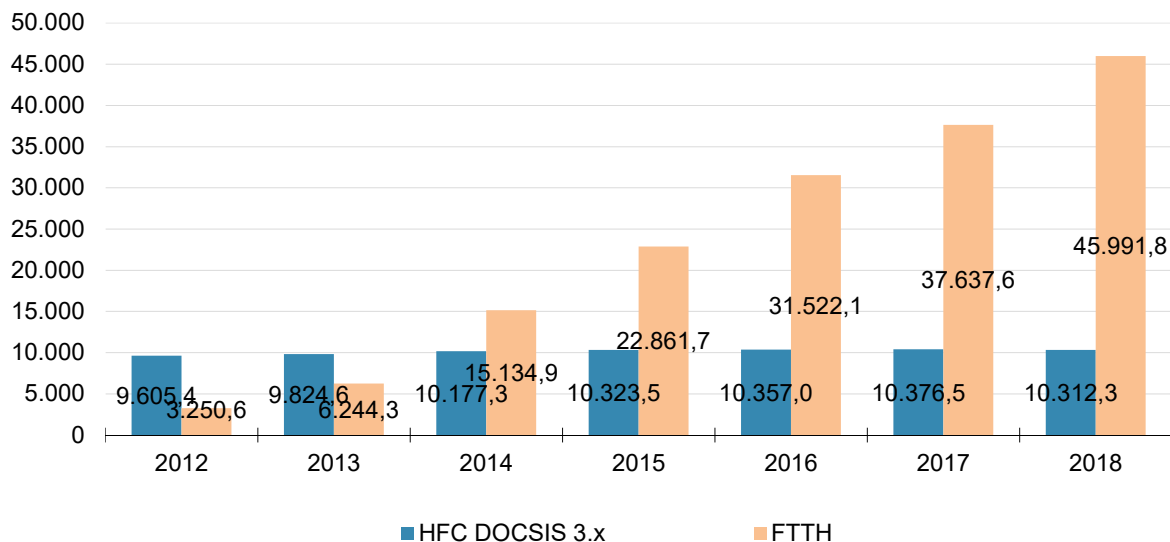


Source: CNMC

The evolution of installed NGA lines (HFC DOCSIS 3.x and FTTH) reflects the fact that fibre lines to the home have shown the greatest increase over the last few years. Thus, in the year 2018, installed FTTH lines reached 46 million, a figure which represents an increase of 8.3 million lines in the last year. Furthermore, HFC DOCSIS 3.x lines fell by 0.6%, down to 10.31 million. This decrease is due to the migration from hybrid fibre and coaxial (HFC) lines to FTTH lines that some operators are carrying out.

<sup>14</sup> The figure does not include lines where no telefonica service exists (known as “pares vacantes”).

Evolution of installed NGA lines (thousands of lines)



Source: CNMC

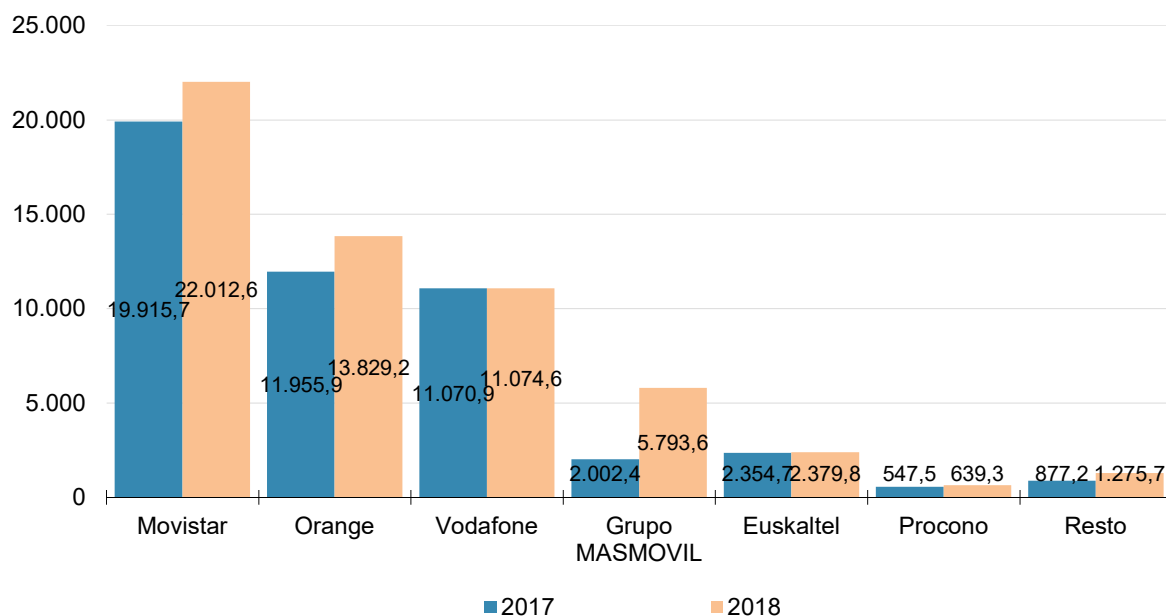
The following graph shows the evolution of installed HFC DOCSIS 3.x and fibre optic lines over the past two years. Movistar ended the year with a total of 22 million fibre lines installed (38.6% of all NGA lines), including, where relevant, the fibre-to-the-node (FTTN) and fibre-to-the-home (FTTH) variants. Of these, the vast majority, 21.3 million, were FTTH lines.

In second place was Orange, with 13.8 million FTTH lines, a figure which represents 24.3% of the market total. Vodafone accounted for 11 million NGA lines (19.4%), taking into account both HFC and FTTH lines, of which 3.5 million were FTTH lines.

The most notable increase in FTTH fibre rollout was conducted by the MASMOVIL group. This operator ended the year with 5.8 million FTTH lines and a market share of 10.2%.

Lastly, the cable operator Euskaltel (which acquired R in mid-2015 and TeleCable in mid-2017) ended the year with 2.4 million NGA lines, which is a market share of 4.2%.

Evolution of installed NGA lines (DOCSIS 3.x, FTTH and FTTN) by operator (thousands of lines)



Source: CNMC

## • Mobile network infrastructures

### - Base stations

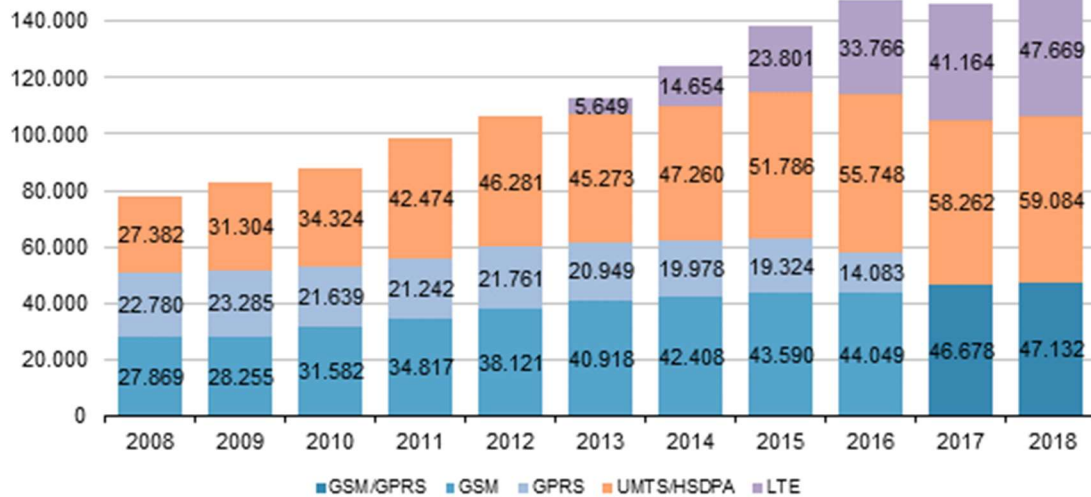
In 2018, for the sixth consecutive year, the mobile communication operators rolled out radio equipment based on Long Term Evolution (LTE) technology, i.e. the fourth generation of the mobile communications standard, also known as 4G technology. This technology makes it possible to reach theoretical data transfer speeds of more than 100 Mbps.

So, in the year 2018, the mobile network operators had rolled out a total of 47,669 LTE base stations, a 15.9% increase compared to the previous year. Although in the first phase the operators focused on the main cities, there has been a general gradual rollout to the rest of the country.

The operators also continued investing in the other mobile technologies, albeit at a slower pace than in LTE technology. An example of this was the number of UMTS/HSPA base stations reported in 2018 - 59,084 active stations - which represented a year-on-year increase of 1.5%. Likewise, the mobile operators reported more than 47,000 GSM/GPRS base stations rolled out across the country.



Evolution of the number of base stations by technology<sup>15</sup>

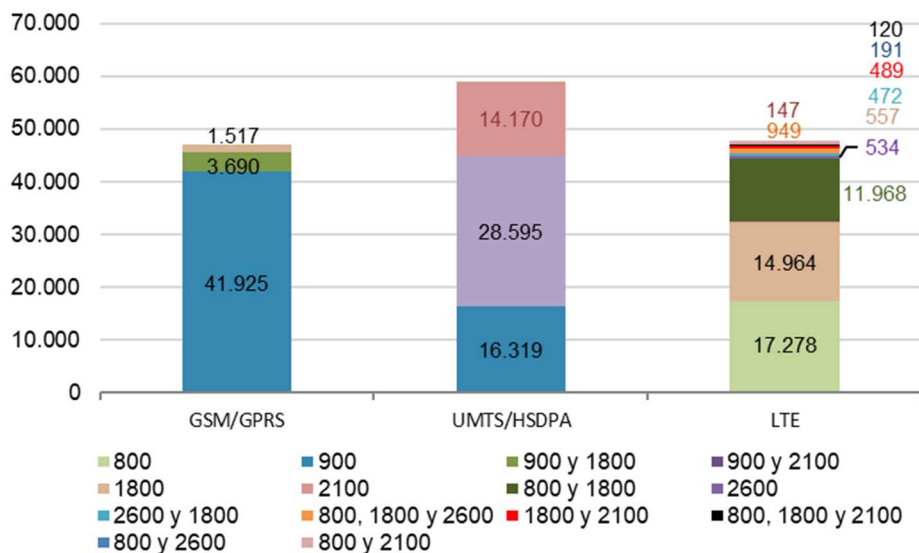


Source: CNMC

It is worth mentioning that Spanish Royal Decree-Law 17/2014 of 26 December, on measures for the financial sustainability of the autonomous communities and local bodies and others of an economic nature, established 31 March 2015 as the final date for the liberalisation of the 800 MHz band, which allowed operators to start offering mobile services through these frequency bands as of that date. The use of this band made it possible to broaden the coverage of the LTE networks. The following graph shows, for the year 2018, the distribution of base stations according to their technology and band used.

<sup>15</sup> Since 2017, the figures on stations using the GSM and GPRS technologies have been combined due to the equipment being able to emit both technologies without distinction. The GPRS system is essentially an update of the GSM communications standard.

Number of base stations by technology and frequency band in 2018



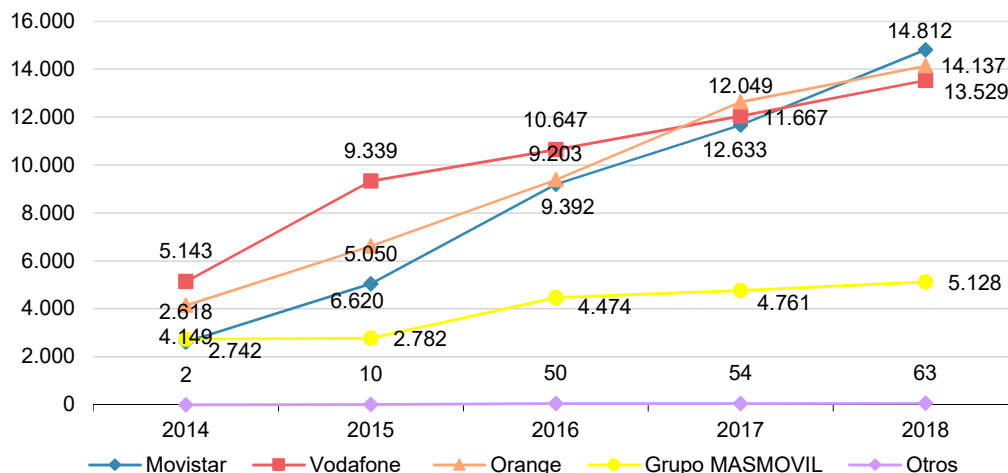
Source: CNMC

The development of radio equipment means that a single telecommunications device can emit signals for the various technologies available (GSM/GPRS, UMTS/HSPA and LTE) at multiple frequencies. The previous graph shows how a significant proportion of the equipment rolled out by the mobile operators offers this possibility, therefore enabling improved coverage, as well as clear savings in the cost of rolling out new mobile technologies. As an example, in the year 2018, 28,595 base stations with UMTS/HSPA technology transmitted simultaneously in the 900 MHz and 2,100 MHz frequencies. In fact, this form of transmission became the most widely used when rolling out UMTS/HSDPA technology in Spain.

In terms of the rollout of 4G technology, in the early years it was carried out mostly in the 1,800 MHz bands. However, the option since 2015 to offer LTE technology coverage through the 800 MHz frequency has led to most base stations currently rolled out by the operators transmitting at this frequency. Therefore, in 2018, over 29,246 of these stations had been installed, of which 11,968 transmitted simultaneously in 800 MHz and 1,800 MHz.

The following graph shows the evolution of LTE base stations in terms of the network operators rolling them out. Therefore, it can be seen that in 2018, Movistar, the network operator with the highest market share, became the operator with the largest number of LTE base stations rolled out across the country. It is worth mentioning that the “Other” section refers to operators such as Euskaltel, Aire Networks and the Consorcio de Telecomunicaciones Avanzadas (COTA) which, despite being a local initiative focused on the province of Murcia, in late 2012 became the first operator to officially offer LTE connectivity in Spain.

Number of LTE base stations rolled out by operator

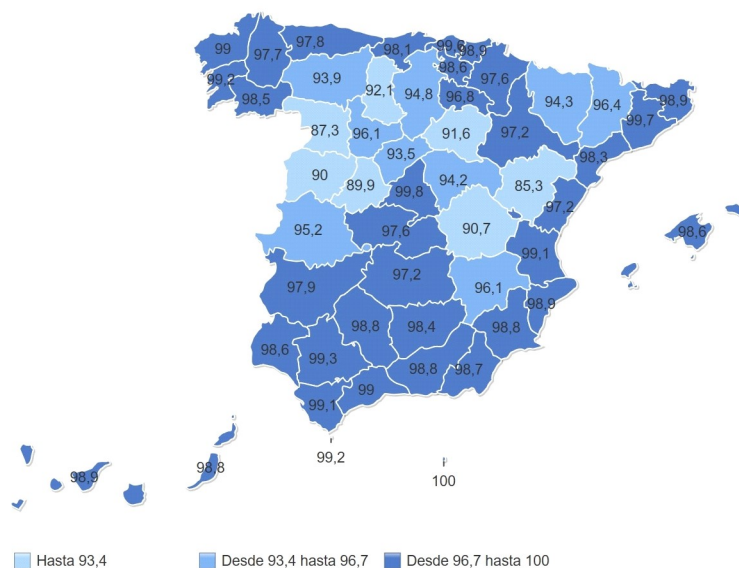


Source: CNMC

The figures suggest that the vast majority of the population now has access to this technology, although it is also true that the provinces with the highest urban population concentrations generally have better coverage.

In the case of coverage with 4G technology, greater differences were observed between the provinces analysed. So, Madrid and Barcelona have slightly better coverage than the rest of the country, although these differences have gradually diminished as the operators have expanded their network of base stations.

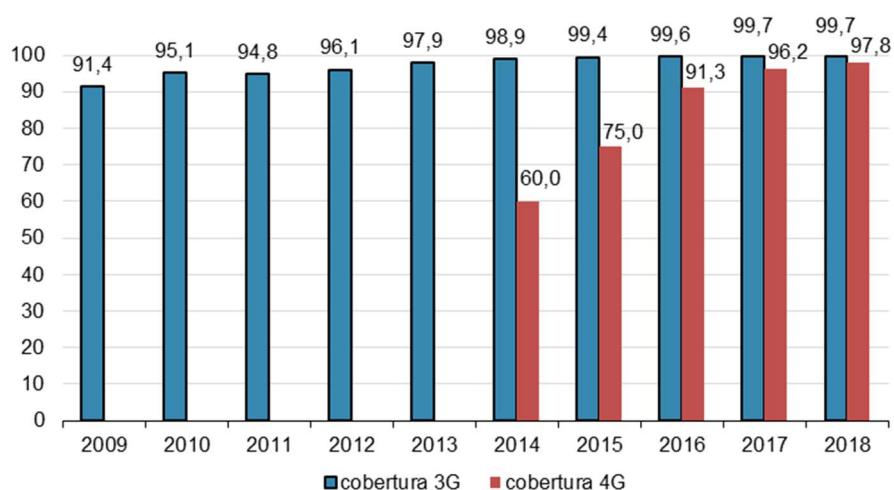
#### Population with access to 4G networks (LTE) (percentage)



Source: CNMC

According to the figures reported by the mobile operators with a proprietary network, 99.7% of the Spanish population is covered by at least one 3G network, through either UMTS or HSPA technology. Furthermore, the figures reported by the network operators also show that, in principle, more than 97.8% of the population has the option to connect to at least one 4G network (LTE).

Population covered by at least one 3G or 4G network (percentage)



Source: CNMC

## - Physical locations

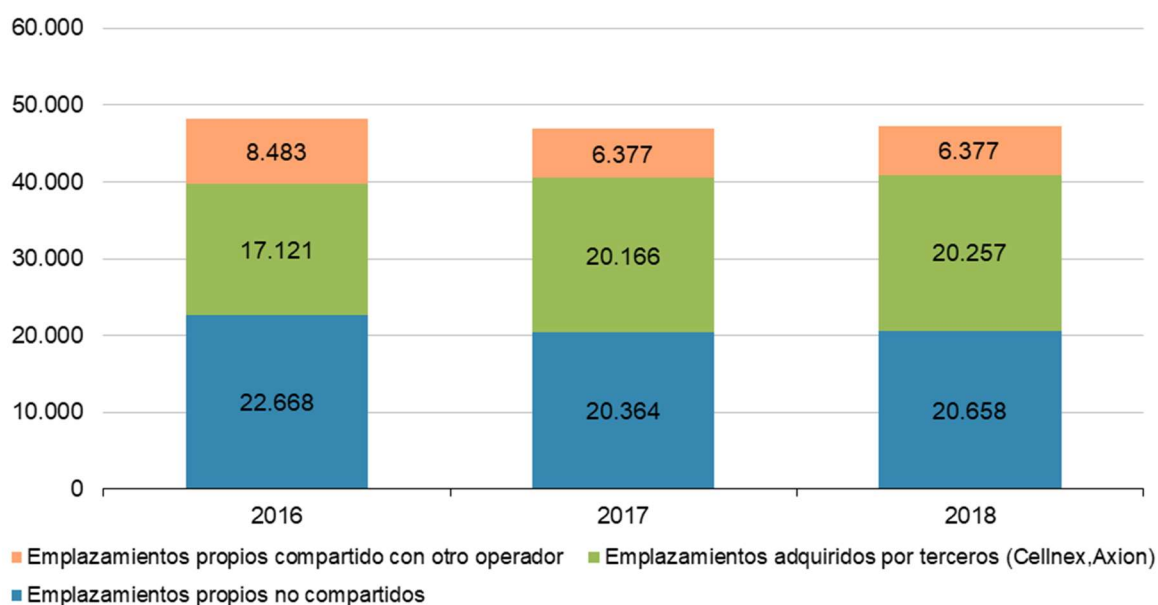
Base equipment or stations used to provide coverage for the different mobile technologies are installed at physical locations distributed across the country, in spaces such as rooftops or towers. The network operators reported a total of 47,292 locations in 2018, where 153,885 base stations were installed.

In recent years, the mobile operators have signed infrastructure sharing agreements to reduce their rollout costs, which has resulted in improved efficiency in the provision of mobile services, as well as limiting the environmental impact of this economic activity. So, operators reported having their proprietary equipment installed in 17,455 physical locations belonging to another operator. It is worth noting that the actual number of locations shared will be significantly lower given that in many of these locations there will be more than two operators sharing.

The sharing of physical infrastructure to decrease their high implementation costs intensified as a result of the high investment needs resulting from the rollout of 4G technology.

In contrast, in 2018, 43.7% of active locations were owned by a single operator using them exclusively.

Types of physical locations used by mobile operators



Source: CNMC

The previous graph also shows that 42.8% of locations used to offer mobile service coverage were owned by a company not offering mobile services in the retail market. This is the case of the companies Cellnex and Axion, which do not offer mobile services in the retail market but in 2018 owned more than 20,000 mobile locations (previously purchased from mobile operators such as Movistar and Mas Móvil Telecom). The sale by mobile operators of their assets is designed to provide a return on the investment made in recent years.

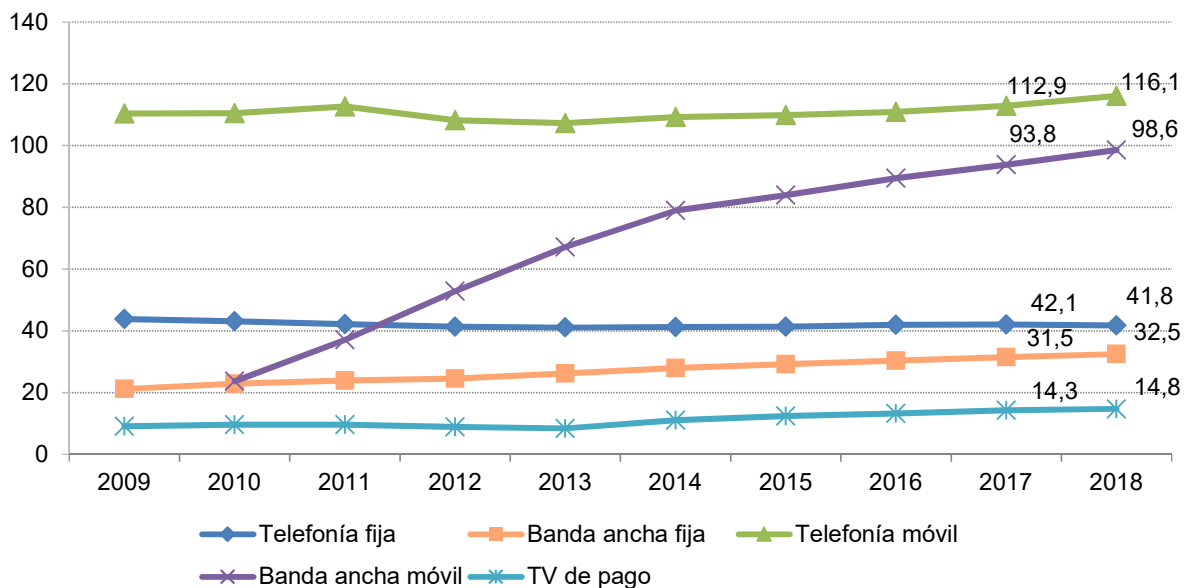
Another way to obtain profitability on these investments is that used by Movistar in creating Telxius, an infrastructure subsidiary to which it has been transferring its assets in the form of mobile telephone masts. In November 2017, Movistar announced the sale of 40% of Telxius to the North American investment fund KKR. Later, in January 2018, Movistar sold 9.99% of the share capital of Telxius to Pontegadea Inversiones, leaving Movistar owning 50.01% of the company.

## 1.5 Penetration

All end services increased their penetration during 2018, with the exception of fixed telephony. This was especially true for mobile broadband services with a year-on-year growth of 5.1%. Fixed broadband, mobile telephony and audiovisual services registered similar positive growth rates, at around 3%. The penetration of mobile broadband reached a value of 98.6 lines per 100 people, and for fixed broadband it was 32.5.

The penetration of mobile broadband is gradually converging with that of the mobile telephony service. In contrast, the fixed broadband service is 10 percentage points below the figure for fixed telephony and has shown very modest growth for many years.

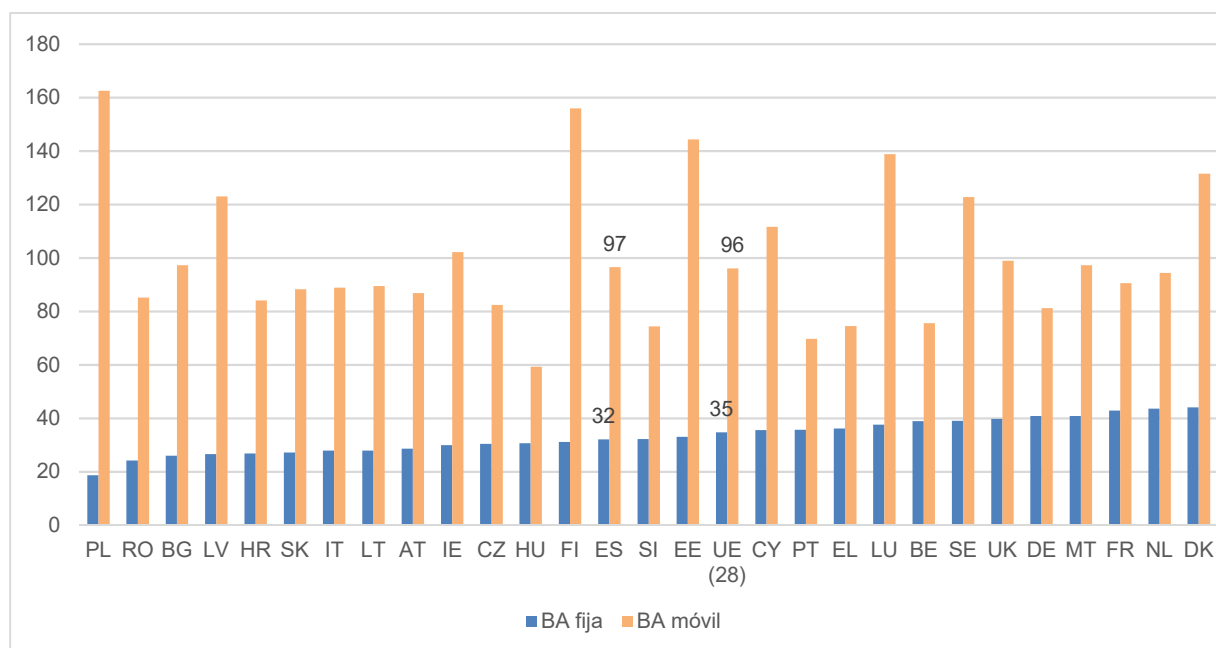
Evolution of the penetration of the main services (lines/100 people)



Source: CNMC

In Europe, the penetration of mobile broadband grew at a year-on-year rate of 6.4%, and fixed broadband at a rate of 3.9%. Comparatively, in the same period (July 2017 to July 2018), the penetration of mobile broadband in Spain grew by 5.9%, and fixed broadband by 4.9%. As a result, the penetration of mobile broadband in Spain is one point above the European figure, and that for fixed broadband is two points below.

Penetration of fixed and mobile broadband (lines/100 people), July 2018.

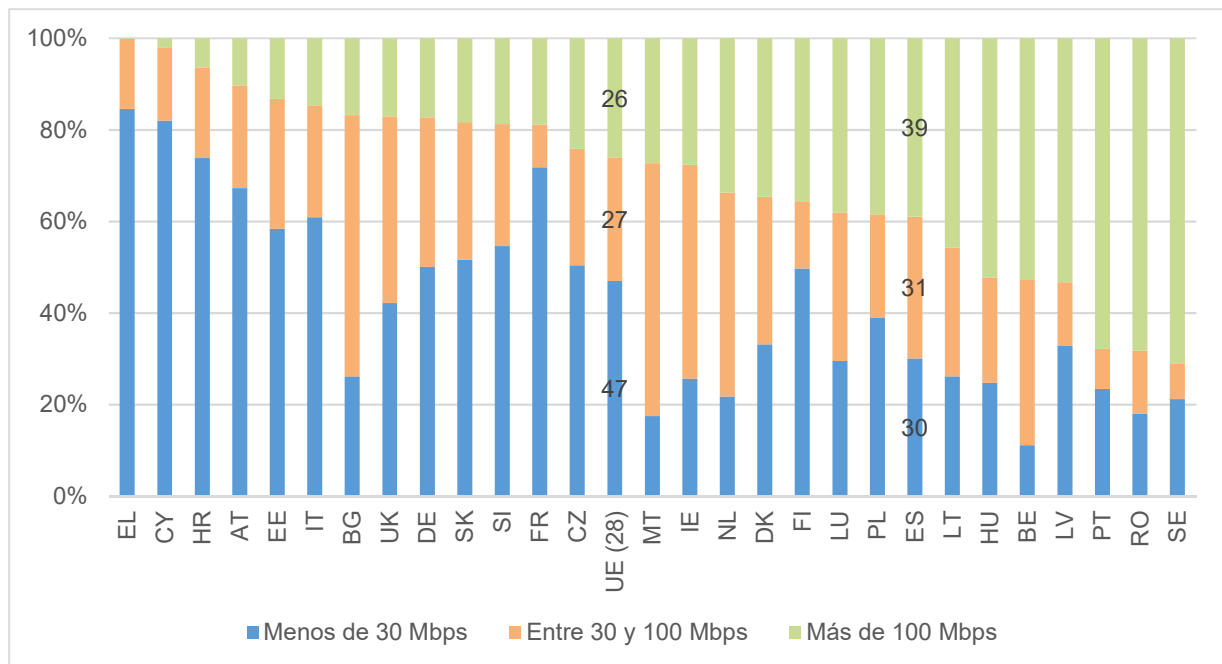


Source: European Digital Agenda Scoreboard, European Commission

The speed of fixed broadband lines increased noticeably during 2018. In Spain, in July 2018, 70% of all lines had speeds greater than 30 Mbps, when just one year earlier this figure had been 59%. In Europe, the percentage increased a little less during the year (nine percentage points), reaching 53% of lines.

Furthermore, the growth in the speed of Spanish lines was due to the increase in the lines of more than 100 Mbps, which went from 24% of the total in 2017 to 39% in 2018. In the EU (28), the percentage of lines with more than 100 Mbps in 2018 was 26%, noticeably lower than the Spanish figure.

Fixed broadband speed (percentage), July 2018



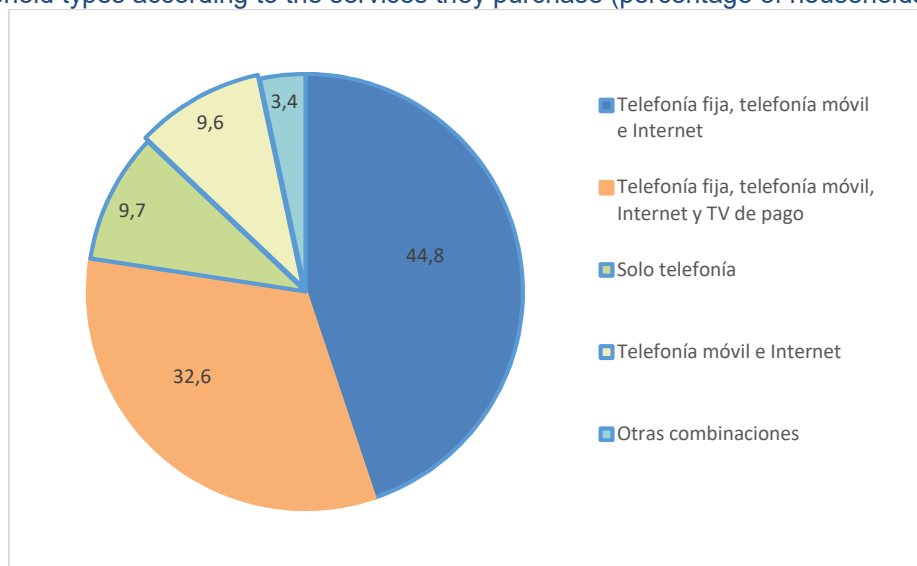
Source: European Digital Agenda Scoreboard, European Commission

According to the CNMC Household Panel, in late 2018, 44.8% of Spanish households had purchased fixed telephony, mobile telephony and Internet services<sup>16</sup>, and 32.6% has also purchased a pay television service. In 2018, the percentage of the first household type fell by 6.7%. This decrease was partially offset by the increase in households with all five services: fixed and mobile telephony, fixed and mobile broadband and pay television, which increased by 4.7%.

<sup>16</sup> This includes fixed broadband, mobile broadband and narrow band.



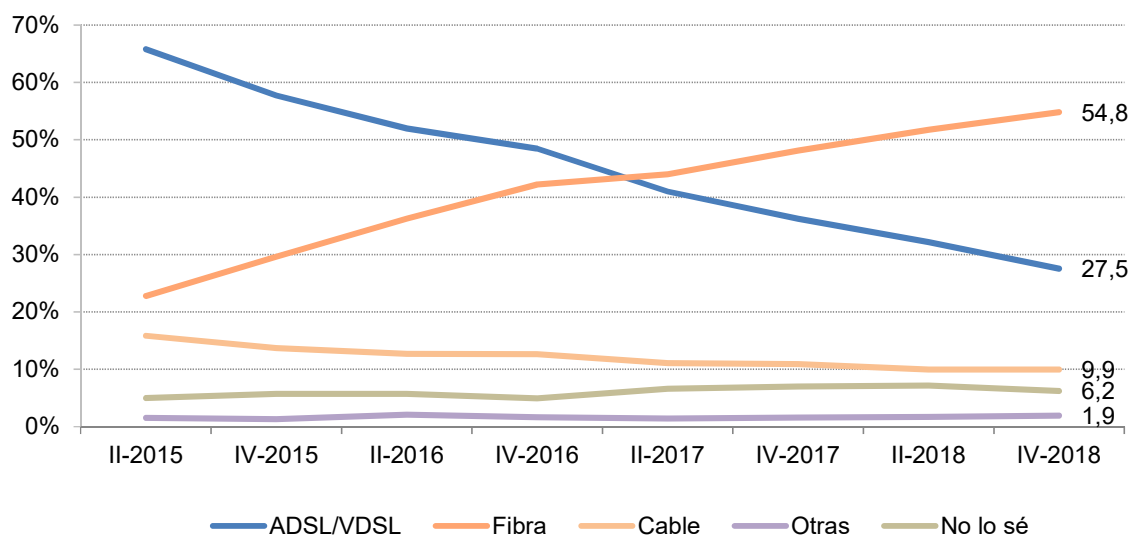
Main household types according to the services they purchase (percentage of households)



Source: CNMC Household Panel

So, in 2018, 35.6% of Spanish households had pay television, 24.8% more than in 2017. The percentage of households with the Internet was 89.5%, and those with fixed broadband represented 82.8% of the total, both percentages being slightly higher than the equivalent figures from 2017. The growth of fixed broadband is mainly due to the increase in the demand for FTTH lines as households are gradually replacing their ADSL lines with these new-generation lines which allow for higher speeds.

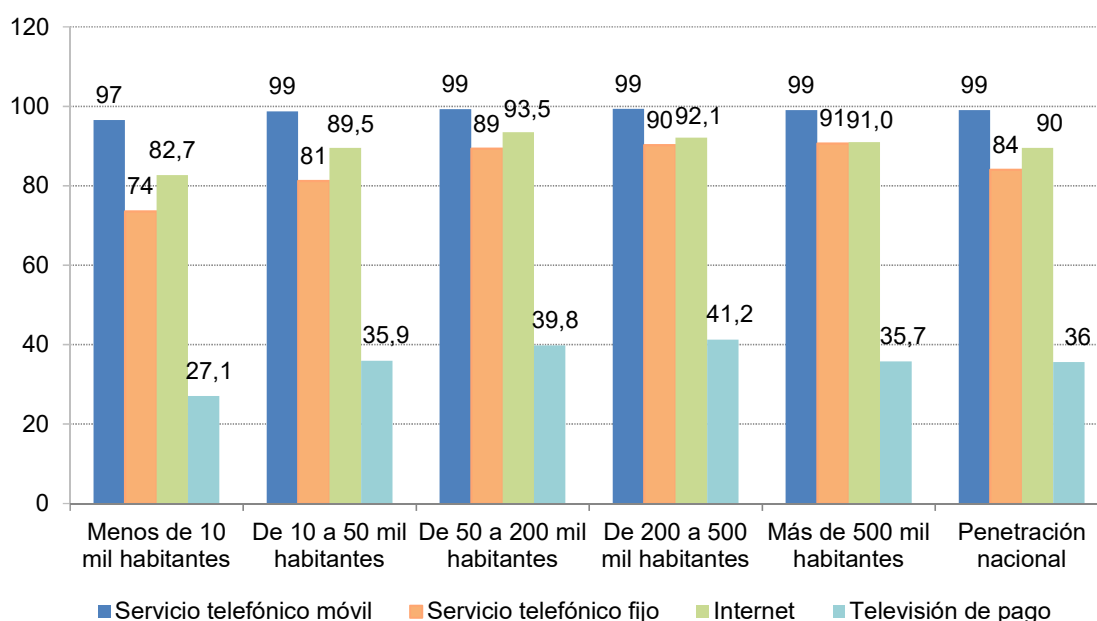
Households according to type of fixed broadband they purchase (percentage of households)



Population: Households with fixed broadband. Source: CNMC Household Panel

Traditionally, the take-up of internet services has been lower in less populated towns than in the rest of the country. While penetration on a national level is at 36%, in towns with fewer than 10,000 inhabitants this figure barely surpasses 25%. However, this gap is gradually closing. So, in 2018, the percentage of households with the Internet in towns with fewer than 10,000 inhabitants was 6.8% lower than the national average, when in 2017 this figure was 7.7%. There is also a difference of 8.5% in the take-up of pay television.

Penetration of the main services in households according to the size of the location (percentage of households with service)



Source: CNMC Household Panel

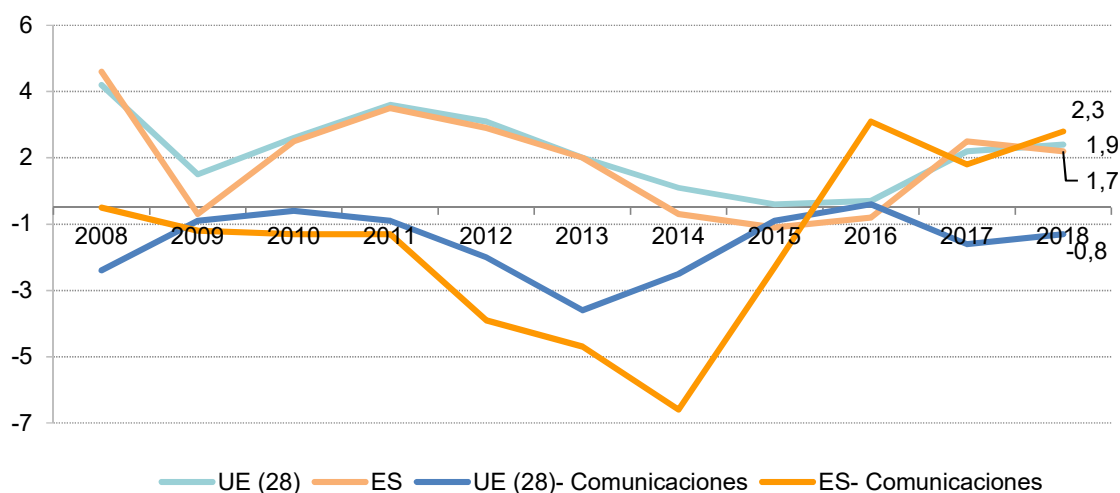
## 1.6 Prices

According to Eurostat figures, in 2018, Spanish prices increased by 2.3%, a little more than in 2017, when they rose by 1.3%<sup>17</sup>. In contrast, in the EU (28) prices fell over these two years: by 0.8% and 1.1% respectively. These divergent trends in communications prices in Spain and Europe contrast with the very similar year-on-year changes in the CPI in the EU (28) and Spain.

This shows the change of cycle for Spanish prices that took place in mid-2015. Until then, the prices of retail products in Spain had fallen every year, and in fact they fell by more than the prices in the EU (28). However, as of spring 2015, national operators began increasing their prices for fixed broadband bundles and mobile services.

It is worth noting that, in the case of Spain since 2015, these price increases have been accompanied by significant improvements in the quality of the services, especially broadband. For example, fixed broadband lines with speeds greater than 100 Mbps have gone from being almost non-existent in late 2015 to accounting for 58.7% of the total in 2018, and since 2015, mobile data traffic has more than doubled as a result of the successive increases in the number of megabytes included at no additional cost in mobile phone contracts.

Year-on-year variation of the general price index and the sub-index for communications prices in the EU (28) and in Spain<sup>18</sup>



Source: Eurostat

The Eurostat indices are based on information on the prices of a basket of consumer products. For example, in the case of bundled services, it takes the average of the prices of the most representative offers advertised on the operators' websites, assuming that the service consumption patterns remain unchanged over time. Therefore, these indices do not reflect changes in user consumption or subscription decisions. According to Eurostat, in Spain in

<sup>17</sup> The Eurostat indices are based on information on the current price of a representative basket of consumer products. In the case of the communications sub-index, the basket is comprised of the following sub-baskets: (i) fixed telephony, (ii) bundled fixed telephony, (iii) mobile telephony and (iv) postal services.

<sup>18</sup> The graph shows the average year-on-year variation of the price index for the past 12 months

2018, the sub-index of bundled fixed telephony prices increased by 4.2%, whereas in 2017 the year-on-year growth of this sub-index was 2.9%<sup>19</sup>.

The statistics for the quadruple and quintuple-play bundles in the CNMC Household Panel are obtained from the price information included in the bills of a representative sample of Spanish households in their main homes. To estimate the cost of the various bundles, it takes into account the bills for quadruple and quintuple-play bundles with one or two mobile lines, extracting the price of the purchased bundle for each household and bill (without adding any additional amounts). These amounts are used to estimate the cost of each bundle in the population. So, these indicators reflect the choices of Spanish households and are affected by them. For example, if consumers choose to replace higher-priced offers with other, more affordable ones or vice versa, or if these customers benefit from temporary special deals.

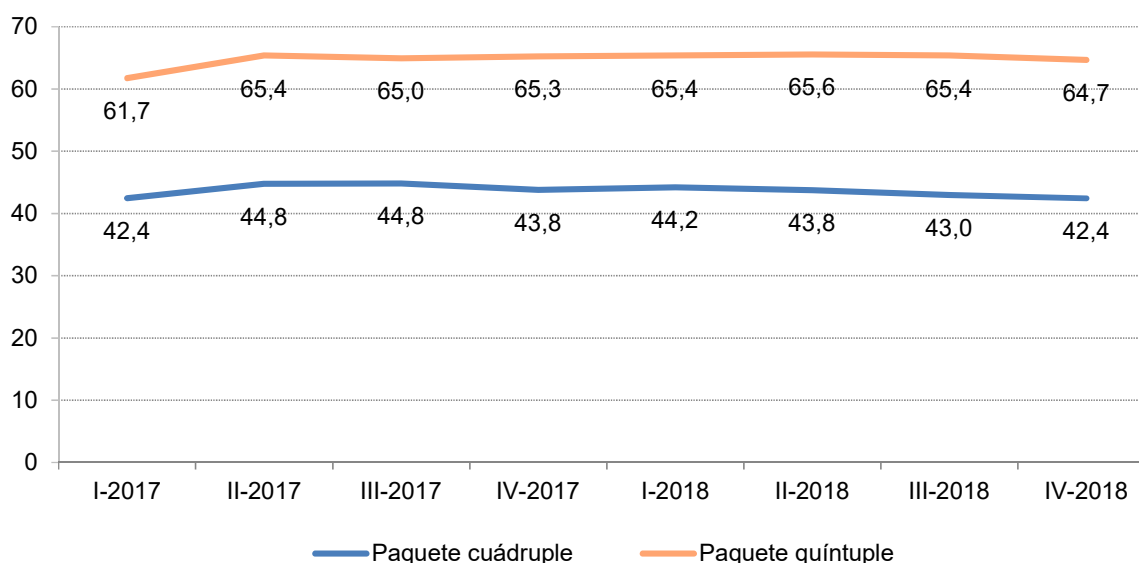
The Household Panel data show a gradual decrease in costs associated with the quadruple-play bundle over the last three quarters of 2018. In addition, this has been a year of record portability figures: 12 of every 100 fixed lines have been ported during this period, and among the major operators the only one with an increase in its fixed broadband market share is the MASMOVIL group, which only sells quadruple-play bundles and whose offers are characterised by lower prices.

The cost of quintuple-play bundles remained stable in the first half of 2018 and showed a slight decrease from the third quarter of the year.

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<sup>19</sup> Average of the year-on-year changes for each month.

### Evolution of the average cost of quadruple and quintuple-play bundles (€ per month)



Source: CNMC Household Panel

The Household Panel also provides information on the cost to Spanish households of the different services. The following table shows the total cost for households that purchase a quadruple or quintuple-play bundle. The total cost includes all the household's payments, in other words, both the amount charged by the operator who supplies the quadruple or quintuple-play bundle (which includes any other chargeable concept as well as the price of the bundle) and the costs incurred due to bills for other services or operators. In December 2018, households with a quadruple-play bundle spent an average of €53.20 a month - a little lower than in late 2017. Furthermore, households with a quintuple-play bundle spent €77.30, almost two euros less than in 2017.

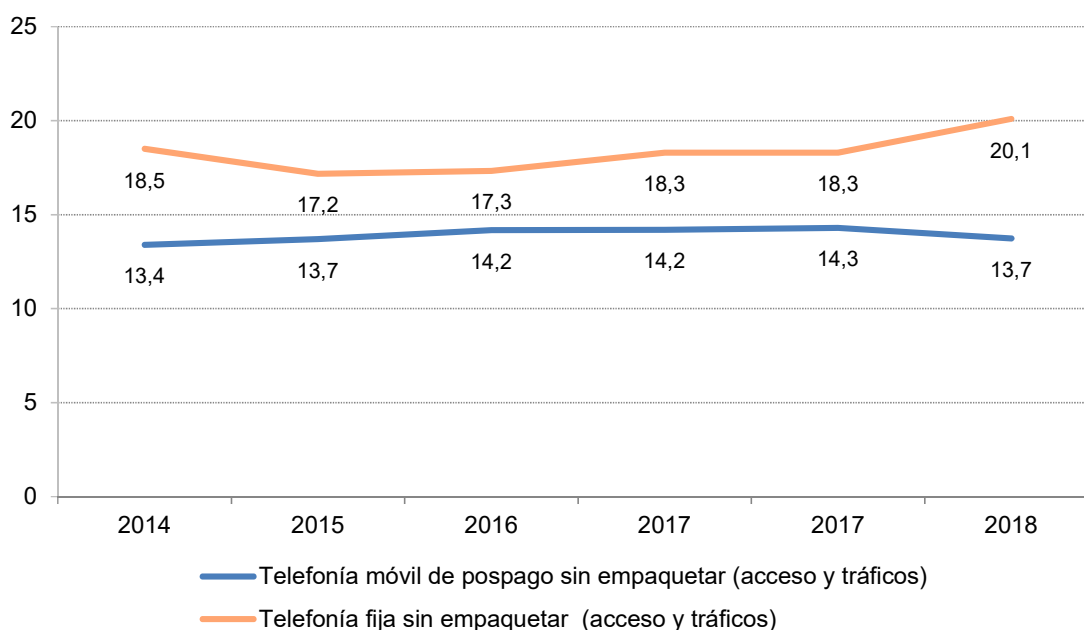
### Total cost and number of postpaid mobile lines by household (IV 2018)

	Total cost and year-on-year growth rate (€/month, %)	Postpaid mobile lines per household and their absolute year-on-year increase	Postpaid mobile lines included in the household's bundle and their absolute year-on-year increase
Households with a quadruple-play bundle	53.2 (-0.7)	2.2 (0.2)	2.1 (0.2)
Households with a quintuple-play bundle	77.3 (-1.8)	2.4 (0.1)	2.2 (0.1)

Source: CNMC Household Panel

Lastly, in 2018, the cost of unbundled postpaid mobile telephony fell (by 3.9%), in contrast to unbundled fixed telephony where the cost per household increased by 9.8%.

Average cost per user for unbundled services (€/month and year-on-year growth rate)



Source: CNMC Household Panel

## 1.7 Use of the services

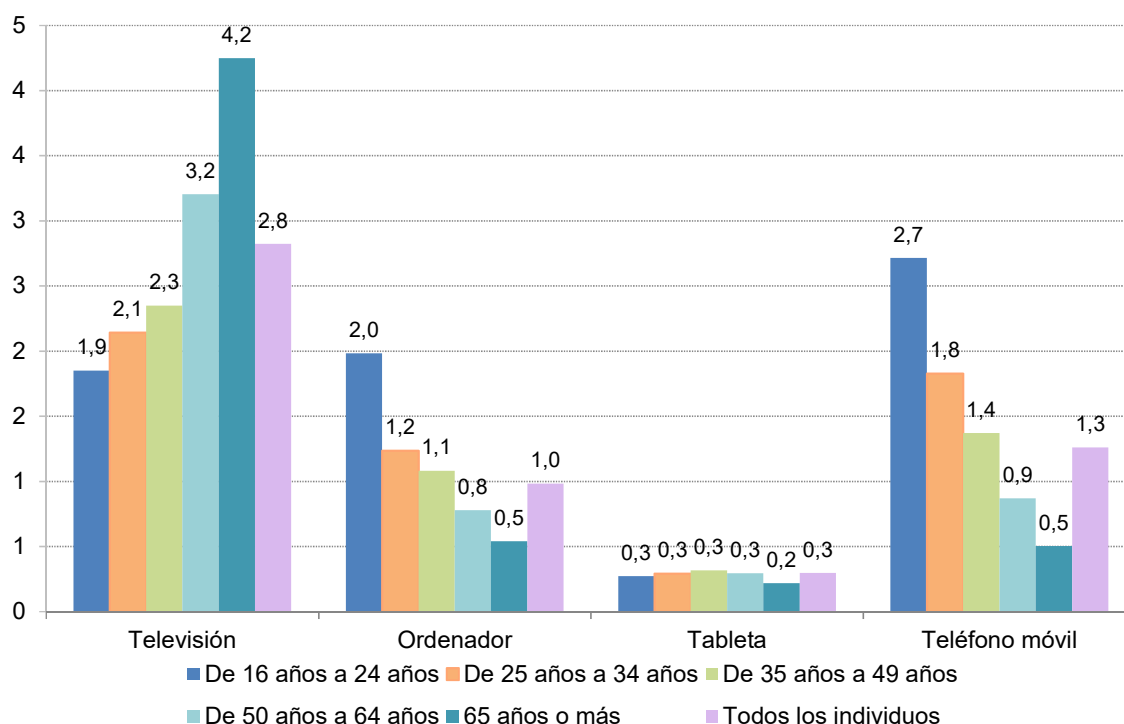
In 2018, 71.9% of Spaniards connected to the Internet every day, 2.1 points more than in 2017. In addition, 44.2% consumed online content at least once a week. Among these, the most popular were short videos and episodes of series, which were consumed by half of the users. In fact, six out of ten prefer watching this content at the time most convenient to them rather than watching in a linear format. Of these users, 48% usually watch rebroadcasts of television programmes on the Internet.

In terms of communication services, 77% of Spaniards regularly use online messaging services, and 42% use online telephony services. Communication services over the Internet appeared in Spain several years ago and are a frequent form of communication which co-exists with traditional telephony and text messaging services.

### Use of audiovisual services

People nowadays watch content on all types of platform. For example, in Spain people spend an average of 2.8 hours a day consuming audiovisual content through the television; 1.3 through their mobile phones and 1 through the computer. Thus, the main consumption method in the audiovisual sector is the television. However, young individuals are much more prone to using new devices and less to watching content on the television.

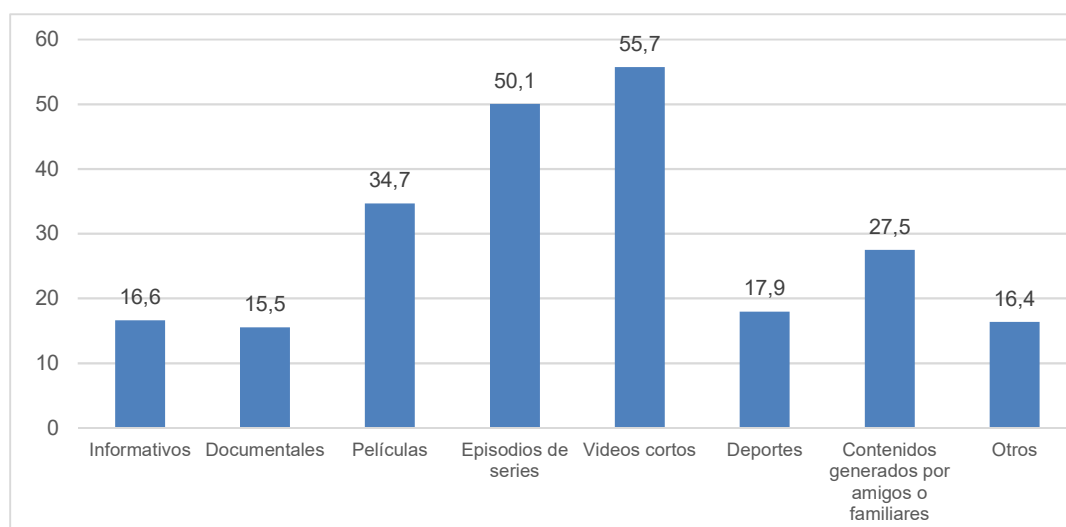
Consumption of audiovisual content by device/terminal and age (average number of hours a day)



Population: Spanish individuals. Source: CNMC Household Panel

In many cases the content consumed is distributed online, or in other words, over OTT platforms. So, 44.2% of surfers consume audiovisual content on OTT platforms at least once a week, with short videos (55.7%), series (50.1%) and films (34.7%) being their preferred online content.

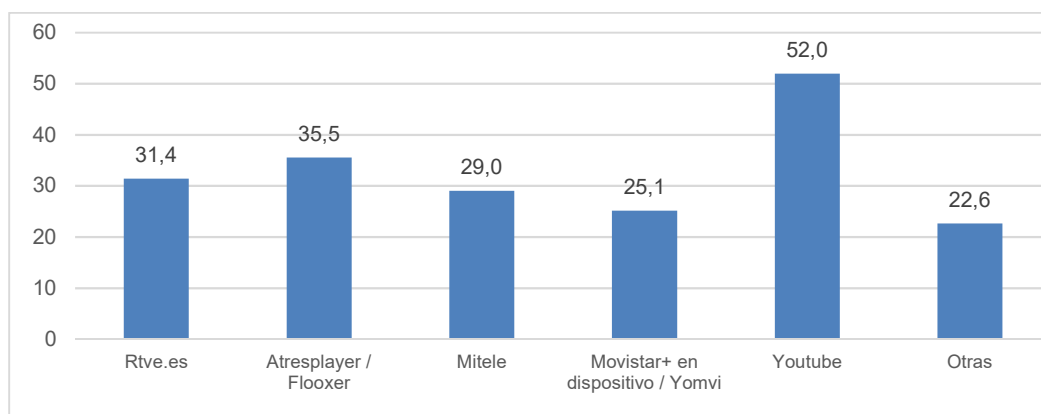
Most consumed online audiovisual content (percentage of individuals)



Population: Individuals who consume audiovisual content online at least once a week and usually watch TV programmes on demand over the Internet. Source: CNMC Household Panel

Television channels have also made their programmes available for viewing over the Internet, through live streaming or on demand. In 2018, 48% of online audiovisual content viewers used a platform to watch television on demand (rebroadcasts of television programmes); mainly YouTube (52%), Atresplayer (35.5%), Rtv.es (31.4%) and Mitele (29%).

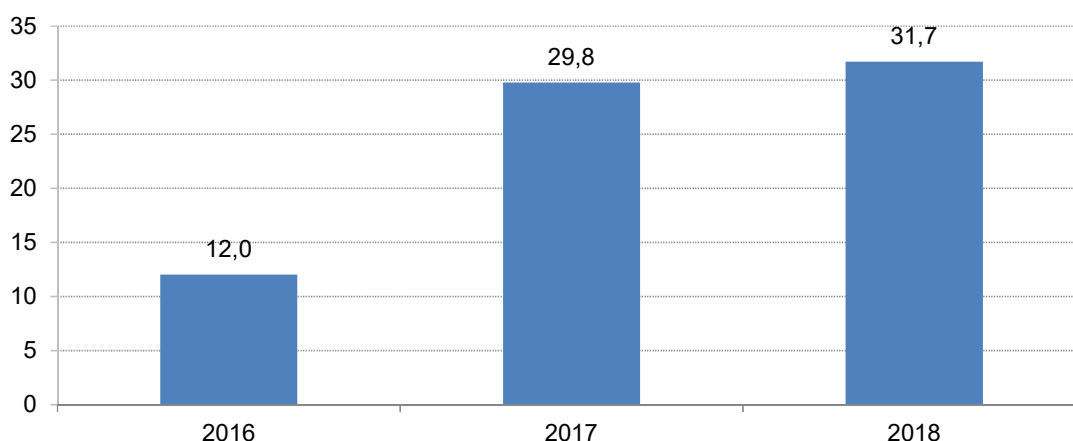
Platforms used to watch television programmes over the Internet on demand (percentage of individuals)



Population: Individuals who consume audiovisual content online at least once a week and usually watch TV programmes on demand over the Internet. Source: CNMC Household Panel

Additionally, several pay platforms allowing users to watch audiovisual content online entered the market in 2016. In late 2018, almost 32% of households with access to the Internet were users of one (or more) of these pay video streaming services.

Households using pay platforms to watch audiovisual content online (percentage of households)



Population: Households with Internet access. Source: CNMC Household Panel

The pay platforms for online content typically offer access to a catalogue of series and/or films for a monthly fee. There are several types: for example, those that charge a fixed monthly fee, although they sometimes have a special offer for the first month or months of the contract. In



this group, some providers, such as Netflix and HBO for example, produce some of the content they distribute, and use sophisticated recommendation systems that, based on big data, guide the consumer in their choices. Unlike online music distributors such as Spotify, these companies do not offer a secondary channel with free content financed through advertising.

In addition, there are also on-demand video services that are “free” when another service is contracted, in other words, as tied sales. For example, Amazon Prime users can access Amazon Prime Video content for free. Similarly, some of these online audiovisual services are included in bundles supplied by electronic communication operators, without any additional payment for them.

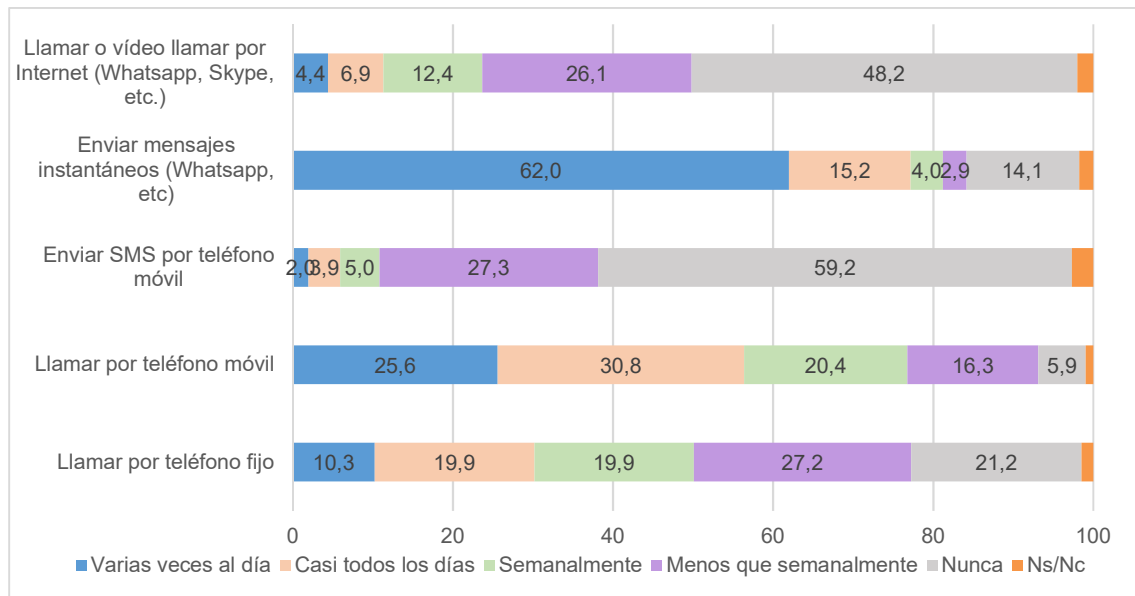
As has been mentioned, the traditional pay television service (which now also includes on-demand online content) is usually sold together with electronic communication services. In 2018, 35.6% of households had pay television that was taken-up almost exclusively together with electronic communication services. Three in ten households with pay television state that the main reason for taking it up was that the operator made a joint offer of these services.

In addition, 15.2% state that the reason for taking it up was the offer of channels with television series, and 17.9% wanted access to sports content. Operators supplement their electronic communication offers with content of interest to their customers, reaching agreements with providers such as Netflix or HBO, and even producing their own channels with their own identity.

### **Frequency of use of the traditional and Internet communication services**

Spaniards continue using online messaging and telephony extensively. These services, as well as being free for the consumer, have additional features that users value (such as, for example, online messaging, communication between several people and the transferring of files such as photographs or videos). At the end of 2018, 62% of Spaniards sent online messages several times a day, whereas 25.6% made calls from their mobile phones with the same frequency, and only 10.3% did so from a landline.

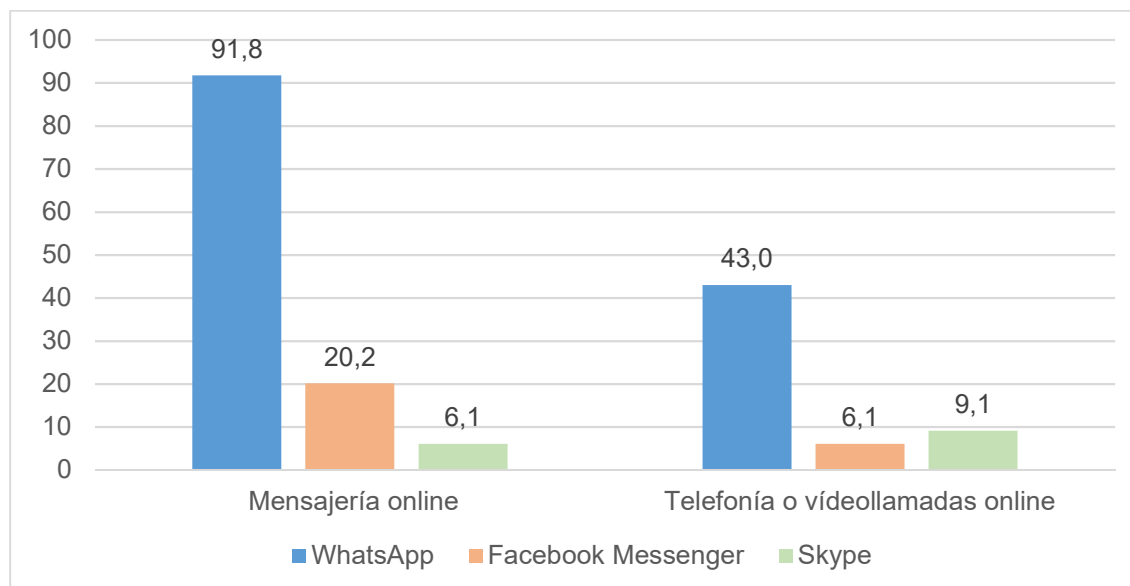
Frequency of use of the different communication services in Spain (percentage of individuals)



Population. Individuals. Source: CNMC Household Panel

Lastly, in Spain the most popular provider of online communication services is WhatsApp. Almost 92% of surfers state that they use its online messaging service regularly, and 43% use its online telephone service.

Spaniards who state that they frequently use the main online communication platforms\* (percentage of the total number of surfers)



\*This graph analyses multiple answers. Population: Individuals who use the internet. Source: CNMC Household Panel

In December 2018, the European Electronic Communications Code was approved, which recasts in a single legislative text the main community directives on the issue of electronic communications from 2013 (Framework, Authorisation, Access and Universal Service). The Code redefines electronic communication services to expand the scope of application of the regulatory framework to the OTT communication services that are equivalent to those provided by traditional operators. So, electronic communication services include a new category, interpersonal communications services (ICS), which differentiates between the number-based and number-independent sub-categories. Although this latter category describes, among others, OTT voice and messaging services, the regulatory provisions applicable to these services are limited to certain areas such as consumer protection, security and the possibility of extension of the interoperability obligations to these services, an option that is considered to be a last resort.

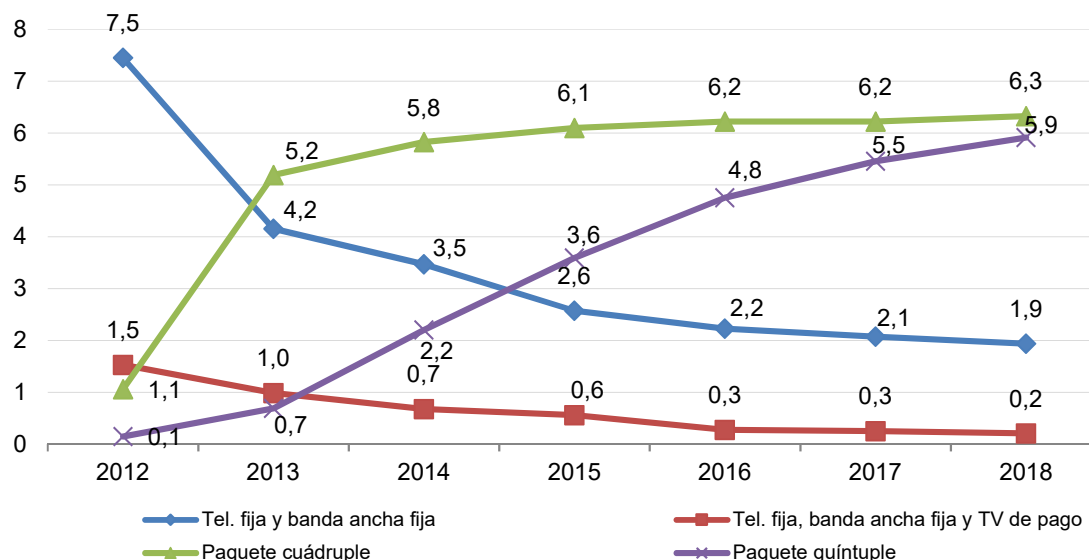
## 1.8 Bundling

The Spanish market is characterised by a high degree of bundling, especially bundles that combine fixed and mobile services in a single offer. Therefore, in late 2018, the total number of contracts with such offers reached 12.2 million, almost 600,000 more than at the end of the previous year.

Since 2012, with the launch of Movistar Fusión, quadruple-play bundles have become popular, with fixed and mobile services for both voice and broadband. In 2014, Movistar started to focus

on content, and therefore on quintuple-play bundles, which add the pay television service to the quadruple-play bundles. The other main operators followed its example.

Evolution of the most popular bundles (millions of bundles)



Source: CNMC

Since then, quintuple-play bundles have not stopped growing, reaching 6 million in late 2018, although the 8.4% rate registered this past year is noticeably lower than the double-digit rates of previous years. This type of bundle grew by almost half a million to stand at 5.9 million at the end of the year. The quadruple-play bundle also grew, having stalled in 2017, adding a little over 100,000 units to stand at 6.3 million.

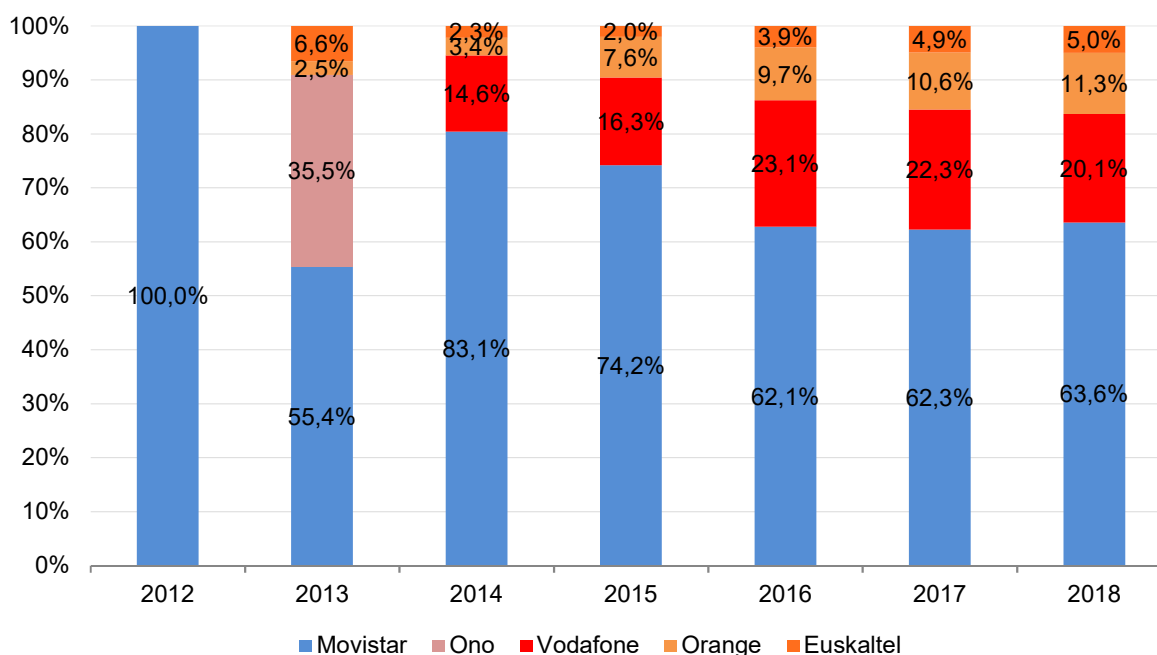
Double-play (fixed telephone and broadband) and triple-play (including pay television) bundles decreased for another year, specifically by 6.5% and 18% respectively, continuing the trend that began in 2012 when quadruple-play and quintuple-play bundles appeared in the market.

In 2018, Movistar was the operator that gained the most quintuple-play bundles in absolute terms and also in market share, accounting for almost 64% of the total. Orange and Euskaltel grew more moderately, but were able to increase their contribution. The only operator that experienced a decrease was Vodafone, which lost two percentage points, with almost 30,000 bundles less than in 2017. This was a result of its decision not to include some football content (Champions League and El Partidazo) in its television offer.

The quintuple-play bundle market is split between the three main operators which account for 95% of the total, and Euskaltel, with R and TeleCable included, has the remaining 5%.

#### Distribution of quintuple bundles by operator<sup>20</sup>

<sup>20</sup> In 2012, Movistar was the only operator offering the quintuple-play bundle. In 2014, Vodafone's figures are those for Ono.



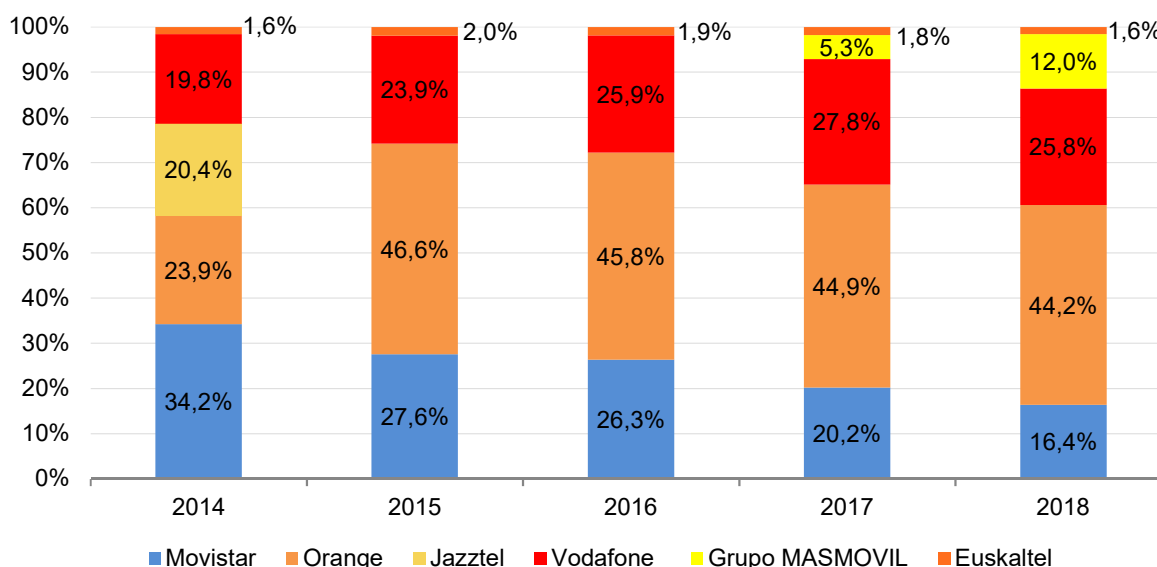
Source: CNMC

A different situation can be observed for quadruple-play bundles, which do not include the pay television service. In 2014, the market was quite evenly split between the four main operators, although with some dominance by Movistar. However, as of 2015 the landscape changed in favour of Orange and at the expense of Movistar. This was for two reasons: the purchase of Jazztel by Orange and the fact that Movistar focused on quintuple-play bundles.

This scenario changed again in 2017, the year in which the MASMOVIL group entered the market. Its offer of quadruple-play bundles at aggressive prices meant that it managed to capture more than 5% of the market share, a figure which reached 12% in 2018. The three main operators, through their secondary brands, continued offering quadruple-play bundles<sup>21</sup> at aggressive prices and with no contracts or with short-term contracts when taking out fibre. This was seen for Vodafone with its Lowi fibre offer, Orange with its Amena brand, and Movistar with Tuenti and O2.

<sup>21</sup> Some of these offers exclude fixed telephony.

Distribution of quadruple-play bundles by operator.

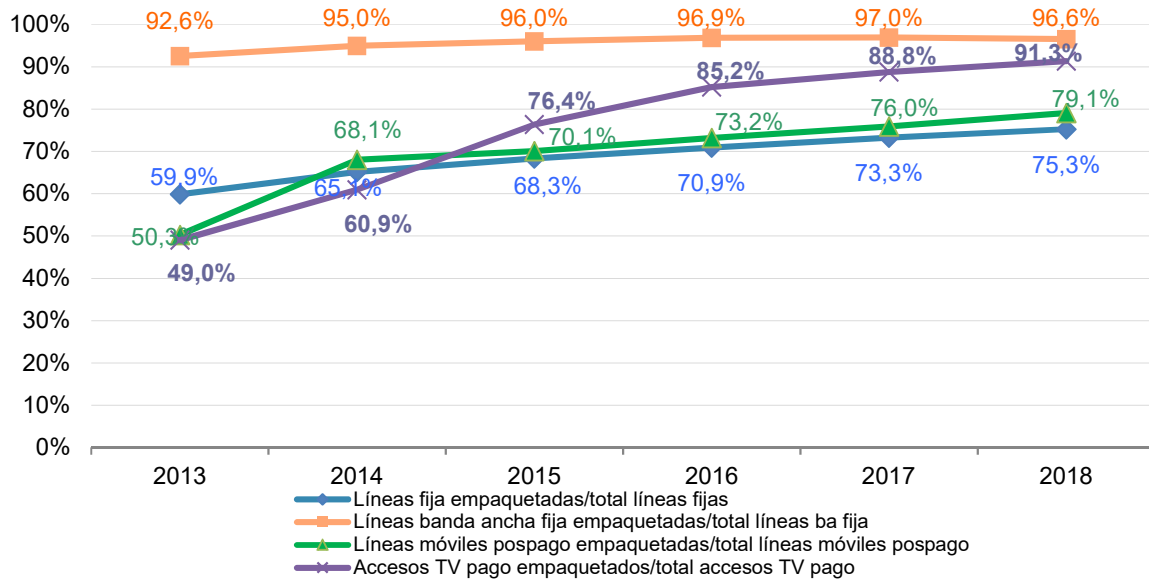


Source: CNMC

The trend for purchasing bundled services can be seen in pay television, which registered an annual increase of almost three percentage points, up to 91.3% of all subscribers with a bundled service. This compares to 61% in late 2014, the year in which quintuple-play bundles began to grow. So, of the 6.9 million pay television subscribers, 6.3 were included in a bundle of some sort. The rest corresponds to subscribers of OTT services and unbundled DTS satellite technology, which are gradually declining as Movistar migrates them to its IP television.

For mobile phones, 79.1% of postpaid lines were bundled in 2018, either with a mobile broadband service alone, or also with fixed network services. In 2011, only 3.5 million postpaid mobile lines were bundled with mobile broadband. In contrast, seven years later almost 34 million lines are purchased jointly with one or more services. Furthermore, the offers associated with additional mobile lines purchased with a quadruple-play and quintuple-play bundle have contributed to this trend.

Percentage of bundled lines/total lines by service



Source: CNMC

As regards fixed telephony and fixed broadband, more than 14.6 million lines were bundled in both cases, which in relative terms corresponds to 75.3% of all fixed telephone lines, and 96.6% of all fixed broadband lines.

## 1.9 Public sector initiatives Key initiatives in 2018 and prospects for 2019

### 1.9.1 European telecommunications and audiovisual framework

#### 1.9.1.1. Electronic communications sector

In 2018, just as in 2017, we have seen the continuance of the development and application of the EC proposals from September 2016 through the Communication on Connectivity for a Competitive Digital Single Market. This Communication implements and supplements the Digital Single Market Strategy (of 2015) on the issues related to the telecommunications sector, and sets the goal of an improvement in connectivity by the year 2025.

- European Electronic Communications Code

On 11 December 2018, the European Electronic Communications Code was approved by Directive (EU) 2018/1972 of the European Parliament and of the Council. The transposition period for this Directive ends on 21 December 2020.

It includes the common goals for the regulation of the sector taking into account technological evolution, changes in demand and consumption habits and the need to promote the investment required to achieve the strategic goals set out in the Communication on connectivity.

The Code introduces a new way of defining services based on their functionality instead of their technical features. So, it differentiates between electronic communications networks and services. Electronic communications services are classified as Internet access services, interpersonal communications services (which can be traditional number-based services or number-independent services) and services consisting wholly or mainly of signal transmission. The scope of application of the various provisions of the Code is established on the basis of these categories.



Likewise, the Code reinforces the independence of the regulator and extends the list of minimum responsibilities that the States must grant to it at the time of transposition.



- **BEREC regulation**

Also approved on 11 December 2018 was Regulation (EU) 2018/1971 of the European Parliament and of the Council establishing the Body of European Regulators for Electronic Communications (BEREC) and the Agency for Support for BEREC (BEREC Office), which came into effect on 20 December 2018 and repealed Regulation 1211/2009 which established this body.

BEREC is the Body of European Regulators for Electronic Communications which, as well as being an advisory body for EU institutions, supplements the activity of national authorities at a European level and provides support for the regulators when applying European telecommunications regulations.

This Regulation resulted in a modification to Regulation 2120/2015, controlling roaming prices for voice calls and text messages within the EU which, from 15 May 2019, were set at a maximum of €0.19/min and €0.06/text message respectively.

- **Other initiatives**

In May 2018, the EC published a Communication on the review of the Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services, produced after consulting the BEREC in March 2018.

Furthermore, during 2019 and 2020, the International Roaming and Net Neutrality regulation will be revised, and provisions will be developed for the application of the European Electronic Communications Code.

In terms of the European net neutrality regulation, Regulation 2120/2015 establishes the requirement of the EC to review this regulation and produce a report along with, where necessary, proposals to modify the Regulation. To aid the EC's work, BEREC produced an opinion in December 2018 on the application of the Regulation and the BEREC net neutrality guidelines to date.

The EC's report was published on 30 April 2019. In this it was concluded that the net neutrality regulation has worked appropriately and that, as a result, the EC does not find it necessary to modify the Regulation in terms of the net neutrality provisions.

Before 15 December 2019, the EC must also analyse the performance of the regulation on international roaming services within the EU. In December 2018, the EC published an intermediate report, highlighting the positive performance of the "roam like at home" regulatory measures banning additional charges for these services over and above the domestic ones. The EC has asked BEREC to give its opinion on the review of this regulation by 19 June 2019.

The EC has started the preparatory work for the delegated acts on termination rates laid out in the Code, which it must adopt before 31 December 2020. The EC is expected to begin a public consultation on the cost modelling in the first half of 2019, for both fixed and mobile termination rates.

The Code also establishes the obligation for the EC to review the Recommendation on relevant markets before 21 December 2020. For this purpose, the EC began a public consultation on 15 February 2019, which ended on 10 May 2019.

Lastly, the EC is producing non-binding guidelines on the return on capital (WACC or weighted average cost of capital). The EC conducted a public consultation between 11 July and 3 October 2018. On 8 February 2019, BEREC issued an opinion on the initial proposal from the EC. It is expected that these directives will be completed between the second and third quarters of 2019.

### 1.9.1.2 Audiovisual sector

- **Audiovisual Media Services Directive**

On 6 November 2018, the European Council approved the compromise agreement with the European Parliament on the review of Audiovisual Media Services Directive 2010/13/EU (AMSD). This marks the end of the legislative process of reviewing the Directive.

The new Directive was published in the Official Journal of the European Union (OJ) on 28 November 2018. From this date, the Member States have 21 months to incorporate the law into their national legislation, which means that the transposition process must have been completed by September 2020.

The Directive leads the way to achieving a more balanced regulatory environment for the entire audiovisual sector, including on-demand services and video-sharing platforms. This ends the process for the review of the Directive that began on 25 May 2016 with the publication by the EC of the proposal for the reform of the AMSD, as part of its “European digital single market strategy”.

The purpose of the review is to respond to the unprecedented technological and market changes that digital transition has caused, in order to protect the competitiveness of the European audiovisual sector, while also preserving general public interest such as the protection of minors, freedom and pluralism of the media, cultural diversity and consumer protection.

More specifically, the specific aims of the review fall under three categories:

- To strengthen the protection of consumers and minors, especially in the area of video-sharing and video-on-demand platforms.
- To guarantee equal conditions for audiovisual communication services, in particular, in the field of European works, the protection of minors and through the simplification and clarification of the procedures to apply the laws determined by the country of origin principle.
- To simplify the regulatory framework and give it greater flexibility, particularly regarding the rules for advertising.

The new Directive broadens its material scope in terms of the media covered by the directive. Therefore, it covers the audiovisual services stipulated in the current directive, such as traditional television and video-on-demand services, and also covers, as a new development,

video-sharing platforms and the audiovisual content on social networks, on which certain measures are imposed to guarantee the protection of minors and the general public.

The new legislative text is based on two key pillars:

- The country of origin principle, which continues being the basic foundation of the new Directive. However, some exceptions are established for European works. In particular, Member States may impose obligations to invest in European works on providers (both linear and on-demand) who broadcast in one Member State but are legally established in another Member State.
- Cooperation between independent regulatory authorities. Taking into account the growing cross-border nature of content distribution, the need for cooperation between national regulatory authorities is strengthened to guarantee the consistent application of the European legal framework for audiovisual services.

With this goal in mind, the role of the independent authorities is reinforced and a series of obligations for cooperation between them are established, particularly on matters of territoriality of the audiovisual services and in the field of the European Regulators Group for Audiovisual Media Services (ERGA).

To implement the goals of the Directive, the role of self-regulation and co-regulation is strengthened, specifically in the areas of minors, advertising and video platforms.

For the first time, the role and functions of the ERGA are formalised and a new article is added which introduces the obligation of Member States to promote and adopt obligations for the development of media literacy.

- **Copyright**

As part of the “European digital single market strategy”, on 14 September 2016 the European Commission (EC) presented its proposals on the modernisation of copyright in order to increase cultural diversity in Europe and the contents available online.

- **Directive on Copyright in the Digital Single Market**

On 13 February 2019, the European Parliament and the Council reached a compromise agreement on the Commission’s proposal for the Directive on Copyright in the Digital Single Market. The agreement was approved by the European Parliament on 26 March 2019, and by the Council on 15 April.

The reform modernises EU copyright laws, which date back to 2001 when there was no social media or video-on-demand, no museums digitised their works of art and no teachers taught lessons online.

The new Directive will come into effect 20 days after being published in the Official Journal and, from this date, Member States will have two years to transpose it into national legislation (in other words, until May 2021).

The Directive includes:

- an obligation whereby the platforms covered by the new rules are considered to be carrying out acts covered by copyright (i.e. performing acts of communication or making available to the public) for which they need to obtain an authorisation from the right holders concerned.

In situations where there are no licensing agreements concluded with right holders, the platforms will need to take certain actions if they want to avoid liability.

- A two-year right for press publishers established in the European Union to authorise the copying and making available to the public of their press publications to be used online. As a result, news aggregators and media monitoring services (and possibly search engines) must enter into licence agreements with the press publishers in order to show news cuttings.
- The principle of “appropriate and proportionate” remuneration for authors and performers when they award licences or transfer their rights of use (for example, to producers and publishers).

As well as the reform of the Directive on copyright, the reform includes other proposals:

- Regulation on the portability of legally acquired contents and cross-border access to legally acquired online services (adopted in June 2017).
- Copyright regulation on satellite and cable broadcasting (compromise agreement from 13 December 2018).
- Regulation on the cross-border portability of online contents (adopted on 14 June 2017).

## 1.9.2 CNMC Initiatives

### 1.9.2.1 Electronic communications sector

- **Market analysis**

In January 2018, the CNMC approved the final measure on the fourth review of the wholesale markets for voice call termination on individual mobile networks. The CNMC establishes a symmetric mobile termination price of 0.70, 0.67 and 0.64 euro cents per minute for the years 2018, 2019 and 2020 respectively. The CNMC therefore lowered the price by over 40%; from 1.09 euro cents in July 2013, to 0.64 in January 2020. This way, Spanish mobile termination

prices are among the lowest in the European Union; the average price in Europe was 0.83 euro cents in July 2018.

In January 2018, the CNMC also approved the fourth review of the wholesale markets for trunk segments of leased lines. The main new feature is the removal of the regulatory obligations on the route connecting the Peninsula and the Canary Islands. The CNMC reached this conclusion on finding that the alternative underwater cable operator to Telefónica (Canalink) has become established and is now the operator with the highest share on this route. Therefore, the nine underwater routes that connect Ceuta, Melilla and the smaller islands of the Balearic and Canary archipelago are the only routes where ex-ante regulation remains.

In October 2018, the CNMC launched a public consultation on the fourth review of the wholesale terrestrial television broadcast market. The CNMC proposes maintaining the declaration of Cellnex as an operator with SMP, and adopting a more flexible regulatory framework than the current one which allows for access agreements between Cellnex and its competitors. To achieve this goal, it proposes the removal of the cost-orientated price control obligation and its replacement with an obligation for reasonable prices.

One month later, in November 2018, the CNMC launched a public consultation on the review of the fixed call termination market. The CNMC proposed updating the price of fixed termination, from 0.0817 euro cents per minute to a price of 0.0640 euro cents per minute for 2019, 0.0591 euro cents for 2020 and 0.0543 euro cents for 2021. With the newly proposed price, the wholesale prices of fixed termination in Spain would still be lower than the European average for countries that use the cost model recommended by the European Commission, which in July 2018 was 0.0865 euro cents per minute. Likewise, as with mobile termination, the proposal is to exclude calls originating from outside the EEA from this maximum price regime, in favour of reciprocity in the rates charged bilaterally.

- **Control of retail services**

In March 2018, the CNMC approved the methodology to analyse the economic replicability of the NEBA-local and NEBA-fibre wholesale services imposed on Telefónica in February 2016. This resolution details the scope of the CNMC's replicability analysis, the handling of the different components of Telefónica's retail services and the procedural aspects for carrying out the new methodology. Telefónica reported a NEBA-local (VULA) service price of €17.57 per line per month<sup>22</sup>, which the CNMC checked to ensure that it allowed the replicability of its catalogue of retail services.

In July 2018, the CNMC approved the methodology to analyse whether Telefonica's business offers could be replicated by other operators. It is the first time that this Commission has produced a methodology to analyse personalised business offers, although in recent years it has analysed the economic replicability of several of them.

- **Regulatory accounting**

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<sup>22</sup> The line installation price for NEBA local (VULA) is €68.17 where there is no existing Telefónica service, and €21.75 where there is an existing Telefónica service.

In 2018, the CNMC reviewed the cost accounting of Telefónica, Telefónica Móviles, Vodafone, Orange and Cellnex for the financial year 2016, respectively (under historical and current cost principles<sup>23</sup>). The CNMC continued introducing into the accounting models the current trends in the sector that could most affect the correct allocation of costs and income, such as the bundling of audiovisual services and the sharing and technological updating of the networks. The rates of return to be used when calculating the costs of capital in the regulatory cost accounting of the electronic communications operators were also approved in December 2018, therefore guaranteeing a suitable return on the investments made. The rates of return approved for 2018 were (pre-tax): Telefónica 6.82%, Telefónica Móviles 6.82%, Orange 6.67%, Vodafone 6.73%, Cellnex 7.02%.

- **Universal Service**

The CNMC estimated the total net cost of universal service (NCUS) for 2016 at €16.8 million. The NCUS continues its downward trend, and in the year 2016 it reached its lowest value since the implementation of the Universal Service obligation in the year 2000. The cost of payphones increased from €2 to €4.5 million, while the cost of the rest of the components decreased from €15.1 to €12.3, meaning the overall effect is a slight decrease in the NCUS for 2016 of 2.2% compared to the NCUS for 2015.

In December 2018, the CNMC also approved the Resolution on the distribution of the National Fund for Universal Service (NFUS) to fund the NCUS for 2015. The operators with annual revenue greater than €100 million, and which therefore are required to finance this, and their contributions, are: Telefónica €5,463,782, Telefónica Móviles €3,074,512, Vodafone €2,848,938, Orange €2,558,976, Vodafone-ONO €955,410, Jazztel €748,087, Yoigo €500,492, Euskaltel €198,818, Cellnex €196,592, R Cable €165,694, BT €164,556, Colt €156,134, Telecable €96,769 and Lycamobile €42,381.

- **Sanctioning power, dispute resolution and inquiries and reports**

On a national level, in the area of the allocation and use of radio spectrum, the CNMC issued two reports on the draft order approving the national table for frequency allocation (NTFA), as well as on the draft order approving the plan to provide coverage that enables access to broadband services with speeds of 30 Mbps or higher, to be executed by the operators that own public concessions in the 800 MHz band. Both orders have now been approved. The CNMC also produced a report on the process for the allocation of the 700 MHz band to electronic communications services and its impact on the current digital terrestrial television services.

Among other reports, in relation to universal service, information was provided on the project to amend Spanish Royal Decree 424/2005, of 15 April, in terms of the consideration of telephone directories, directory enquiries and public payphones as falling with the universal service; and several reports were produced on the issue of numbering (including one on the

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<sup>23</sup> Cellnex's accounting was approved on 12 July 2018, the accounting of the three mobile operators on 12 July 2018, and that of Telefónica on 26 July 2018.



draft resolution on the availability of new geographical numbering for the telephone service available to the public in the provinces of Málaga, Alicante, Castellón, Guipuzkoa, Badajoz and Burgos, which was processed at the request of the CNMC. Likewise, information was provided on the proposed resolution to establish the criteria to ensure the provision of the directory enquiry service in suitable conditions for the end user. These regulations are also currently in effect.

Lastly, pursuant to article 3.2 of Spanish Royal Decree 462/2015, of 5 June, which regulates the instruments and procedures for coordination among different Public Administrations on the issue of public aid, the CNMC produced several reports on the subsidy projects for the deployment of NGA networks by the governments of the Basque Country, Navarre, La Rioja, Aragon, Castile-La Mancha, Castile and León and Guipuzkoa. Regarding public subsidies for broadband, it is worth mentioning the report (published in February 2019) on the draft order establishing the regulatory principles for the granting of subsidies charged to the Programme for the extension of next generation broadband (PEBA in Spanish) for the 2019-2021 period, an order which has yet to be approved.

Regarding dispute resolution, in the year 2018, the CNMC settled around 30 disputes between operators. In general, most disputes arose due to the relationships that govern network access (including cases of unilateral termination of the contractual relationship due to the existence of possible breaches), and due to the opening of 118AB numbering and the suspension of interconnection due to irregular traffic and the withholding of payments. On the issue of access to the civil infrastructure of those bound by Spanish Royal Decree 330/2016, of 9 September, on measures to decrease the cost of deploying high-speed electronic communications networks, the CNMC resolved five disputes which had arisen due to the existence of problems with accessing the physical infrastructure of certain public administrations or other private agents (including companies operating in the energy sector).

The CNMC also resolved a conflict lodged against Telefónica in connection with the provision of wholesale services on lines where no telefonica service exists, a series of conflicts on the issue of wholesale text messaging prices and of mobile origination for calls to 900 and 902 numbers, and a conflict of the manager of the local DTT digital multiplex in Tenerife.

Regarding the exercising of sanctioning powers, aimed at guaranteeing compliance with the established regulation and legislation, the CNMC processed 14 sanctioning procedures in 2018. Most of these procedures were initiated as a result of a breach by electronic communications operators of the conditions required for the allocation and awarding of the usage rights of public numbering resources (including those concerning number conservation). Of note are the sanctions levied on four operators in September 2018 for breaching the conditions associated with 902 numbering and making payments to the called subscribers who used this numbering (against the National Telephone Numbering Plan).

In April 2018, the CNMC levied a fine on Telefónica for €8.5 million, after proving that it presented an offer that was not economically replicable by other operators in the framework of a public tender run by the Basque government. Also noteworthy is the recent €3 million fine

levied on Telefónica for breaching its obligations on the issue of collocation in main exchanges. As the resolution states, Telefónica unilaterally modified the condition of certain exchanges previously declared impractical and which, therefore, should in theory be inaccessible to any agent, by recovering spaces for its own use by rolling out its fibre optic network to those exchanges, without previously notifying the CNMC and the alternative operators.

Lastly, it is worth mentioning the responses to inquiries issued by the CNMC throughout 2018 on the compatibility of the WiFi4EU Programme with the Spanish regulation on the telecommunications activities of Public Administrations; the possibility of providing Internet access through Wi-Fi networks in urban public transport; the use of the 010 short number; the use of numbering resources for the provision of services associated with the connected car; and the use of foreign SIM cards to provide data connectivity to M2M and IoT services.

- **Reference offers**

The year 2018 also saw key interventions on Telefónica's obligations that resulted in reference offers.

Among the numerous decisions issued we can highlight the amendment to the reference interconnection offer based on IP technology (IP-RIO) to include call origination services with this technology, and the amendment to the RIO based on TDM technology to remove capacity-based interconnection and the double transit level, an updating of prices (including billing and collection services) and the default procedure.

Similarly, the reference offer for leased lines was amended to establish a procedure that guarantees the migration to fibre of the copper circuits affected by the closure of exchanges. The MARCo (Cabinet and Duct) offer was also amended in relation to procedures, occupational health and safety and agreement of good practices, as was the local loop unbundling backhaul service to add the 10 Gigabit Ethernet line type and to review the dark fibre modality.

Another resolution on wholesale obligations was the one on the continuance of the testing process of the Multicast functionality on NEBA local (VULA), and the review of the price of the capacity in indirect access points of the wholesale NEBA broadband service, notified to the European Commission in November. The final measure was approved on 10 January 2019, setting the price of the capacity in indirect access points of NEBA for 2019 and 2020. The monthly price was €5.14/Mbps for best-effort traffic, being €3.06/Mbps in 2019 and €2.83/Mbps in 2020.

- **Portability specifications**

On the issue of portability, a case was processed on the process for deregistration of subscribers with a ported number, which makes it possible to notify of the deregistration of a customer with a ported number so that, one month later, this number can be returned to the operator assigned the block to which the number belongs.



- **Actions planned for 2019**

In 2019, the CNMC will complete the current review of markets 18/2003 (wholesale terrestrial television broadcast market) and market 1/2014 (fixed termination). Likewise, it will begin work to undertake a new review of the wholesale broadband markets (markets 3 and 4).

In late 2018, the European Electronic Communications Code was approved by the EU institutions, which must be transposed into domestic law within the next two years.

More than two years after the entry into effect of Spanish Royal Decree 330/2016, and in light of the experience acquired, the CNMC plans to produce, throughout 2019, guidelines on dispute resolution in relation to access to civil work infrastructures. The CNMC will also update the principles for intervention by the Public Administrations as electronic communications operators, which will entail the review of Circular 1/2010, of 15 June, which regulates the conditions for the exploitation of networks and the provision of electronic communications services by Public Administrations.

In addition, during 2019, this body will conduct a review of Circular 2/2009, on the implementation of carrier preselection by access operators obliged to provide it in the public fixed telecommunications networks market, and Circulars 1/2004 and 1/2009, which add verbal consent verified by a third party in carrier preselection procedures and in the contracting of regulated wholesale services for fixed communications, as well as in the requests for conservation of numbering. In connection with these provisions, it is analysing whether to retain the obligation on operators to hire an external verification entity to check the consent of customers when taking out retail telephone and broadband services, in light of the current consumer and user legislation allowing for the use of other means to confirm consent in remote purchasing.

Lastly, it is worth mentioning the various initiatives to be implemented in connection with Telefónica's wholesale services, such as NEBA local (VULA), local loop unbundling, GigADSL and MARCo. For 2019, the introduction of the multicast functionality in the reference offer for the NEBA local (VULA) service is planned, as is the verification of the operation of this service (once checked, the regulation of the temporary NEBA fibre service will end), and the review of the MARCo (Reference Cabinet and Duct) offer to improve the access procedures to Telefónica's infrastructure in less populated areas. An update of the access prices for this MARCo offer is also planned, as is a review of the procedures to provide unbundled local loops and supervise the closure of the GigADSL service.

### **1.9.2.2 Audiovisual sector**

- **Key initiatives planned for 2019**

In the audiovisual area, in 2018 the intense work on content control continued, with the constant supervision of any content which could affect the rights of minors, as well as the supervision of television advertising, to check that it is in keeping with the current legislation (in both quantitative and qualitative terms), and of any content that could entail incitement to hatred, discrimination, not respecting human dignity and the truthfulness of the information.

Furthermore, in line with the 2018 Action plan, special attention has been paid to the broadcasting of advertisements and self-promotions on CRTVE, carrying out the relevant procedures to guarantee their alignment with its Financing Law.

These actions are conducted by the CNMC continuously, to check that the television operators are complying with the relevant legal provisions, and they can lead to requests to stop broadcasting certain adverts, or to sanctioning procedures. On the issue of content control, during 2018, the CNMC has agreed 10 cessation requirements, and a total 8 sanctioning procedures were concluded.

In 2018, this Commission continued with its functions of surveillance and monitoring of the promotion of European works in Spain.

This general obligation entails two essential actions; on one hand, supervising compliance with the obligation on audiovisual communication service providers to finance the production of certain European works in advance. And on the other, to monitor compliance with the obligations in connection with the annual broadcasting of European works. These obligations are designed to be a tool for the promotion and development of the audiovisual industry.

In terms of the financing of European works, in 2018, the CNMC approved a total of 22 resolutions regarding compliance with the obligation to finance the production of European works in advance from 2017, among which we can highlight the inclusion for the first time of programme catalogue providers.

Closely related to the financing obligation is the obligation on providers to set aside certain percentages or shares of their annual broadcasting time for European works and European works of an independent nature.

As a result of this control, in June 2017 it provided the data requested by the European Commission on the monitoring of the application of this obligation by the linear services for the 2013-2014 period, and by the on-demand services corresponding to the 2011-2014 period. The final report that comprehensively analyses the data was approved in January 2018.

In relation to the public organisation, in April 2018, the CNMC approved the report on compliance with the public service obligations of CRTVE in 2015 and 2016. In that report, special attention was paid to the obligations related to the content it broadcasts through its distribution platforms: television, radio and online services, to review the figures on

programming, broadcasting and acquisition of audiovisual content, concluding, in general terms, that CRTVE had complied with its obligations.

However, the report includes recommendations to improve its compliance with the obligations analysed, among which are to make progress with accessibility objectives; continuing focussing on information as an essential element of its programming and increasing the broadcasting of cultural and educational content.

Furthermore, as part of its commitment to complying with the accessibility obligations, in 2018, the CNMC monitored and controlled compliance with the accessibility obligations throughout 2017. The conclusions from this analysis have been published in the Report on the monitoring of the obligations imposed on accessibility for the year 2017, approved on 30 January 2019.

In connection with subtitling, the report highlights the positive evolution of this service in the last four years, verifying that twenty-four of the twenty-six channels analysed managed to reach the target set by the General Audiovisual Communication Law (LGCA). Regarding the audio description service, what stood out was a slight decrease in the total number of audio described hours. Despite this, the number of networks that reached the minimum compliance levels required increased compared to the previous year. Sign language, despite having improved the number of hours signed in 2017, continues being the accessibility service with the lowest level of penetration in number of hours, although most television operators reached the minimum levels required by the law.

Lastly, from 2018 it is worth mentioning the settlement of two disputes connected to broadcast rights for football competitions, in other words, with the rights to access and broadcast the short news summaries recognised in article 19.3 of the LGCA.

During 2019, an in-depth study of the new features established by the new Directive and the tasks of collaboration with the Ministry of Economy and Business Affairs will be essential for its effective transposition and implementation.

Likewise, in line with the changes proposed by the new Directive in this area, the CNMC will analyse the need to review the Code of Self-regulation for the protection of children in the media. A working group of those involved in the sector will be created for this purpose.

The new ways in which minors access and consume audiovisual content are especially noteworthy among the changes that have taken place in the audiovisual sector in recent years. This is why the CNMC is already starting to adapt the control and supervision tasks to these new means of providing audiovisual communication services. The paths through which audiovisual contents are accessed go beyond free-to-air linear television. This is the safest environment as it currently has the strictest child protection measures, and here it is worth maintaining the level of control and supervision that the CNMC has conducted in recent years.

In addition, and given the possibilities opened up with the new Directive, the CNMC will gradually increase its control and supervision in the realm of the Internet, to the extent that providers who use this route could be subject to the current LGCA and the Directive, due to being considered providers of the video-on-demand service.

The CNMC is also preparing to regulate the content generated by users on video sharing platforms, a task for which it will not be responsible until the new Directive is transposed into the national legislation.

## 2. RETAIL SERVICES

### 2.1 Fixed communications

#### 2.1.1 Fixed telephony

Fixed telephony revenue and traffic continued to decline during 2018, while the number of lines decreased slightly. The only operator with significant growth was the MASMOVIL group, which added 437,000 lines, while Orange only added 6,000 and, in contrast, Movistar and Vodafone registered losses.

Despite fixed-line telephony having been a mature market for several years, the bundled offers of the main operators, especially those of the MASMOVIL group, and the changes in the content of Vodafone's pay television offerings (rejecting the Champions League and El Partidazo), led to consumers switching provider, leading to the portability of fixed numbers rising to a record high, with over 2.3 million transactions registered in 2018.

The average traffic generated by a fixed line decreased again this year, specifically by 12.4%, leading to a fall in total traffic of the same proportion. Furthermore, according to data from the CNMC Household Panel, 11.3% of Spaniards report making calls or video calls over the Internet almost every day, compared to 30.2% who use traditional telephony to make calls.

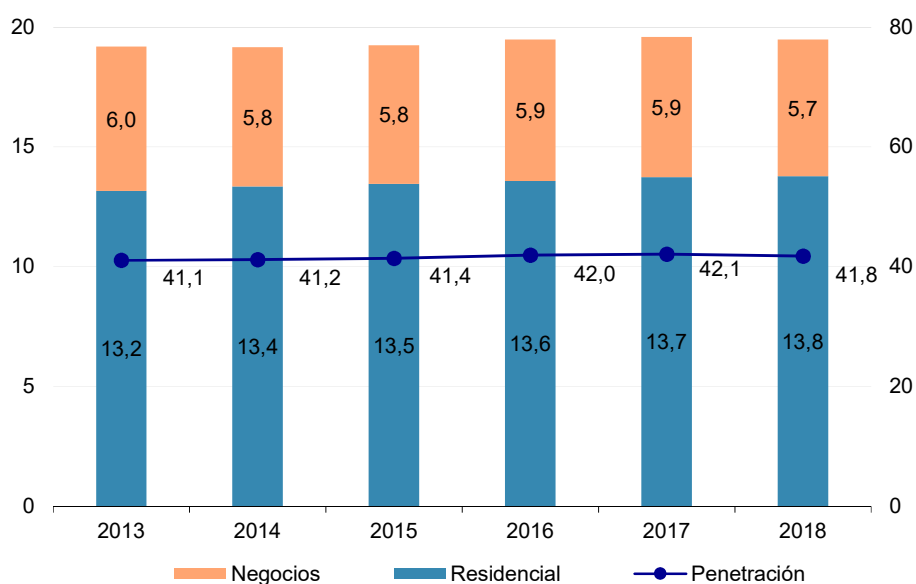
In late 2018, only 25% of fixed telephone lines were contracted individually, while the remaining 75% were split: 12% with other fixed services and the remaining 63% in bundles combining fixed and mobile services. Although the quadruple-play bundle grew this year, it is the quintuple-play bundle - comprised of fixed voice, fixed broadband, mobile voice, mobile broadband, and pay television as the fifth service - increased by the largest amount to account for 30% of the total number of fixed lines.

The market is highly concentrated after the acquisitions that have taken place in recent years. In 2016, the three main operators accounted for 93% of lines, while in 2018, this percentage had fallen by almost four percentage points, down to 89.5%, mainly due to the appearance of the MASMOVIL group and the greater contribution of Euskaltel, after purchasing TeleCable. In fact, in the last two years, the five main operators have accounted for the same percentage of lines, 98%, although with changes to the share of each operator. The share of Movistar, the largest operator, fell to 45% last year.

## Lines

The number of active fixed telephone lines was 19.5 million, 103,000 fewer than in the previous year. The number of lines had been continuously declining since 2009, mainly as a result of the decrease in lines in the business sector. The trend changed from 2015 but in 2018 the number of lines has again fallen due to the decrease in the business segment.

Fixed-line telephone lines and penetration (millions of lines and lines/100 people)

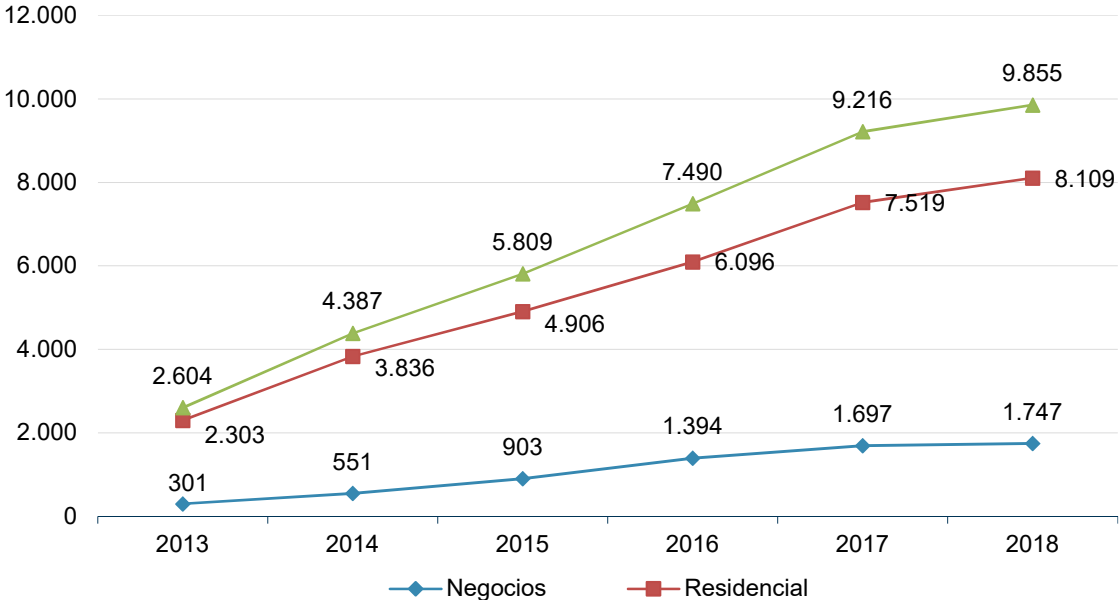


Source: CNMC

The gradual increase in FTTH lines to provide fixed services is one of the reasons for the growth in lines that offer VoIP, which exceeded 9.8 million by the end of 2018, over 600,000 more than in the previous year. This figure implies that 50.6% of all fixed telephone lines have VoIP.

Movistar closed the year with 3.6 million VoIP lines, in line with its number of active lines over FTTH, while Orange and Vodafone ended the year with 3.1 and 1.8 million VoIP lines respectively.

Fixed telephone VoIP lines<sup>24</sup> (thousands of lines)



Source: CNMC

The penetration rate of fixed telephony, defined as the total number of active fixed lines per 100 people, was 41.8<sup>25</sup>, a little lower than that seen in the last two years.

### Customers

At year-end, there were a total of 16.4 million fixed telephone customers, 15.9 million through direct access and the rest through indirect access. Direct access customers reflect the same trend as seen for lines, with a decrease in customers for the main operators, except for the MASMOVIL group.

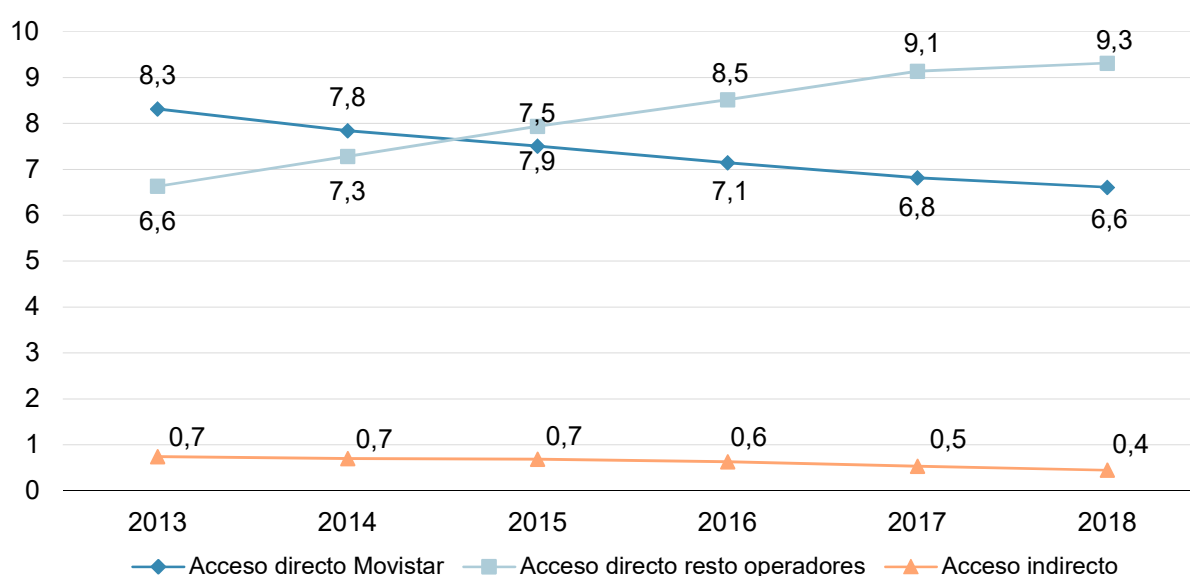
The competition for fixed communications services has led operators to opt in the main for the direct access service, competing in terms of infrastructure, whether proprietary – mainly HFC or FTTH networks – or owned by Movistar (making use of the various wholesale services regulated by the CNMC). This latter option forces the alternative operator to make investments, but they also benefit from being able to configure their own offer, differentiating it from Movistar’s offer.

<sup>24</sup> This figure does not include the use of applications for telephone calls over the Internet.

<sup>25</sup> The penetration is calculated from the total number of fixed telephone lines and the population figures, in turn obtained from the census update of 2011 by the National Statistics Institute (INE). For the year 2018, this figure is 46,658,447 inhabitants.

At first, the alternative operators without a proprietary infrastructure started to offer direct access services to their end customers using Movistar’s wholesale local loop unbundling services. However, since late 2013, they have chosen to rollout their own fibre networks, although it was only from 2015 when the decrease in demand for local loop options to provide fixed voice services (shared without POTS (plain old telephone service) or fully unbundled) became evident, and in the last four years these have fallen as a whole by more than 2.4 million units. The recent availability of the NEBA local (VULA) wholesale service (emulating local loop unbundling through virtual access to Movistar’s fibre) has also allowed alternative operators to offer their customers services over fibre in certain areas. In late 2018 there were more than 630,000 units of this wholesale service.

Evolution of direct and indirect access customers (millions)



Source: CNMC

Furthermore, indirect access voice customers continue decreasing in the same way as seen in recent years, falling to less than half a million. This service allows the operator to provide fixed telephone services over the physical access of Movistar through an operator selection code and, although it is currently residual, it allows operators to offer voice services in areas they cannot reach with their own network or where they are not collocated. The most important tool for providing the indirect access service is Wholesale Line Rental (WLR)<sup>26</sup>, which allows alternative operators to provide indirect access to their customers, charging them for the access and thus untying them from Movistar.

In 2018, the number of indirect access customers was 447,000, 16.4% fewer than in 2017, the same rate of decline as seen for WLR lines - which ended the year with 414,363 units.

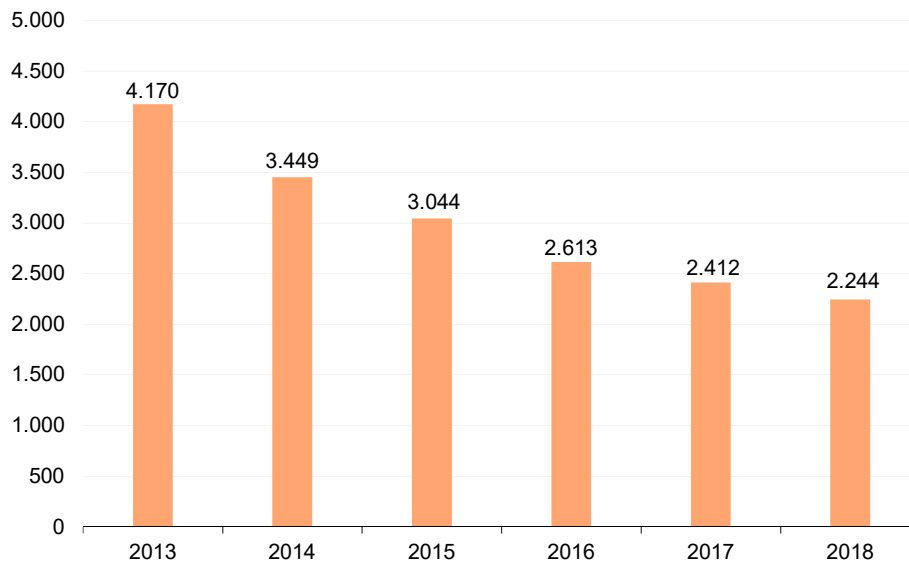
<sup>26</sup> After the review of market 2 approved by the CNMC in January 2017, that same July, the requirement for Telefónica to provide indirect access unbundled from WLR disappeared, so operators have had to tie their customers to this type of wholesale access or keep them under Telefónica’s commercial conditions, not under the regulated ones that existed until then.



## Revenue and traffic

Revenue from the fixed telephone retail service continued to fall, down to €2,244.4 million, with a rate of decline of 7% which is in line with the figure from 2017 and noticeably lower than that in previous years, when double-digit rates of decline were recorded.

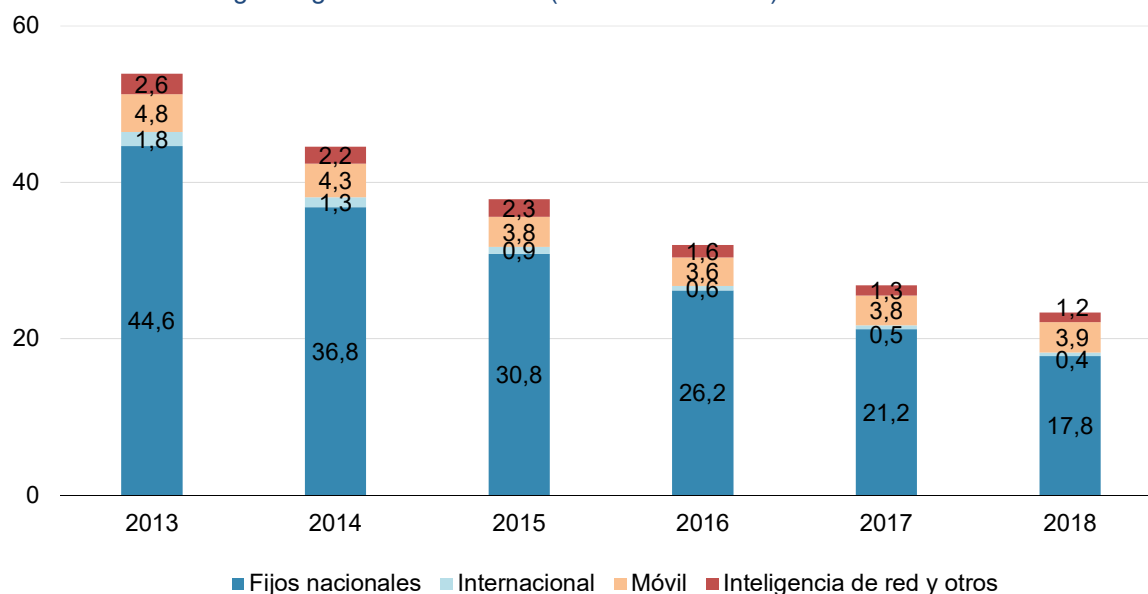
Evolution of total fixed telephone revenue (€ million)



Source: CNMC

Regarding the traffic originating in the fixed network, the figure fell again, this time by 12.9%, a slightly lower rate than in previous years.

Evolution of traffic originating in a fixed network (billions of minutes)



Source: CNMC

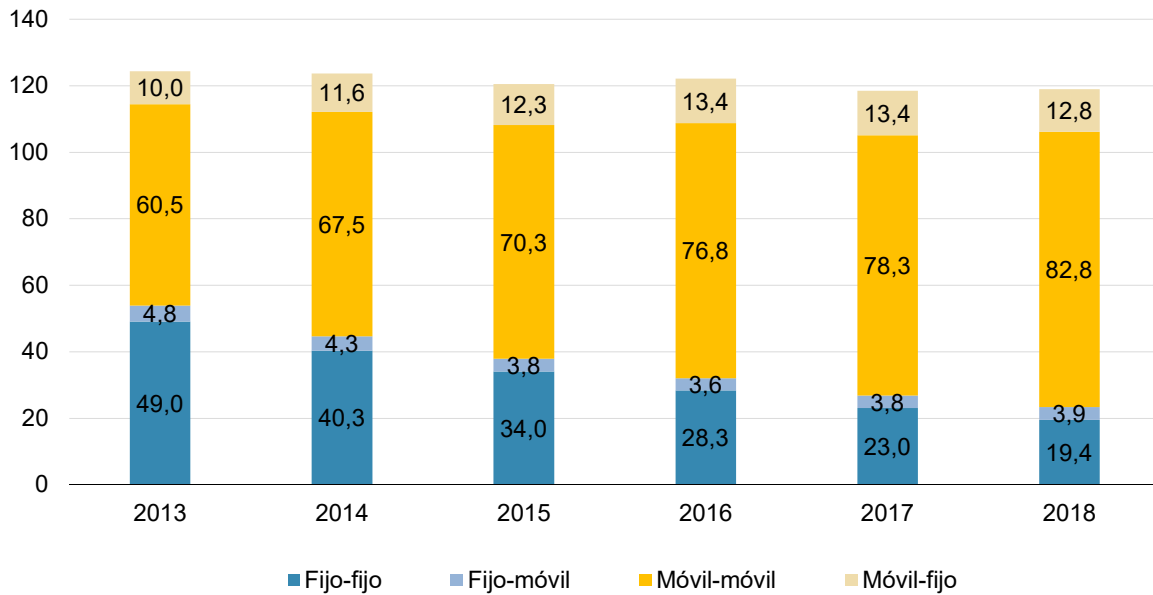
While as a result of the gradual bundling of services there continues to be an increase in the number of fixed telephone lines covered by a flat rate, the proportion of total traffic accounted for by minutes covered by a flat rate tariff<sup>27</sup> stood at 72.3%, down from the 75.5% in the previous year.

If total voice traffic is analysed, whether originating from a fixed or mobile line, it can be seen that traffic has remained stable at 119 billion minutes. Following the trend in previous years, the proportion of traffic from mobile networks is growing; in 2018 it stood at 80%, up from 57% in 2013. Furthermore, traffic from fixed networks saw a decline in its share again, its contribution falling by 24 percentage points in the last five years, down to just 20% in 2018.

In terms of traffic types, the one that grew most was mobile to mobile, clearly at the expense of fixed to fixed. For mobile lines, which continued to grow for another year, calls to mobiles dominate calls to fixed lines, as can be seen in the following graph.

<sup>27</sup> This is calculated without taking intelligent network and other traffic into account, nor access to the Internet.

Evolution of voice traffic by origin and destination<sup>28</sup> (billions of minutes)

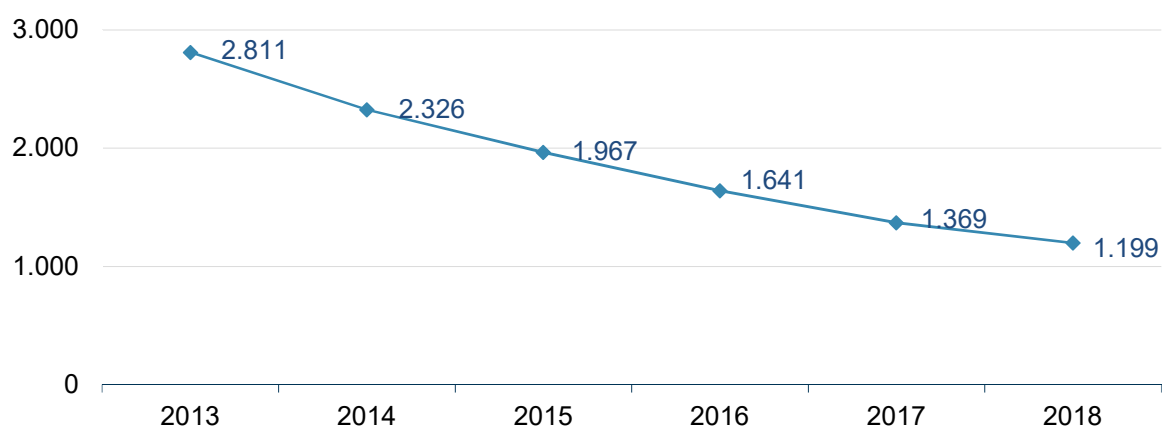


Source: CNMC

Consumption per fixed line has been continuously falling in recent years, and it fell again in 2018, by 12.4%. Given that over the last year the number of fixed lines is relatively unchanged, the total traffic from fixed networks fell in practically the same proportion. In contrast, traffic originating on the mobile networks continued growing, at a rate of 4.4%, due to the increase in the number of mobile lines, as the traffic per mobile line remained practically unchanged from 2017.

<sup>28</sup> Fixed-to-fixed traffic does not include local calls to narrow band Internet. Mobile traffic is calculated in airtime minutes and does not include international roaming.

Minutes per fixed line and year<sup>29</sup> (minutes/line)



Source: CNMC

Furthermore, according to data from the CNMC 2018 Household Panel, calls from fixed telephones have been forced to take a back-seat in comparison to other communication methods. Two out of every ten Spaniards never make calls from fixed telephones, and almost five out of every ten do so once a week or less. The use of mobiles to make calls is proving more resilient to the entry of OTT communication. Therefore, instant messaging is the service most used to communicate, by more than half of the Spanish population, who use it several times a day (62%), a figure far greater than the daily use of calls from fixed telephones (10.3%) or mobile phones (25.6%).

## Competition

The appearance of the MASMOVIL group and the strong growth of this operator in the last two years, together with the acquisition of R and TeleCable by Euskaltel, changed the landscape in 2016, when the three main operators shared 93% of the lines, compared to 89.5% of the lines they had in 2018.

In 2018, the MASMOVIL group became the fourth largest operator, with almost a million lines and a market share of 4.7%. Furthermore, it invested significantly in the rollout of its proprietary fibre network and continued using Orange's wholesale offer<sup>30</sup>, which allows it to offer services on a national level. The five main operators held 98% of the market in terms of lines, the same figure as in 2017, with a redistribution of market shares in favour of the MASMOVIL group.

<sup>29</sup> The fixed telephony traffic included in this report corresponds to that registered by all telecommunications operators, and therefore does not include the traffic managed by over-the-top operators, which allow calls to be made to any destination through Internet applications.

<sup>30</sup> This was one of the conditions that drove Orange to approve the acquisition of Jazztel.

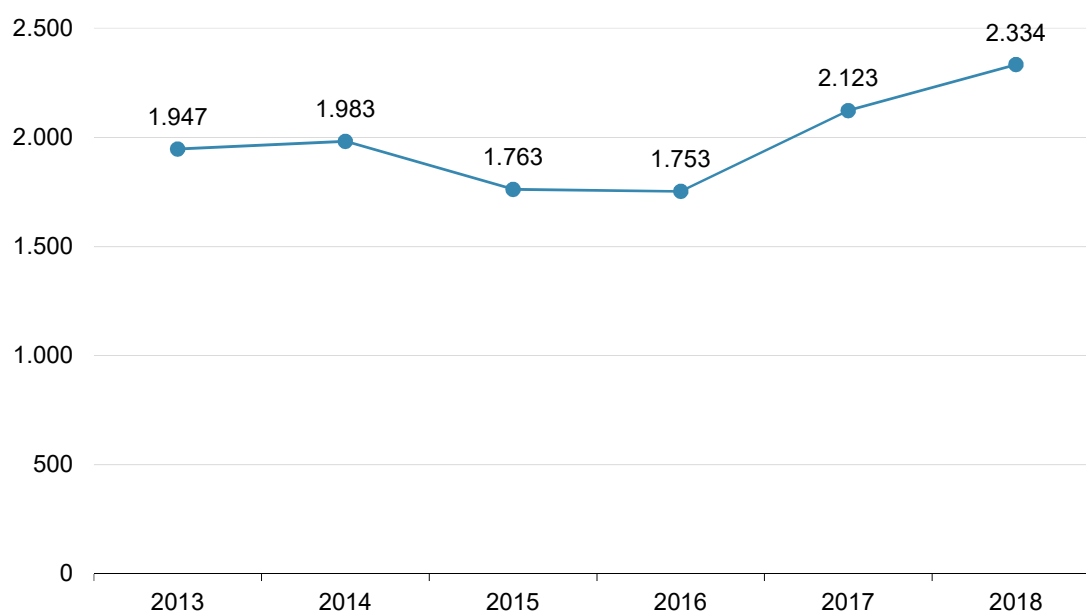
## Portability

Portability allows users to switch operator while retaining their number. Portability statistics are a good indicator of the degree of competition in the market.

Despite the fixed-line telephone market being a mature market, in recent years there has been lots of activity in terms of fixed portability, with another upturn in 2018, reaching a record high of more than 2.3 million, representing a monthly average of 194,474. According to the CNMC Household Panel, 13.5% of households report having switched their fixed-line telephone service provider in 2018, a figure that is two percent higher than that in 2017.

This upturn is mainly related to customers switching operators to purchase bundled services, save money on their bills or have access to the various pay television contents that operators include in their bundles.

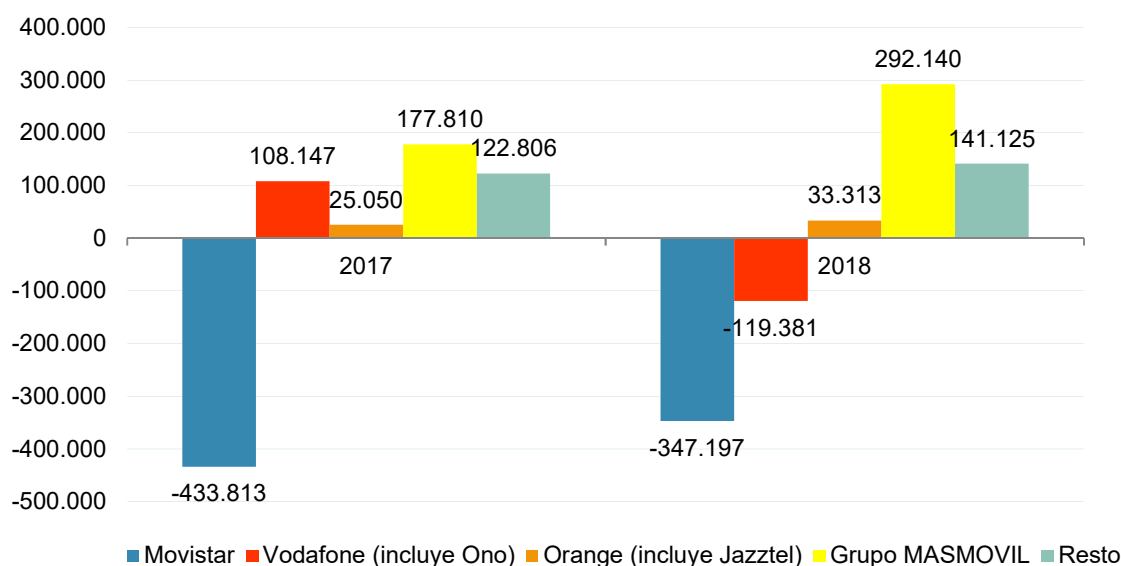
Ported fixed lines (thousands of lines)



Source: CNMC

In terms of the figures by operator, Movistar and Vodafone both had negative results in 2018. While the former improved its figures, for Vodafone it was the other way around and it went from gaining 100,000 lines in 2017, to losing them in 2018. Orange and the MASMOVIL group, with positive results, improved their figures from the previous year, especially the fourth operator, which gained almost 300,000 more lines than it lost to other operators.

### Net portability figures by operator in 2018 (lines)

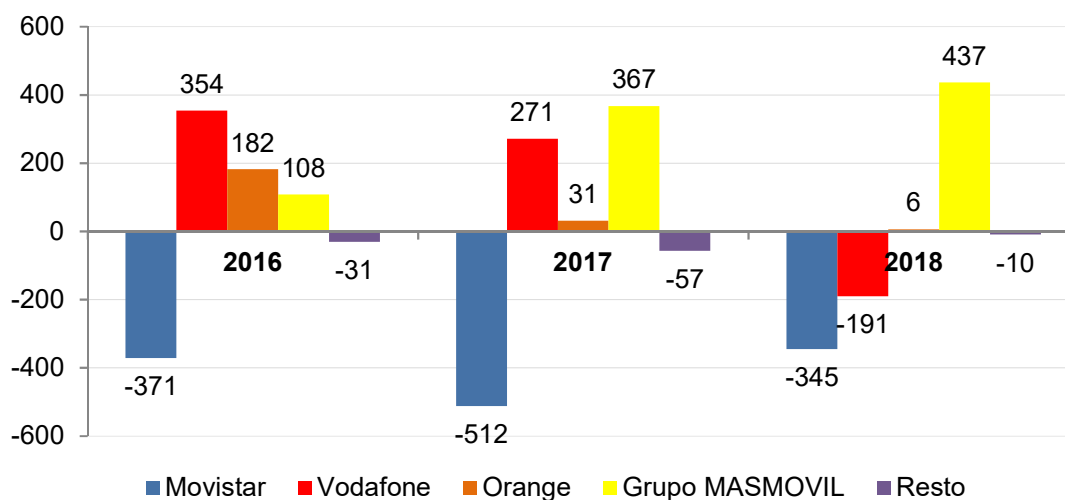


Source: Asociación Operadores Portabilidad (Association of Operators for Portability) - CNMC

### Line gains and losses

The MASMOVIL group was once again the operator gaining the most lines in 2018 (437,000), while Vodafone saw a change in its trend and lost almost 200,000 after removing part of its football contents (Champions League and El Partidazo) after the summer. Orange only gained 6,000 lines, and Movistar lost fewer lines than in 2017, benefiting from the demand for its content offer, which translated into a gain of 244,000 pay television subscribers.

### Evolution of net lines gained by operator (thousands of lines)



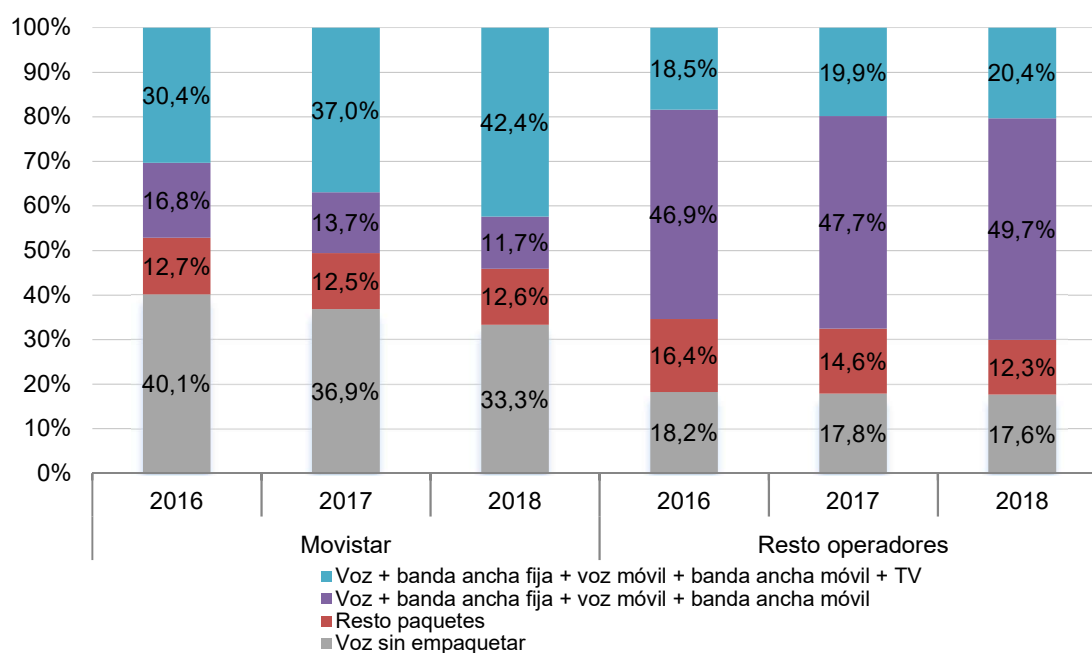
Source: CNMC

### Voice bundles

Fewer lines are being contracted individually and this figure stood at 24.7% in late 2018. Of the remaining 75% (14.7 million lines), the majority - 83% - belong to joint offers with other fixed and mobile services. Specifically, the combination that grew most was the quintuple-play bundle, which ended up accounting for 30.4% of total fixed lines, moving ever closer to the 32.5% accounted for by quadruple-play bundles.

In 2018, Movistar continued gradually increasing its percentage of quintuple-play bundles at the expense of other bundles and its unbundled share, which fell by more than three percentage points. The other operators maintained their unbundled share (close to 18%) and their quintuple-play offers increased by half a percentage point, up to 20.4% of their lines, whereas quadruple-play bundles increased by two points in the last year. This increase was mainly registered by the MASMOVIL group, which continued with its strategy of offering quadruple-play bundles with voice and broadband<sup>31</sup> to different target audiences under its different brands (Más Móvil, Yoigo and Pepephone), although the three main operators, through their secondary brands, continued offering quadruple-play offers<sup>32</sup> at aggressive prices and with no contracts or short-term contracts when contracting fibre. This was seen for Vodafone with its Lowi fibre offer, Orange with its Amena brand, and Movistar with Tuenti and O2.

Proportion of fixed telephone lines by type of bundle and operator (percentage of active fixed telephone lines)



Source: CNMC

<sup>31</sup> In the case of Pepephone, the offers do not include the fixed voice service.

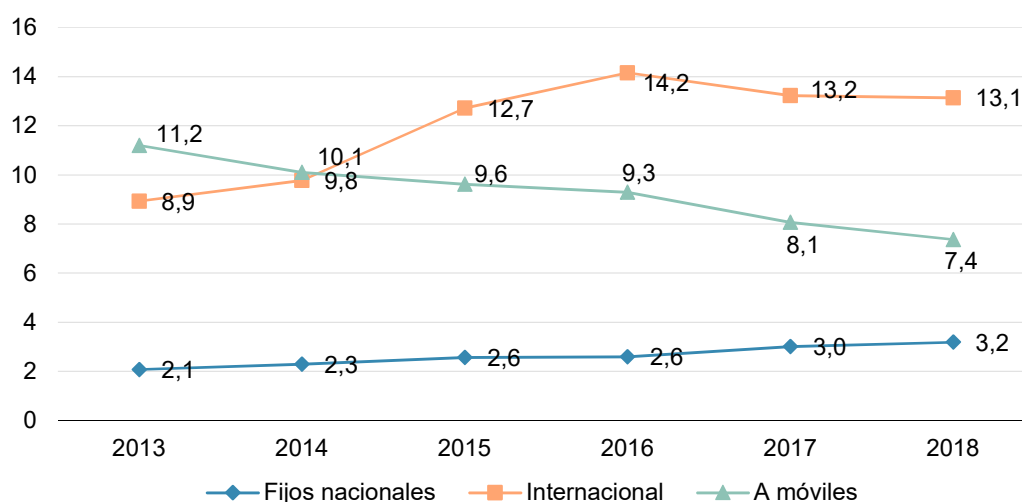
<sup>32</sup> Some of these offers exclude fixed telephony.

## Prices

To assess the evolution of prices for the different types of fixed telephony traffic, average revenue can be used as an approximation. It should be noted that the greater presence of bundles complicates the price analysis, particularly in the case of national traffic and traffic to mobiles, as flat-rate voice tariffs include an unlimited number of minutes to national fixed-line numbers and, increasingly, flat-rates or partial flat-rates for fixed-to-mobile minutes. In any event, the prices of some services are mainly time-based, such as calls to international destinations or calls to intelligent network services

Average revenue per call from a fixed network to a mobile network fell by 8.7% to stand at 7.4 cents per minute. This price may be affected by the evolution of the wholesale mobile call termination price, regulated by the CNMC. From July 2013, the wholesale mobile call termination price remained at 1.09 euro cents per minute, and from February 2018, as a result of the corresponding market analysis, the wholesale price was reduced to 0.7 euro cents per minute in 2018, 0.67 in 2019 and 0.64 from January 2020.

Average revenue from traffic to fixed national, international and mobiles (euro cents/minute)



Source: CNMC

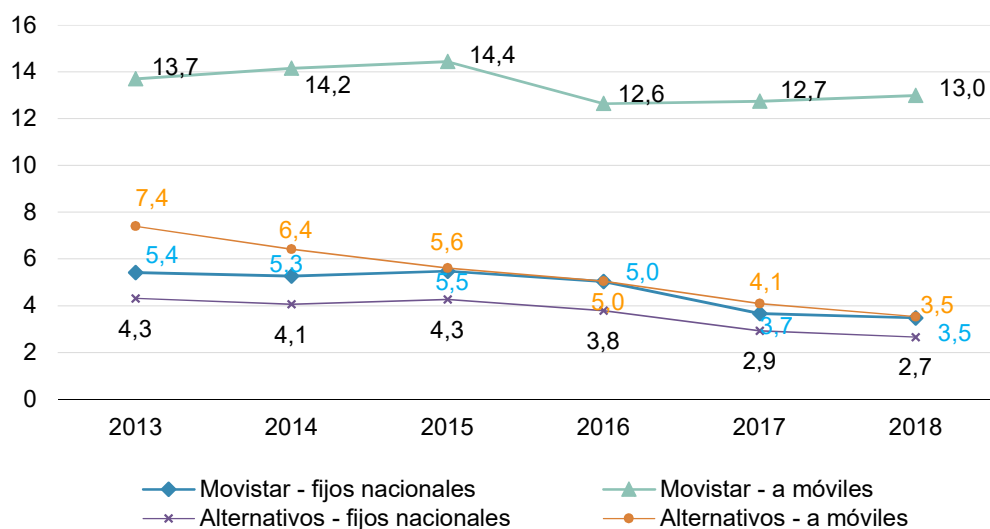
More significant is the analysis of the average revenue from traffic priced on a time basis, in other words, by minutes consumed, although it represents 27%<sup>33</sup> of the total traffic.

For fixed to mobile traffic, 65.2% of which was charged on a time basis, the difference between the average revenue of Movistar and the other operators increased. In contrast, for traffic with a national destination, 18.4% of which was charged on a time basis, this difference remained unchanged over the past year.

Average revenue from time-based traffic to national destinations and mobiles for Movistar and the alternative operators (euro cents/minute)

<sup>33</sup> This is calculated without taking intelligent network and other traffic into account, nor access to the Internet.





Source: CNMC

### Market shares<sup>34</sup>

In 2018, 89.5% of lines belonged to the three main operators, compared to 93% in 2016, the year in which the MASMOVIL group entered the market.

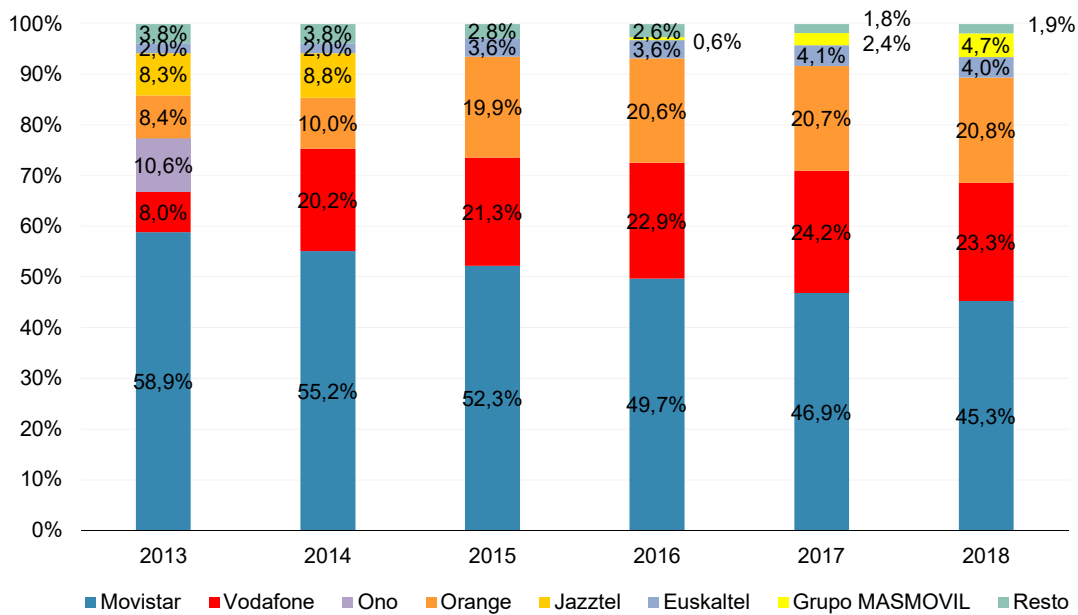
Movistar saw another reduction in its share of lines, down to 45.3%, although it managed to halt the rate of decline and lost 1.6 percentage points, compared to the 3 percent it had been losing year after year.

Orange has maintained its share of around 21% since acquiring Jazztel, whereas Vodafone lost lines for the first time since purchasing Ono and ended the year with 23.3%. The operator that registered the greatest increase was the MASMOVIL group, which added more than two percentage points in just one year, reaching 4.7% and moving up to fourth place, ahead of Euskaltel which continued to have 4% of fixed lines.

Thus, with this scenario, the five main operators accounted for 98% of fixed telephone lines in 2018.

<sup>34</sup> Ono's figures are included in Vodafone's figures for the whole of 2014, even though the purchase was completed in July 2014. Similarly, Jazztel's figures are included in Orange's figures for the whole of 2015, even though the purchase was completed in August. Euskaltel included the figures for R for 2015 even though the purchase was completed in November, and those for TeleCable for 2017 even though the purchase was completed in July.

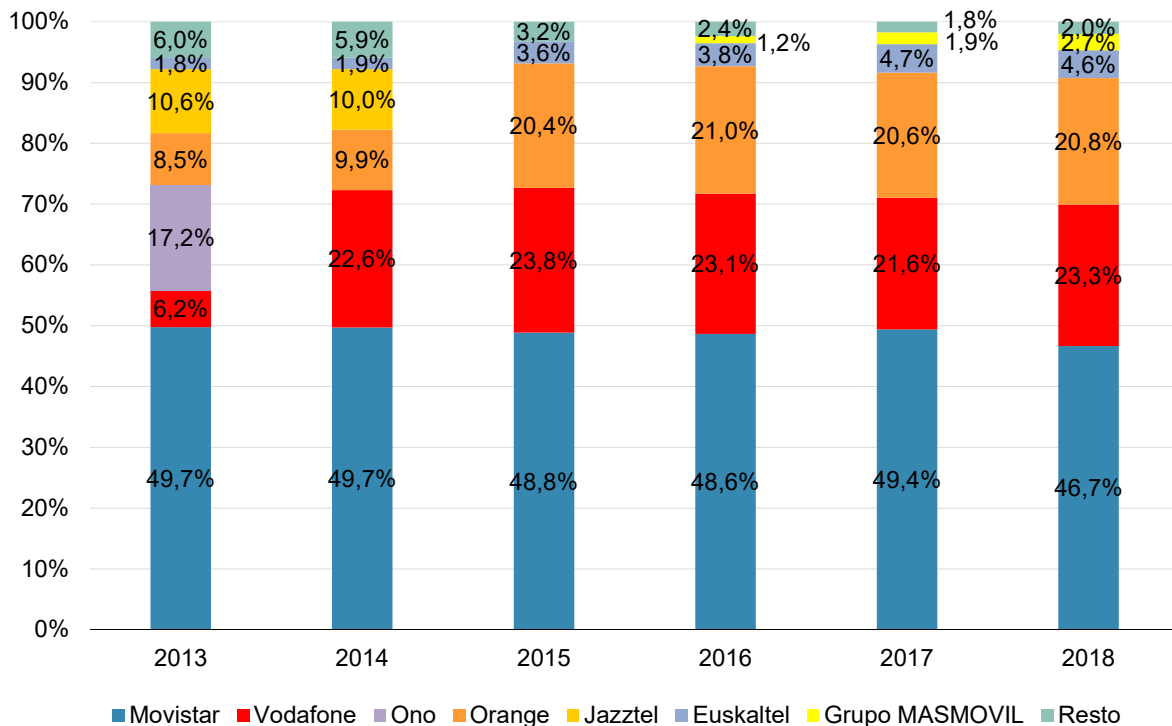
Market shares for fixed telephone lines (percentage)



Source: CNMC

In 2018, the absolute value of traffic for the three main operators fell, and as a whole they accounted for 90.7% of total fixed-line telephone traffic, one percentage point less than in 2017. If we include Euskaltel and the MASMOVIL group, who increased their traffic, the five main operators accounted for 98% of the total number of minutes originating on a fixed network.

Market shares for fixed-line telephone traffic (percentage)



Source: CNMC

The indirect access option continued decreasing, falling to a total of 447,057 customers. Orange is the operator with the highest share of this type of customer, 90.3% in 2018 compared to the 56% it held in 2014, before purchasing Jazztel.

## 2.1.2 Fixed broadband

In 2018, revenue from retail fixed broadband services fell slightly compared to the previous year<sup>35</sup>. So, turnover fell by 0.9%, down to €4,254.2 million. If we add the revenue from switched access and other services, the figure grows to €4,411.2 million, 1.3% lower than in the previous year. In contrast, fixed broadband lines continued their growth seen in recent years. Last year, the volume of lines grew by 3.5%, up to 15.18 million.

Last year, the MASMOVIL group, the fourth largest national operator comprised of the operators Mas Móvil Telecom, Yoigo, Pepephone and the fixed network operator Xtra Telecom, was, for the second year running, the operator attracting the largest number of customers, adding 478,000 new lines. It was followed by Movistar, with an increase of almost 123,000 lines. Meanwhile, Orange ended 2018 with a slight increase in customers (just over 26,000 lines), and Vodafone ended the year with a loss of almost 140,000 lines.

As regards the rollout of next-generation access networks (NGA), which allow very high-speed connections, this continued to show very high growth figures. Specifically, in late 2018, there were 46 million fibre-to-the-home (FTTH) lines installed, 22.2% more than in the previous year. Furthermore, the number of hybrid fibre-coaxial connections (HFC DOCSIS 3.0) installed reached 10.31 million, slightly fewer than in 2017.

This rollout of next-generation access networks enabled operators to configure broadband offerings with higher connection speeds. The year ended with 74.2% of lines having a subscribed speed of 30 Mbps or more. Furthermore, lines with speeds of 100 Mbps or more accounted for 8.9 million, 58.7% of the total number of lines, compared to 27.7% in the year 2017. Lastly, lines with speeds of more than 500 Mbps accounted for 2.5 million (16.5% of the total number of lines).

## Lines and penetration

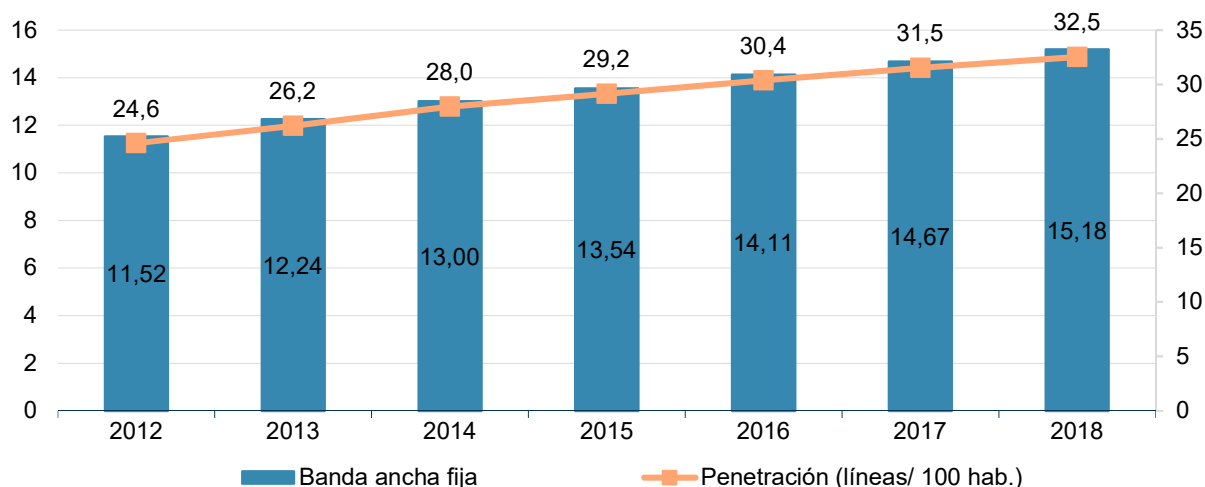
Fixed broadband lines grew by 3.5% in the last year, a slightly lower figure than in the previous year. This rise resulted in the total number of lines standing at 15.18 million, and increased the penetration to 32.5 lines per 100 people<sup>36</sup>, which represents a rise of one line per 100 people in the last year.

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<sup>35</sup> The decrease in revenue is the result of a change in the way that Movistar allocates income between fixed and mobile broadband.

<sup>36</sup> In terms of households, fixed broadband penetration grew by 81.9%, reflecting a total number of households for the year 2018 of 18,535,900 (source: INE).

Evolution of broadband lines and penetration (millions of lines and lines/100 people)



Source: CNMC

## Technologies

Broadband access services can be provided using several alternative technologies. In terms of fixed network broadband services, we have the following classification:

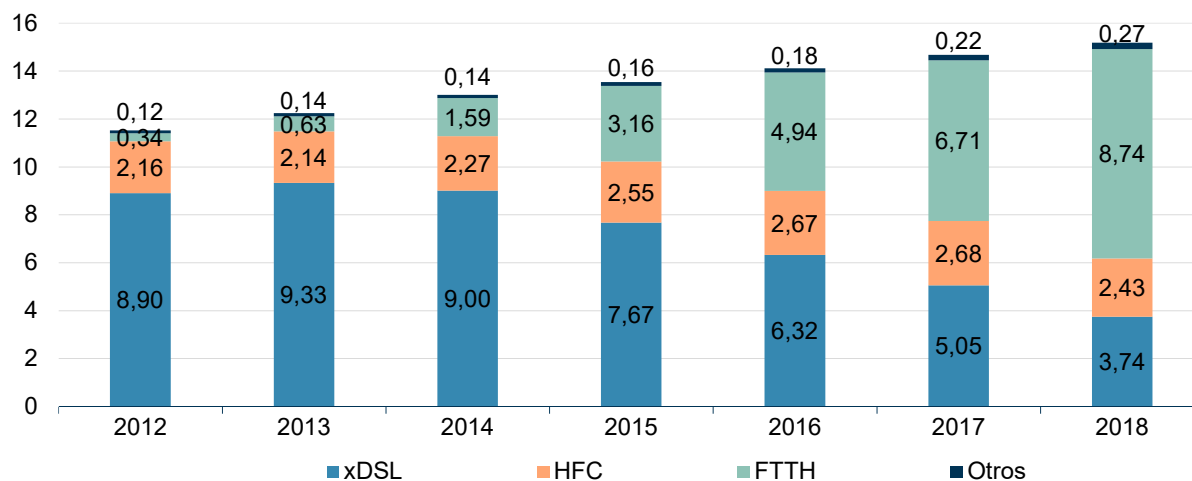
- a) Technologies supported over fixed networks: xDSL technologies over copper pair; technologies over cable networks, such as HFC networks using a mixed medium of fibre-optic and coaxial cable with DOCSIS technology; and, lastly, technologies over fibre-optic networks, such as FTTH connections using GPON passive technology
- b) Technologies on wireless networks: LMDS, WiMAX (wide-area coverage) and Wi-Fi (smaller coverage environment).
- c) Networks over satellite systems such as VSAT.

The decrease in the use of copper pairs in access networks continued in 2018. There was also a slight decrease in HFC lines caused by the migration to FTTH lines. Thus, progress in the rollout of FTTH lines by Movistar and the alternative operators resulted in a decrease in active xDSL lines, which was offset by an increase in the number of FTTH broadband lines. Furthermore, for the first time, the volume of active FTTH lines significantly exceeded 50% of the total for broadband. xDSL ranked second as the method of access for end users, followed by HFC lines, almost entirely updated to DOCSIS 3.x.

Specifically, active broadband lines based on xDSL represented 24.7% of the total, compared to 34.5% in the previous year. This decrease contrasts with the increase in FTTH lines, which reached 57.6% of the total for broadband, compared to 45.7% in the year 2017. Furthermore, HFC lines represented 16% of total broadband lines. Lastly, other technologies accounted for 1.8% of total broadband lines.

In absolute terms, active xDSL lines reached 3.74 million, which reflects a 26% decrease in the past year. Furthermore, the number of broadband connections based on HFC networks experienced a 9.4% decrease compared to the year 2017. In contrast with this, active FTTH lines grew by 30.2%, reaching 8.74 million lines. Active lines over other technologies grew by 20.5%, but continue to represent a very small percentage of the market; less than 2%.

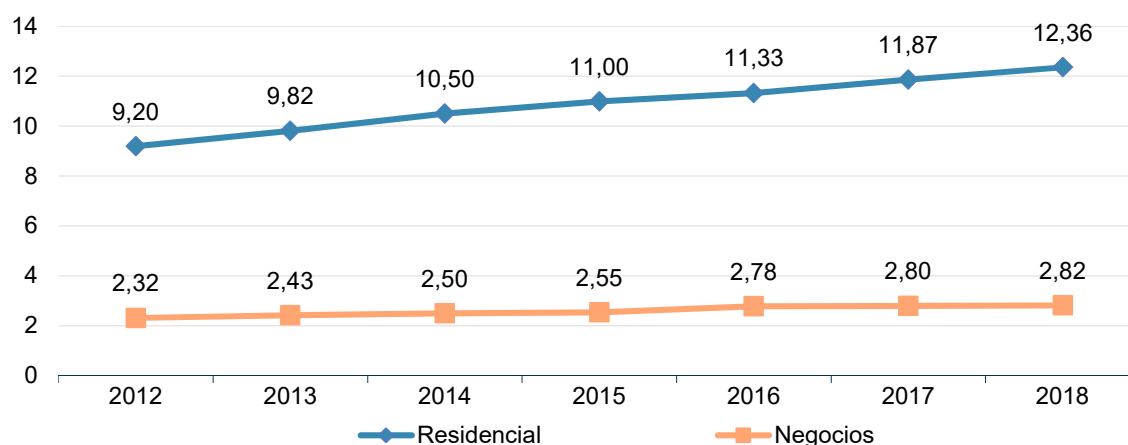
Evolution of broadband lines by technology (millions)



Source: CNMC

In the distribution of broadband lines by segment, it can be seen that, by the end of the year, in the residential segment there was a total of 12.36 million lines, which represents a 4.1% increase in the last year. Furthermore, the business segment ended the year with 2.82 million lines (0.6% more). The percentage of total lines accounted for by residential and business lines was 81.4% and 18.6% respectively.

Evolution of broadband lines by segment (million)



Source: CNMC

### Next generation networks (NGA) and subsidies for the rollout of broadband

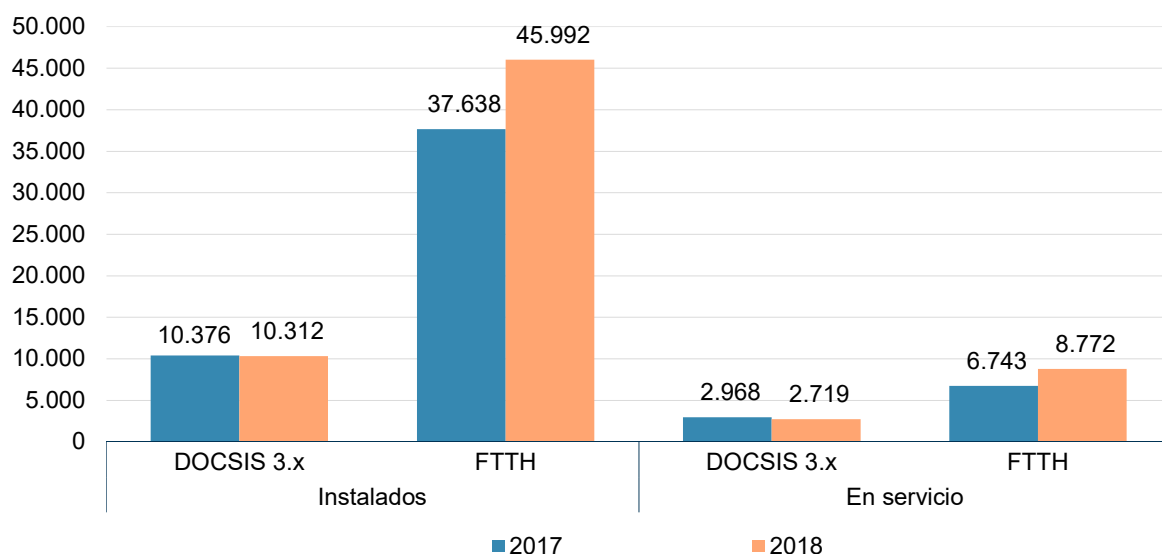
In 2018, the operators extended the coverage of Next Generation Access (NGA) networks based on FTTH; these networks provided users with high connection speeds and quality, thereby allowing new services that require greater bandwidth to be offered.

On the one hand, cable operators updated practically all of their lines to DOCSIS 3.x. These lines are provided mainly by Vodafone (which completed the purchase of the cable operator Ono in mid-2014) with national coverage, and by Euskaltel (with the addition of R and TeleCable, which it purchased last year). Likewise, some local operators migrated some of their cable lines to new FTTH lines.

Meanwhile, Movistar, Vodafone, Orange and the MASMOVIL group continued with the rollout of FTTH lines. This way, they offered customers services through the fibre optics network in areas with FTTH coverage, and conducted a migration of active xDSL-based connections to the new NGA network. Also worth mentioning are the commercial wholesale agreements over fibre networks that operators have reached in the last two years, and which have allowed them to significantly increase their coverage in the country, in other words, the number of homes and businesses they can serve.

The following graph shows the evolution of the installed and operational NGA network lines over the past two years. So, installed lines based on HFC DOCSIS 3.x reached 10.31 million, showing a slight decrease of 64,000 lines compared to 2017. Meanwhile, the number of FTTH lines grew by 22.2%. Therefore, in the last year, the volume of lines installed using this technology reached 46 million, compared to the 37.64 million seen in the previous year. Furthermore, active FTTH lines showed an increase of two million compared to the previous year.

Evolution of installed and operational DOCSIS 3.x and FTTH lines (thousands)



Source: CNMC

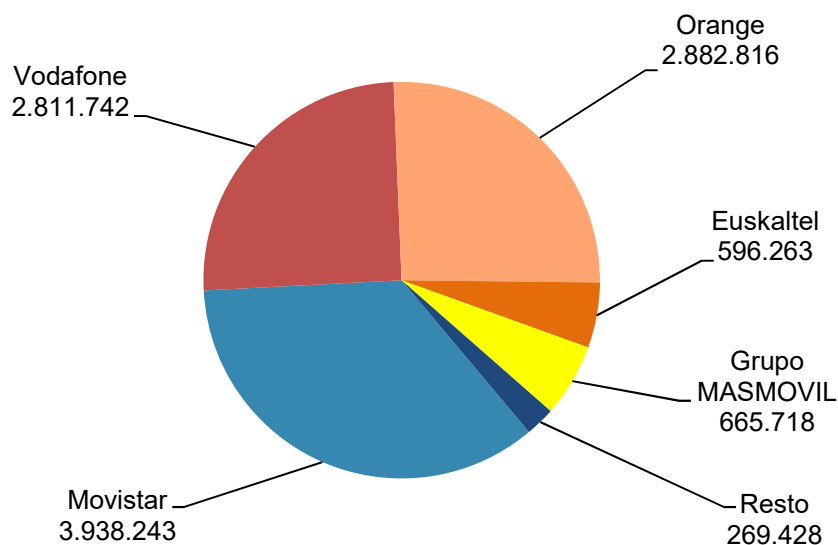
The year 2018 ended with a total 11.16 million active NGA lines (taking into account DOCSIS 3.x broadband and FTTH lines). Of these, 35.3% belonged to Movistar and were provided through the FTTH network. In second place was Orange, which ended the year with 2.88 million active NGA lines mainly based on FTTH, a figure which represents 25.8% of the total number of lines.

Next was Vodafone, with 2.81 million active NGA lines (25.2% of the total number of lines), mainly through the HFC network of the former operator Ono and, to a lesser extent, through

the FTTH network. The fourth operator on a national level, the MASMOVIL group, ended with a share of 6% (666,000 lines), in contrast to the 213,000 lines in 2017.

Lastly, the rest of the regional or local operators had a total of 866,000 active NGA lines, a figure which represents 7.8%. Euskaltel, which includes R and TeleCable, stands out here with almost 600,000 active lines.

Distribution of active NGA (DOCSIS 3.x and FTTH) lines by operator



Source: CNMC

All national, regional and even local governments can provide subsidies for the rollout of broadband networks, so long as they comply with the relevant EU regulations. The EC's directives establish recommendations to prevent duplications and inconsistencies between the rollout plans of the different administrations, and also to prevent competition distortions that could be caused by such subsidies if erroneously awarded. As a result, the EC only allows the funding of projects in certain white or grey zones, those where there is little probability of private rollout<sup>37</sup>.

Spain's Digital Agenda for 2013 established the strategy to achieve the European Digital Agenda objectives. The objective of the Ultra-fast Telecommunications and Networks Plan is to boost the rollout of ultra-fast broadband access networks and encourage the adoption of these networks by citizens, companies and the public authorities.

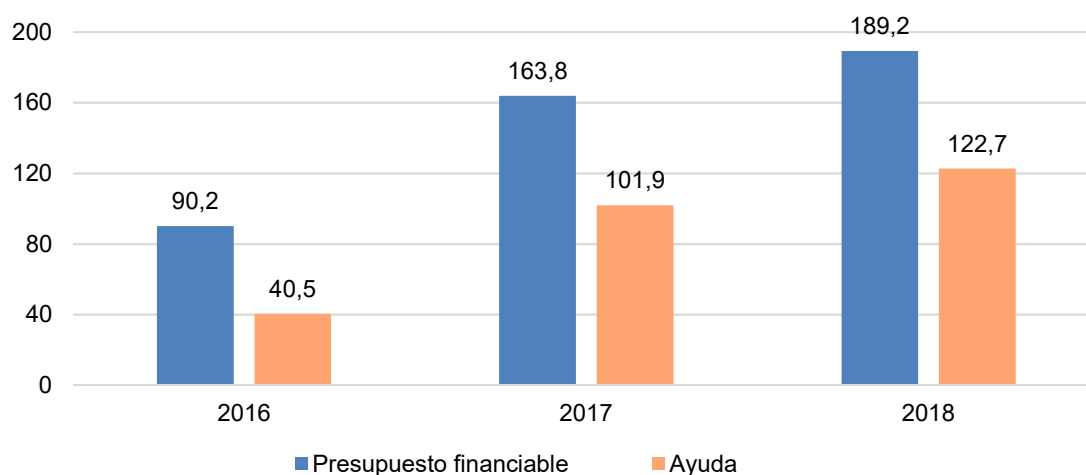
There are no centralised statistics on such subsidies in Spain, and there is only information on the subsidies awarded by the national administration, in its successive Next Generation Broadband Expansion Programmes (PEBA in Spanish). In 2018, the subsidies granted under the PEBA reached €122.6 million, a figure greater than that seen in 2017: €101.9 million. In total, investments to be made reached €189.2 million. 20.7% of state aid was directly funded

<sup>37</sup> White zones are those where there is no broadband infrastructure and one is unlikely to be developed in the near future, and grey zones are those where a network operator is present, and it is unlikely that another network will be developed in the near future.



from the Ministry's budget, whereas in 2017 this percentage was 23.7%. The remaining 79.3% was funded with contributions from the European Regional Development Fund.

Subsidies for the rollout of broadband in the framework of the Broadband Expansion Plan (PEBA) (€ million)



Source: Compiled by the authors based on the figures from the SEAD<sup>38</sup>.

Galicia received 20% of PEBA subsidies in 2018, followed by Andalusia and Castile and León (13.2% and 11.1% respectively). The Valencian Community obtained 10.5% of the subsidies, and Castile-La Mancha, 9.8%.

Furthermore, all PEBA subsidies were allocated to the rollout of FTTH networks, and 82% of it was assigned to Movistar. The second operator in terms of the most subsidies secured was Euskaltel (which includes R and TeleCable), with 7.9% of the total.

Lastly, in March 2018, the Spanish Government announced the 300 x 100 Plan for the rollout of fibre networks in rural areas, whose objective is for 95% of the population to have access to ultra-fast broadband networks. This entails subsidies worth €525 million for the period from 2018 to 2021, €395 million of which will come from ERDF funds<sup>39</sup>. The first batch of subsidies will be assigned in 2018, for a sum of up to €150 million.

## Revenue

In the year 2018, revenue from Internet services fell slightly compared to the previous year<sup>40</sup>. The total volume of revenue from Internet services fell by 1.3% compared to the previous year, down to €4,411.2 million. In relation to broadband, its revenue stood at €4,254.2 million, 0.9% lower than in the previous year.

<sup>38</sup> Secretariat of State for Digital Progress.

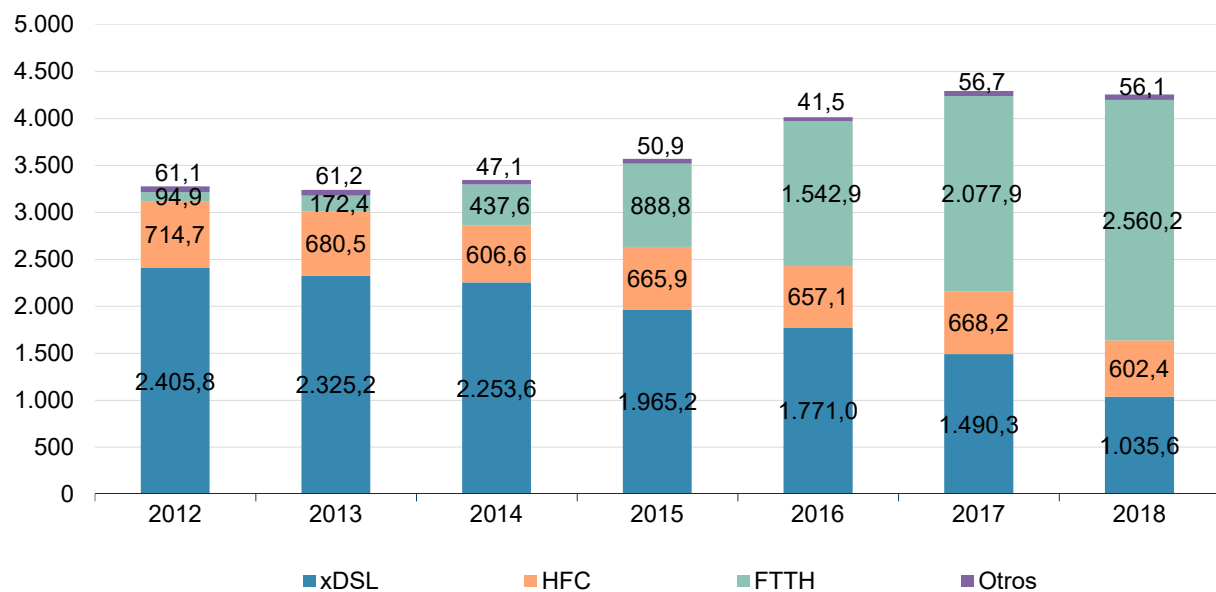
<sup>39</sup> The European Regional Development Fund, managed by the EC.

<sup>40</sup> The decrease in revenue is the result of a change in the way that Movistar allocates income between fixed and mobile broadband.

The breakdown by technology shows a significant decline in xDSL revenue, in keeping with the aforementioned decrease in lines. In contrast, revenue linked to FTTH lines experienced the greatest rise. Specifically, revenue from xDSL lines fell by 30.5%, to stand at €1,035.6 million. Meanwhile, revenue from FTTH totalled €2,560.2 million, 23.2% higher than in 2017.

Lastly, revenue from HFC fell by almost 10%, down to €602.4 million.

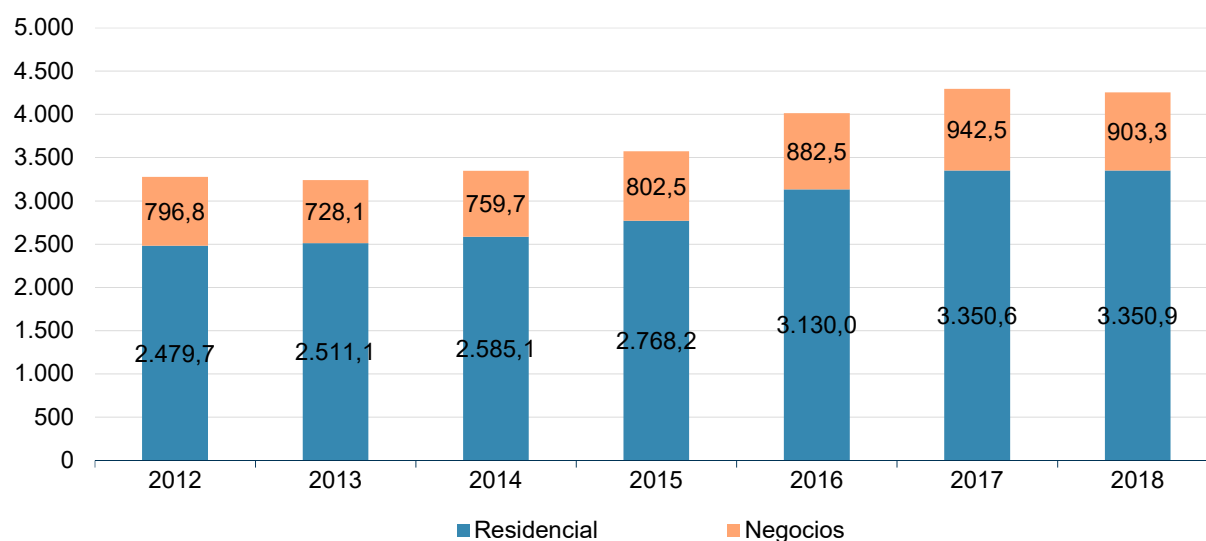
Evolution of broadband revenue by technology (€ million)



Source: CNMC

The revenue breakdown by segment shows that the decrease in revenue reached the business segment. So, the revenue in this segment stood at €903.3 million, a 4.2% decrease. Meanwhile, revenue in the residential segment was practically unchanged, standing at €3,350.9 million.

#### Evolution of broadband revenue by segment (€ million)



Source: CNMC

### Traffic

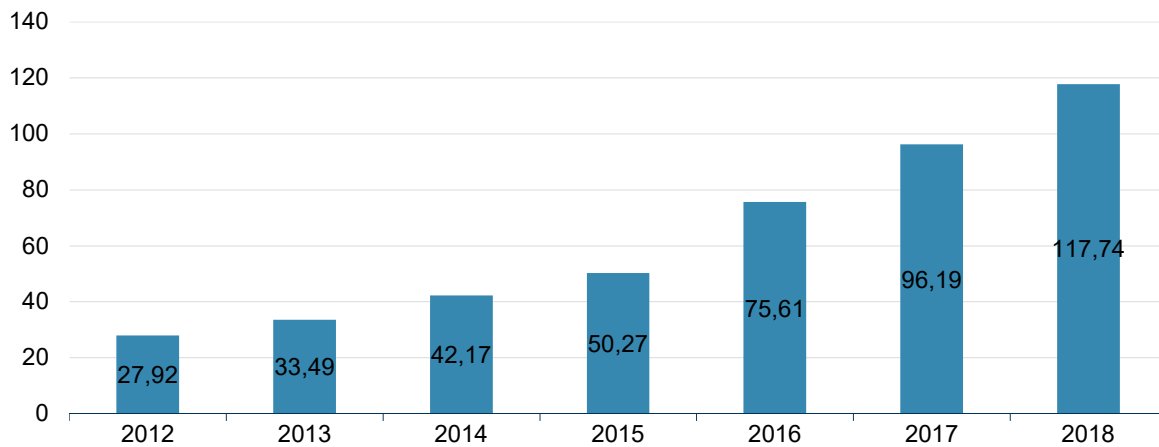
The improvement of broadband access networks through the rollout of FTTH lines and HFC lines upgraded to DOCSIS 3.x, as well as the presence of offers with greater connection speeds, has led to a continuous increase in data traffic. It is worth mentioning that, in Spain, some operators sold broadband bundles with speeds of 1 Gbps over their FTTH networks.

Likewise, there has been a generalised and intense consumer use of Internet services. These facts, together with the increase in the number of active broadband connections, led to an increase in the data traffic registered in 2018. Thus, by the end of the year, there was total traffic of 21.4 million Terabytes, 26.7% more than in 2017.

The following graph<sup>41</sup> shows the evolution, in the last seven years, of the average monthly volume of data per broadband line, in Gigabytes. In the last year, the increase in average monthly traffic per line was 21.6 Gigabytes compared to 2017, in other words, an increase of 22.4%, to stand at 117.7 Gigabytes.

#### Evolution of data traffic per broadband line (Gbytes/month/line)

<sup>41</sup> There has been a change to the total traffic in the years 2016 and 2017 due to a rectification of some of Movistar's data.



Source: CNMC

## Competition

In late 2018, the joint share of the three main operators (Movistar, Vodafone and Orange) in the fixed broadband market was 87.3% in terms of lines, as will be seen in the following sections. Similarly, if we include the operators Euskaltel and the MASMOVIL group, their combined share stood at 97.8%, an increase mainly driven by the fast growth of the MASMOVIL group in the last two years. In general, most operators increased their number of broadband lines, except for Vodafone, which registered a decrease in active lines. In any event, all of them continued investing in upgrading their access networks.

As has been mentioned previously, the alternative operators, who traditionally offered their services through xDSL, increased the rollout and sale of FTTH lines. Orange and Movistar were the operators leading the migration from xDSL lines to a fibre to the home network, seeing a fall in their number of active xDSL lines of over a million. Similarly, in the year 2018, Vodafone, despite the decrease in broadband lines as a whole, also registered a significant increase in FTTH lines, at more than 350,000. Meanwhile, the MASMOVIL group was the operator that ended the year with the greatest number of new customers, with a total of 478,000 lines. The rest of the local or regional operators with HFC lines saw their share of lines and revenue remain unchanged.

As regards commercial offers, the trend to market and sell offers with higher connection speeds continued, as did the trend for a greater degree of bundling with mobile network services (mobile voice and broadband) and pay TV services. Here, it is worth mentioning the increase in the purchase of bundles with premium television contents, both from Movistar and alternative operators.

## Market shares

In 2018, the number of active NGA lines for the main operators exceeded the number of xDSL lines. FTTH and HFC DOCSIS 3.x have become the main form of access for Spanish operators who in recent years have carried out an extensive rollout of fibre optic networks and have migrated their lines based on copper pairs to NGA lines.

The following table shows that xDSL lines experienced a decrease of 1.31 million, down to 3.74 million lines. This figure represents 24.7% of all broadband lines, down from 34.5% in 2017. This decrease contrasts with the increase of just over two million FTTH lines in the past year, up to 8.74 million (57.6% of broadband lines compared to 45.7% in the previous year).

#### Evolution of broadband lines by operator and technology

	2017				2018			
	xDSL	HFC	FTTH	Other	xDSL	HFC	FTTH	Other
Movistar	2,350,092	-	3,420,221	139,189	1,886,407	-	3,938,243	207,533
Orange	1,710,811	27,828	2,231,807	538	1,113,989	26,014	2,856,802	452
Vodafone	676,575	1,970,757	708,360	-	404,460	1,751,224	1,060,518	-
Euskaltel	15,326	574,317	15,671	2,840	13,116	573,108	23,155	2,210
MASMOVIL Group	290,296		212,806		315,456		665,718	
Other	11,834	110,976	119,026	78,942	9,981	81,213	190,736	56,619
<b>Total</b>	<b>5,054,934</b>	<b>2,683,878</b>	<b>6,707,891</b>	<b>221,509</b>	<b>3,743,409</b>	<b>2,431,559</b>	<b>8,735,172</b>	<b>266,814</b>

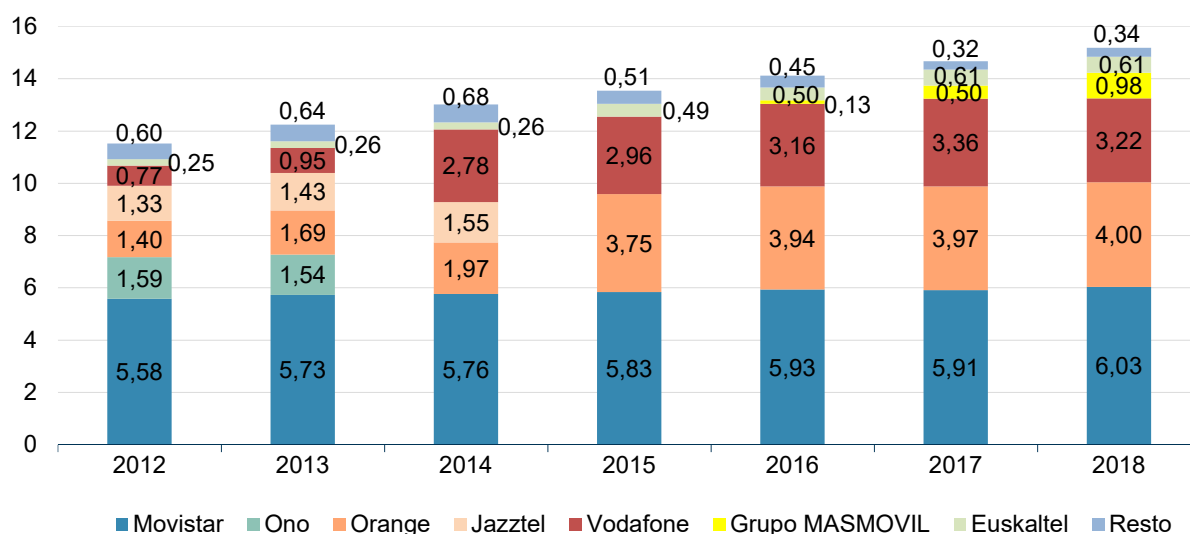
Source: CNMC

In terms of the volume of lines, in the year 2018, more than half a million new broadband lines were added to the market, a figure close to the one obtained in the year 2017.

Movistar, which increased the volume of lines last year, continued being the operator with the largest volume, with over 6 million active broadband lines. Orange remained in second place with four million lines. In third place was Vodafone, which fell to 3.22 million lines.

Lastly, the MASMOVIL group and Euskaltel ended the year with almost a million lines and 611,000 lines respectively. The other, smaller operators did not show significant changes.

Evolution of broadband lines by operator (million)

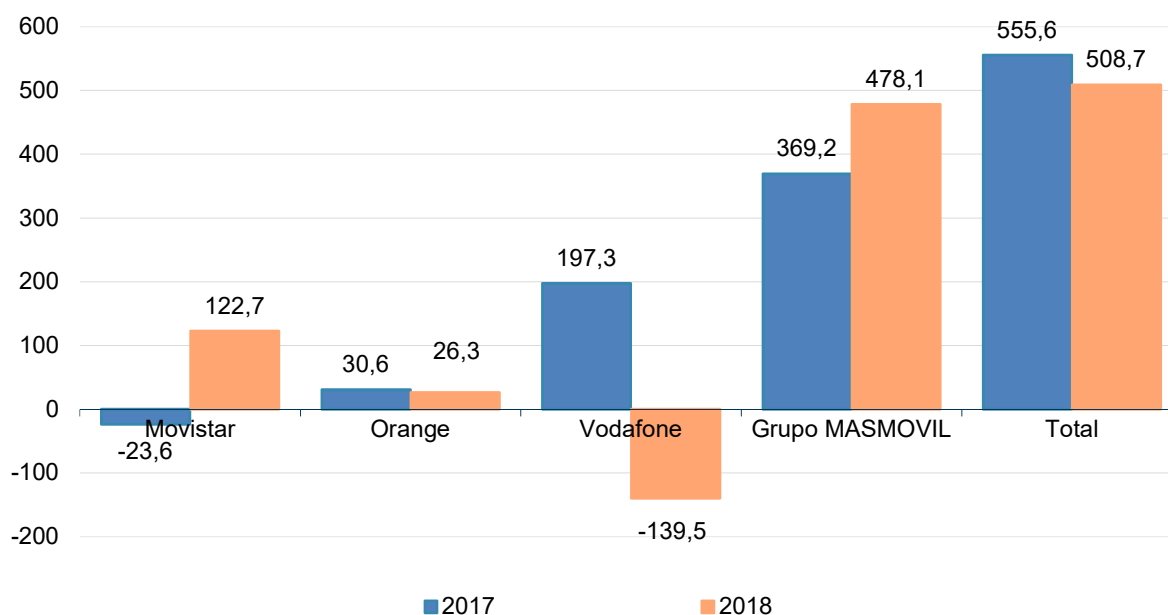


Source: CNMC

As can be seen in the next graph, the MASMOVIL group was the operator with the greatest ability to attract new customers, with almost 94% of the new lines. Meanwhile, after a decrease in 2017, Movistar ended this last year with a gain of 122,681 lines.

Lastly, Orange added just over 26,000 lines, and Vodafone lost 140,000 lines.

Evolution of the net gain of broadband lines by operator (thousand)

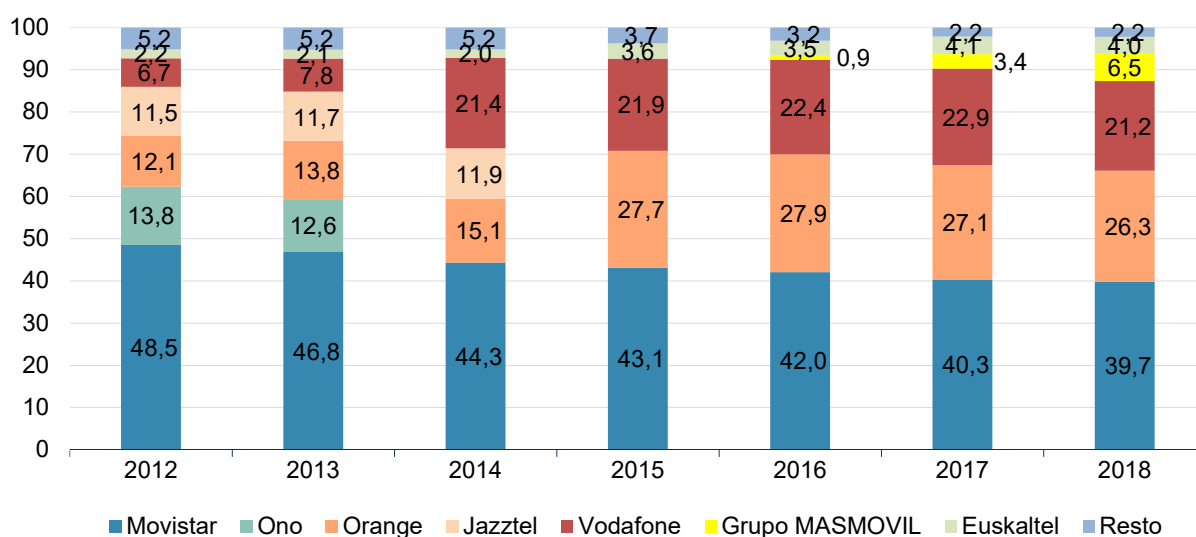


Source: CNMC

The evolution of market shares in terms of lines shows the ongoing decline in Movistar's share. Its share was under 40% for the first time, half a percentage point lower than in 2017. Orange, which showed modest growth in lines, lost a share of 0.7 percentage points last year, down to 26.3%. Meanwhile, Vodafone, which experienced a significant loss of lines, fell 1.7 percentage points, down to 21.2%.

It is worth noting the increased presence of the MASMOVIL group, which ended the year with almost one million broadband lines and a market share of 6.5%, strengthening its position as the fourth largest operator nationally. Lastly, Euskaltel had a 4% market share (this includes the lines corresponding to R and TeleCable).

Distribution of broadband lines by operator (percentage)



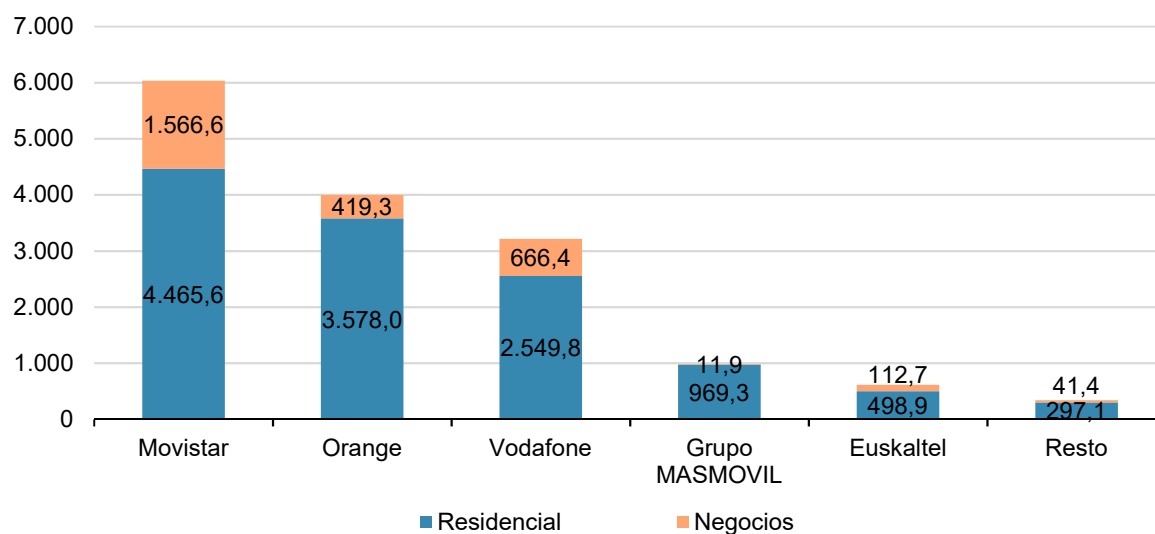
Source: CNMC

The analysis of lines by segment shows that Movistar maintained its dominance in the business segment seen in previous years. In any case, in 2018 it lost one percentage point, down to a 55.6% share of lines, a figure which represents 1.57 million lines in the business segment. Vodafone continued to be its main competitor, with a 23.6% share of business lines, at over 666,000 lines. Meanwhile, Orange reached a market share of almost 15% and the other operators ended the year with noticeably lower business broadband line figures.

In terms of the residential segment, Movistar's share fell in 2018 by half a percentage point, down to 36.1%. Meanwhile, Orange ended the year with almost 3.58 million residential lines and a market share of 29%, compared to its 30.2% share in the previous year. Vodafone's share in the residential segment stood at 19.9%, a figure which is significantly lower than the one it attained in 2017 (22.7%).

Finally, most of the Euskaltel and MASMOVIL group lines belonged to the residential segment.

Distribution of lines by operator and segment (thousands of lines)



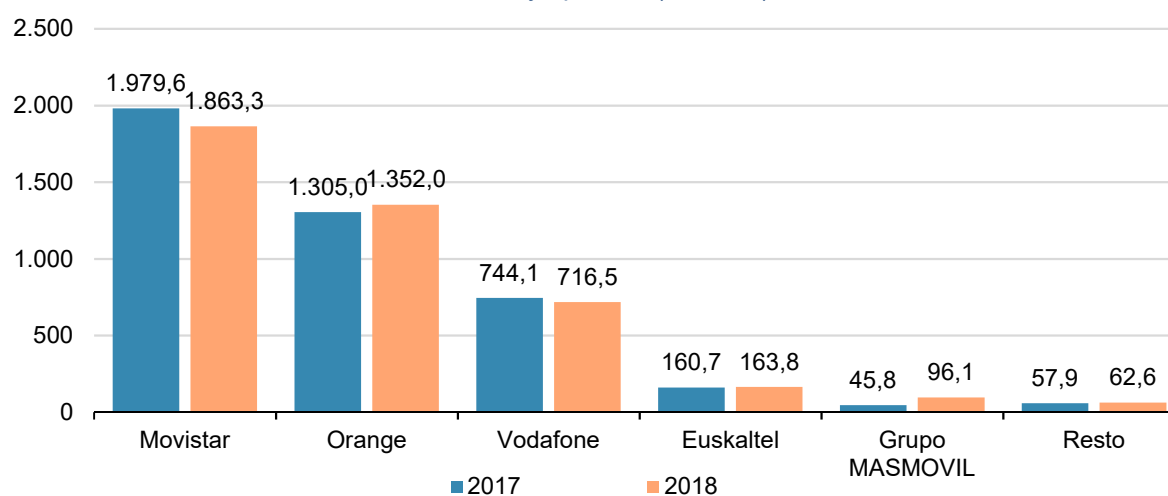
Source: CNMC

Regarding the revenue associated with the broadband lines of the main operators, these showed a trend in keeping with that of the lines themselves. The exception was Movistar which, despite the increase in lines, saw a fall in its revenue of almost 6%, down to €1,863.3 million, and its share was 43.8%. Meanwhile, Orange's revenue increased by 3.5%, to €1,352 million, reaching a share of 31.8%. Vodafone, following the trend in its lines, lost €27.6 million in revenue, and ended the year with 16.8% of total revenue.

The fourth operator, the MASMOVIL group, doubled its revenue and added more than €50 million, reaching almost €100 million, and its share of revenue ended at 2.3% of total broadband revenue.

Lastly, among the regional operators, Euskaltel obtained an increase in revenue of 1.9% last year, to stand at €163.8 million.

#### Evolution of revenue from broadband lines by operator (€ million)



Source: CNMC

### Bundling



In the year 2018, the joint purchase of fixed and mobile services from the same operator, including pay TV or not, was once again the most popular option in both the residential and business segments. Taken as a whole, these quadruple-play and quintuple-play bundles represented 83.5% (12.2 million) of the total bundles purchased with fixed broadband, compared to 82.1% in 2017. It is worth noting the gradual appearance of convergent offers that include audiovisual services which the operators can configure, in part, due to the improvement in the access networks based on FTTH or HFC.

In the residential segment, the number of fixed broadband lines purchased together with another service was almost 12 million, representing 97.1% of the total. In the business segment, the bundling percentage was 89.5% (2.58 million lines).

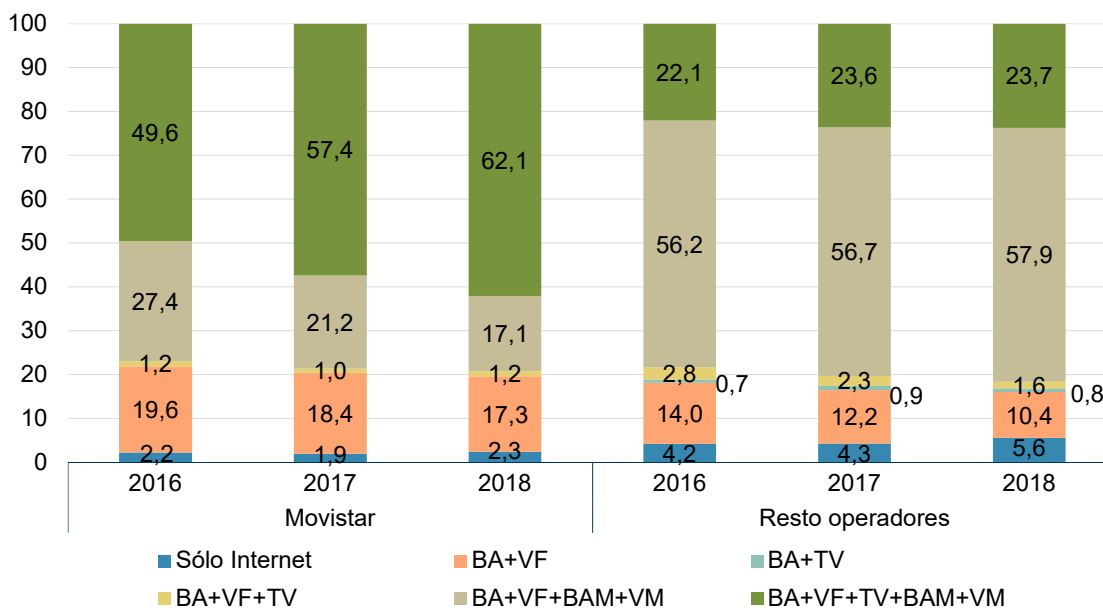
If we analyse lines by operator and bundle type, we can see that, in the case of Movistar, quintuple-play bundles represented more than half (62.1%) of its broadband lines (3.7 million bundles). If we add triple-play bundles to this, the bundles that include pay television account for 63.2% of the total, a figure greater than the 58.4% recorded in 2017. Meanwhile the quadruple-play bundle (meaning bundles with fixed broadband, fixed voice, mobile voice and mobile broadband) represented 17.3% of the total, compared to 21.2% in the previous year.

Lastly, double-play bundles with broadband and voice fell by more than one percentage point last year, down to 17.3% of all Movistar lines (around one million bundles).

Meanwhile, the alternative operators ended the year with 5.3 million bundled lines of fixed broadband, fixed voice, mobile broadband and mobile voice. Quadruple-play bundles represented 57.9% of the total number of broadband lines of these operators.

Similarly, there was another increase in the number of lines for the alternative operators sold as bundles with the television service. However, the proportion accounted for by these bundles, which include television, is not as high as it is for Movistar, standing at less than 30%. So, the total volume of bundles that include pay television reached 2.4 million bundles - 26.1% of lines. Despite the increase in absolute value, the quintuple-play option was relatively unchanged in percentage terms, accounting for 23.7% of the broadband lines of these operators.

Evolution of broadband lines by bundle type and operator (percentage)



Source: CNMC

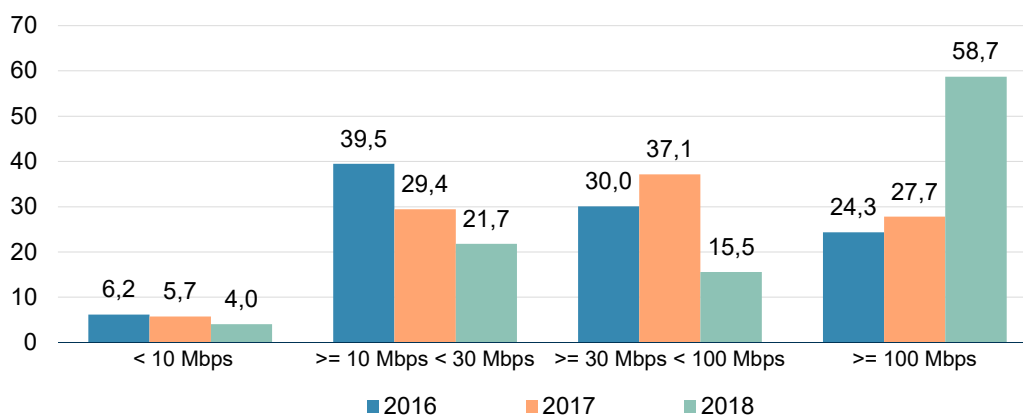
## Line speed

The following graph shows a growing trend for purchasing broadband offers with greater speeds. The main factor working in favour of this increase in speed is the improvement in the access networks and the sales strategies of the operators, whose bundles include greater connection speeds for fixed lines and a larger volume of traffic for mobile connections. So, the cable operators (with the upgrading of their nodes to DOCSIS 3.x), Movistar and other alternative operators (with the deployment of FTTH lines) have driven the purchase of broadband offers with greater connection speeds. Similarly, despite the limitations of the copper network, there are also connection speed offers (up to 30 Mbps) with VDSL technology (an xDSL variant that allows for greater connection speeds than ADSL).

At the end of 2018, 96% of broadband lines had a connection speed of 10 Mbps or greater. Meanwhile, lines with a connection speed greater than 30 Mbps increased significantly to account for 74.2% (in absolute terms there were 11.3 million lines), compared to 64.8% in the previous year.

Lastly, lines with a speed of 100 Mbps grew by a factor of 2.2 to represent more than half the total number of lines, with 58.7% of lines (almost nine million lines), compared to 27.7% in 2017.

### Evolution of broadband lines by speed (percentage)



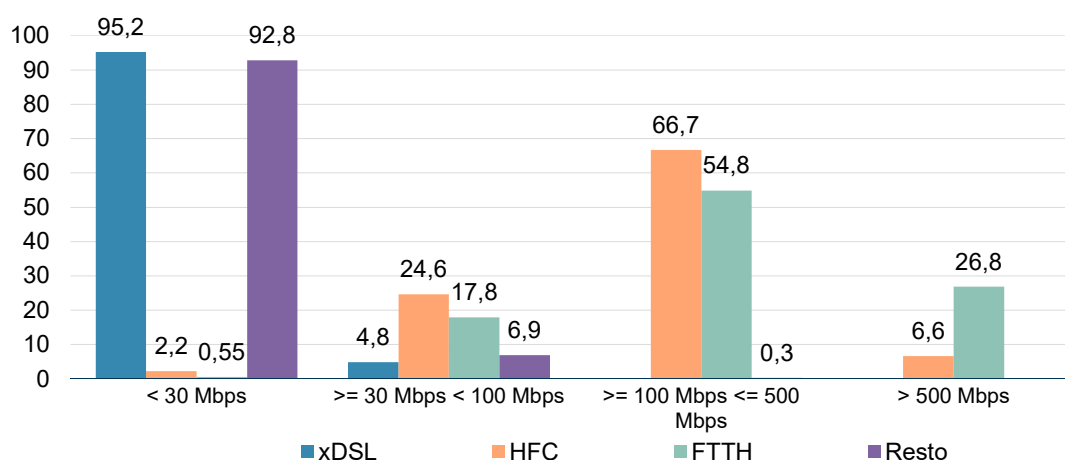
Source: CNMC

The breakdown of line speeds by access technology shows significant differences in line speed depending on the type of access network. The limitations of access networks based on copper pairs, in terms of speed and quality of service, can be seen in the fact that the speeds offered and purchased over xDSL lines are mainly concentrated in speeds under 30 Mbps, with 95.2% offering this speed.

In contrast, NGA networks, in other words, HFC DOCSIS 3.x and FTTH lines, were practically the only ones offering speeds of 30 Mbps or greater, this speed accounting for 99.5% of connections in the case of FTTH. Furthermore, 26.8% of FTTH lines exceeded 500 Mbps, which represents 2.34 million lines.

In keeping with this, HFC lines were also clearly above 30 Mbps. In this case, most lines were between 100 Mbps and 500 Mbps, these accounting for 66.7%, or in other words, 1.62 million lines.

### Broadband lines by speed and technology (percentage)



Source: CNMC

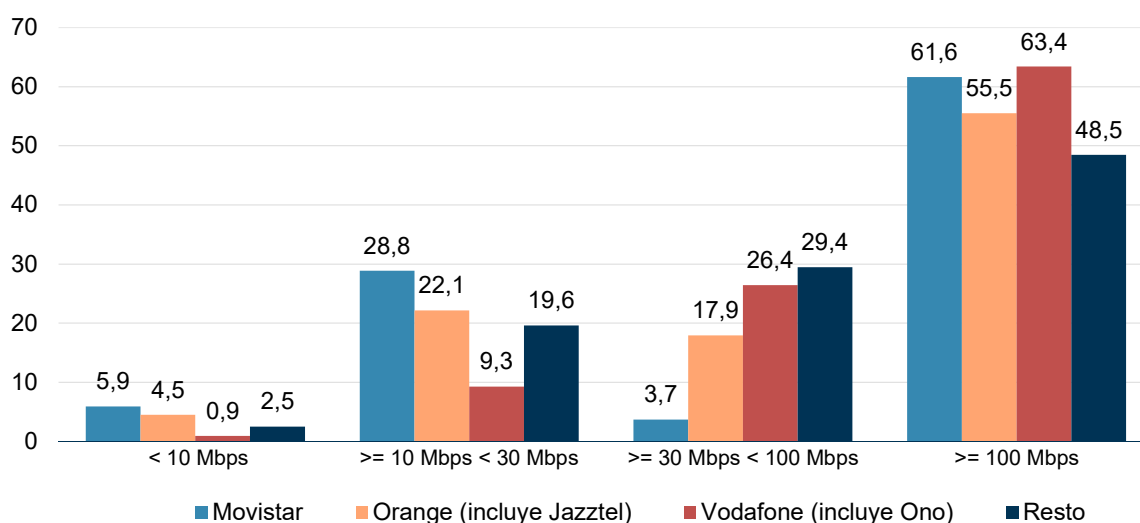
The following graph shows the distribution of broadband lines by speed provided by the main operators. 61.6% of all Movistar lines offered a connection speed of 100 Mbps or greater (compared to 37.7% in 2017). Likewise, lines with a speed of greater than 500 Mbps provided through FTTH totalled 3.64 million, which is 60.3% of the total lines of this operator.

In relation to Orange, there was significant provision of FTTH lines and this can be seen in the percentage of lines offering more than 100 Mbps, which reached 55.5% of lines, compared to 12.5% in 2017. It is worth remembering that in previous years, a high percentage of lines provided by this operator offered a speed of between 10 and 30 Mbps and were mainly based on xDSL technology.

In the case of Vodafone, more than two million lines (63.4%) offered greater than 100 Mbps, a majority of which, in this case, correspond to FTTH and HFC lines.

Lastly, the other operators - which mainly include those that operate in the retail market through HFC (Euskaltel) and FTTH (MASMOVIL group) lines - had 78% of their active lines with speeds equal to or greater than 30 Mbps, and as for their competitors, a high percentage (48.5%) of lines provided exceeded 100 Mbps.

Broadband lines by speed and operator (percentage)



Source: CNMC

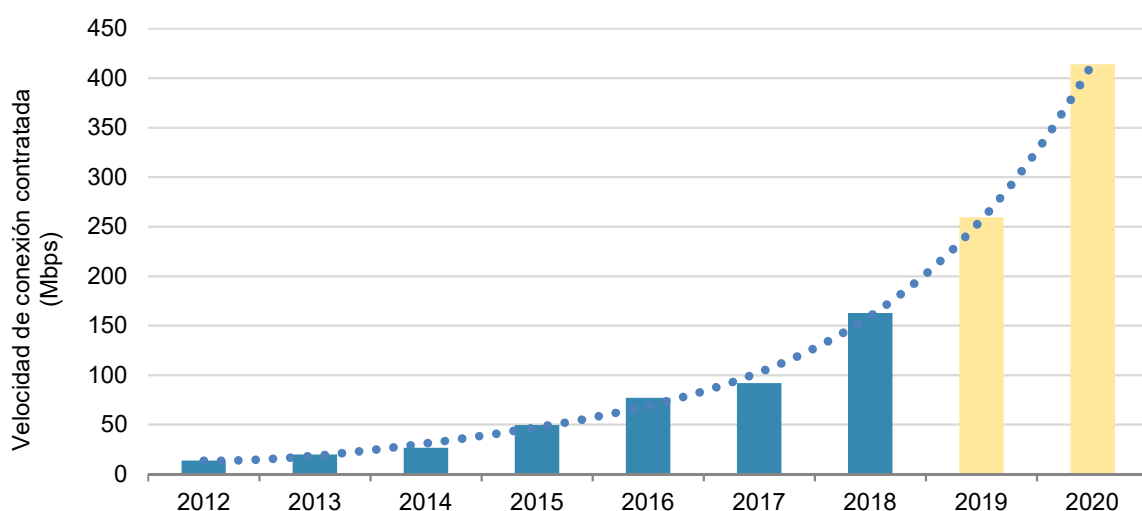
These figures show a gradual increase in the connection speed provided. This fact is the result of the improvement in the access networks through updating existing networks, such as the HFC network, or investing in the rollout of new fibre-to-the-home (FTTH) networks and the sales strategies of the operators, focussing on high speeds. In their fibre optic networks, the main operators offer high speeds of over 500 Mbps, even reaching 1 Gbps. The NGA entry-level offer usually provides 100 Mbps or more, and the most common offers include speeds of

between 300 Mbps and 600 Mbps. Similarly, it has become more common to have symmetrical offers, where the upload speed is the same as the download speed<sup>42</sup>.

The following graph shows the evolution of the average speed for broadband lines provided as a whole and the forecast trend for the two next years. In 2018, this connection speed reached 162 Mbps, compared to the average of 92 Mbps in 2017, figures that reflect a 77% increase in the last year. Moreover, in the last four years, the average speed of offers purchased has increased six-fold.

The average speed of lines is expected to exceed 400 Mbps in the next few years.

Evolution of the average line speed and forecast (Mbps)



Source: CNMC

<sup>42</sup> In the year 2018, the main operators, such as Movistar, Orange, Vodafone and the MASMOVIL group, offered symmetrical connections of between 100 Mbps and 600 Mbps, and in some cases up to 1 Gbps.

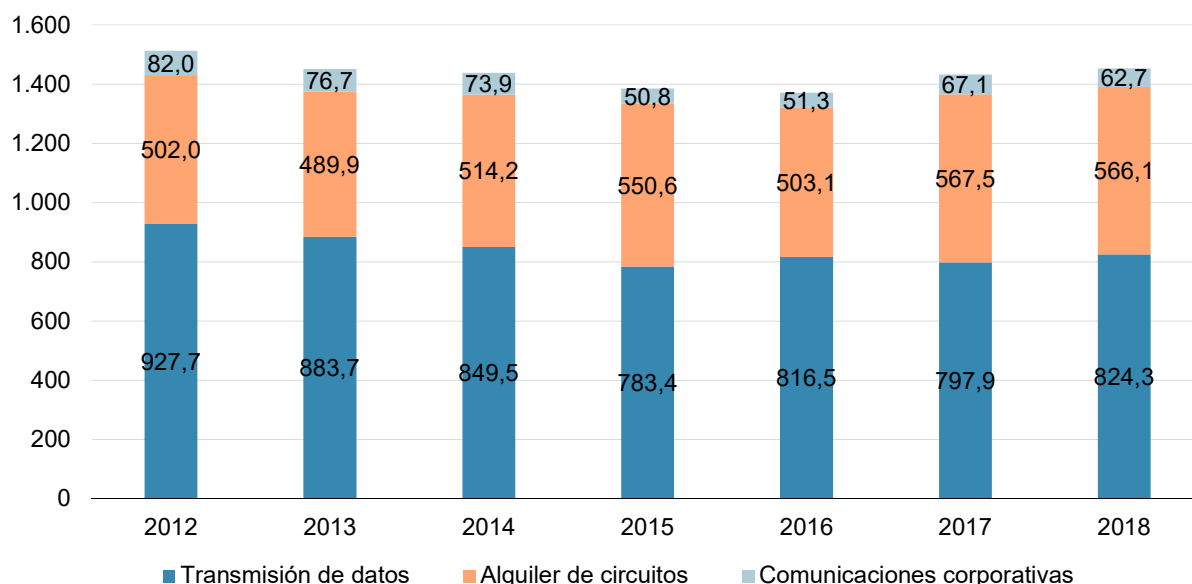
### 2.1.3 Business communications

We separate business communications into corporate voice communications, leased lines, and data transmission services aimed at the business segment. These three services accounted for revenue of €1,453 million, which was a 1.4% increase compared to the previous year (in absolute value, €20.4 million more). This result is in line with the figures recorded in 2013.

In 2018, the trend observed in 2017 continued. The revenue segment recording the greatest increase was data transmission. In absolute terms, it accounted for €824.3 million, which represents an increase of 3.3% or €26.3 million.

Revenue from leased lines for the business segment recorded very similar values to those of 2017. It accounted for €566.1 million, which represents a fall of €1.5 million.

Revenue from business communications services (€ million)



Source: CNMC

Below, the two main services that comprise business communications are analysed in depth.

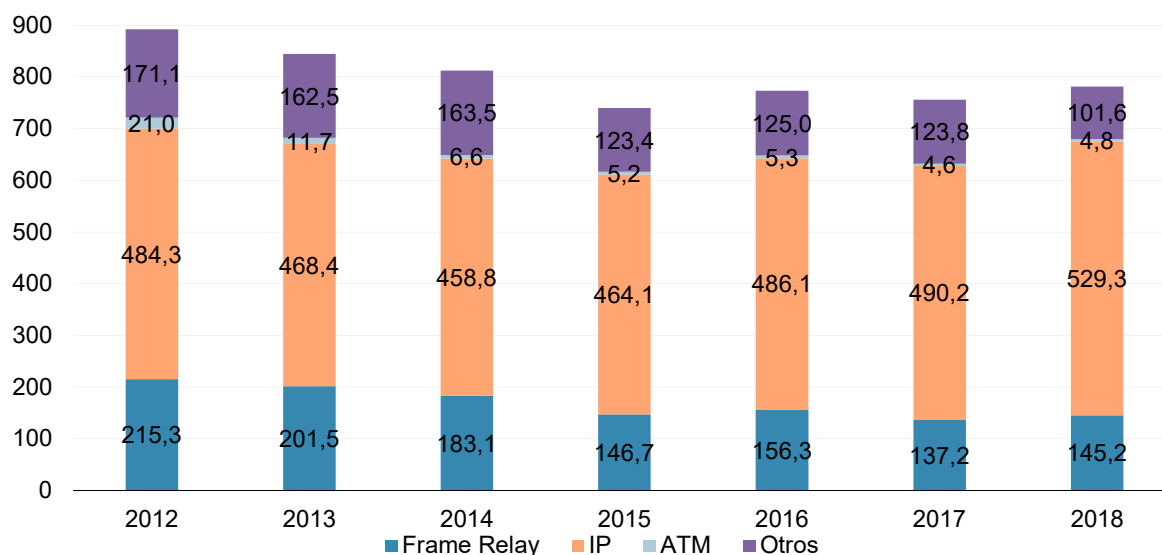
#### Data transmission

Data transmission services include both dedicated data lines - “turnkey” solutions that the operator provides for companies with custom designs - and information services - support services for networks and Internet access.

As in the previous year, dedicated data lines accounted for most of the income from data transmission - 94.7% of the total revenue. This revenue is gradually accounting for a higher percentage, reaching €780.9 million, similar values to those recorded in 2016. If we analyse

revenue by technology, IP-based data lines accounted for the greatest proportion of revenue - €529.3 million and a growth of 8.0%. Other technologies also experienced an increase in their turnover.

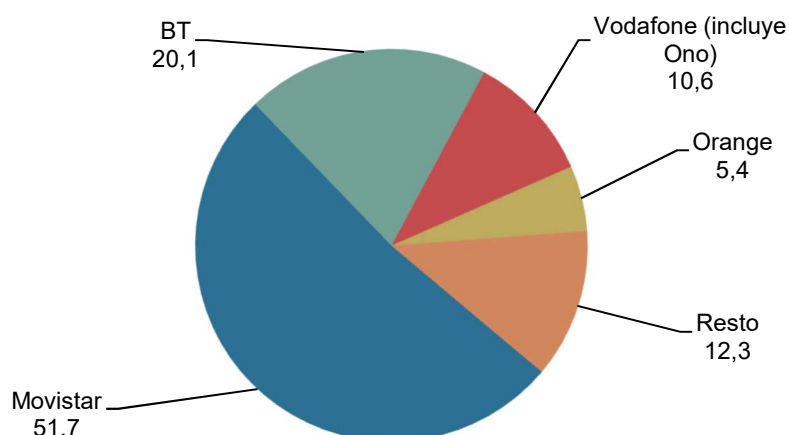
Revenue from dedicated data lines by technology (€ million)



Source: CNMC

In an analysis of market shares in terms of data transmission revenue, the order did not change - a trend which has been seen since 2015. Movistar was the operator with the highest market share in terms of revenue - with 51.7% and a total of €425.8 million - increasing this by 1.4 percentage points, which translated into €24.4 million more. In second place was BT, with a market share in terms of revenue of 20.1% and a total of €165.4 million, with a fall in revenue of €25.5 million and very similar results to those seen in 2016. Vodafone (including Ono) remained in third place with a market share of 10.6% and €87.2 million in revenue, which represented a net gain of €24.6 million.

Market share of data transmission revenue (percentage)



Source: CNMC

## Leased lines

The total revenue generated by the service of lines leased for the end customer was €566.1 million, slightly lower than the value seen in the previous period. It fell by 0.3% compared to the previous year, which reflects a decrease in absolute terms of €1.5 million.

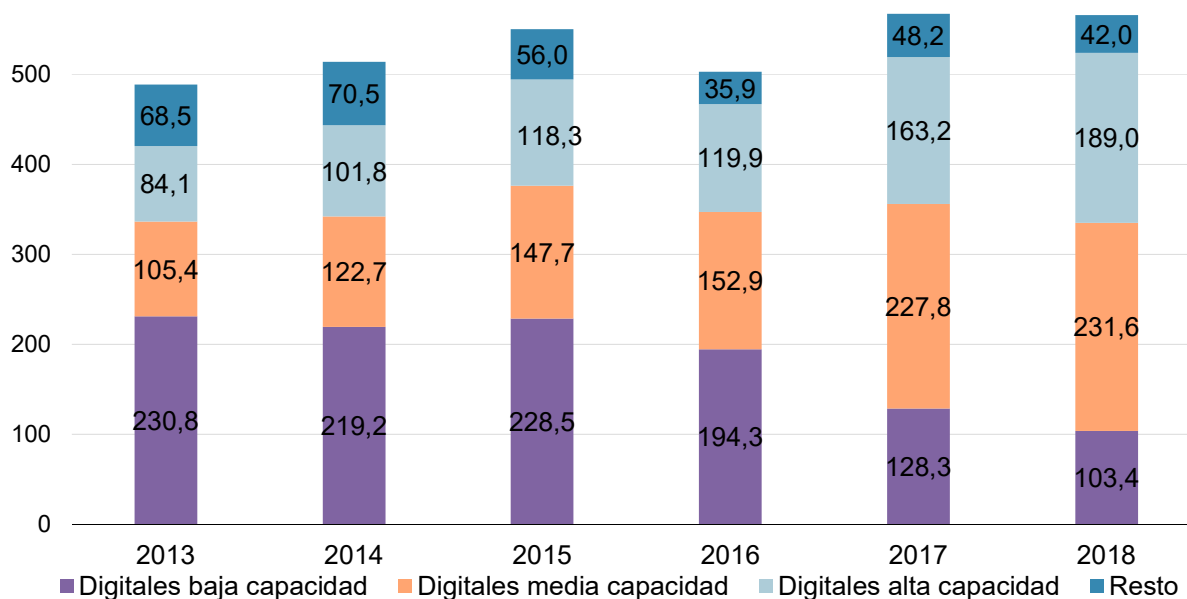
If we carry out the analysis in terms of capacity<sup>43</sup> of the leased lines, medium and high capacity lines are the ones showing increases. Specifically, those with the greatest growth were high-capacity lines, which experienced a year-on-year increase of 15.8%, which translates into an increase in revenue of €25.8 million. Medium-capacity lines had very similar revenue to that recorded in 2017, with a slight increase of 1.7%. In contrast, low-capacity lines decreased their revenue by 19.4%, a trend that has been seen since 2014 but which has become more pronounced in the last two years.

If we analyse some specific capacities, the lines with the greatest increase in revenue were the *Gigabit Ethernet* lines, with a 16.8% increase, but representing 34% of total revenue. As has already been mentioned on several occasions, *Ethernet*-type lines are becoming more widespread due to their lower costs, driven by the economies of scale associated with that technology, and by technological development itself.

### Revenue from leased lines (€ million)

<sup>43</sup> Low capacity corresponds to transmission speeds of less than 34 Mbps, medium capacity to speeds of between 34 and 622 Mbps, and high capacity to speeds of over 622 Mbps.

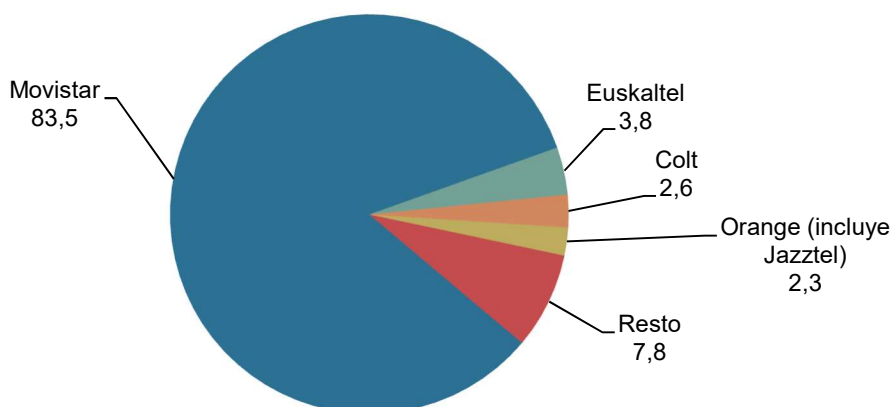




Source: CNMC

When conducting an analysis of the market share of the different operators in terms of the aforementioned revenue, the main operators in the sector varied slightly compared to 2017. Movistar is in first place, with a share of 83.5%, higher than in the previous year - at 0.1 percentage points higher- but with slightly lower revenue than recorded in 2017. In second place was Euskaltel, with a market share of 3.8%, increasing its revenue and market share. In third place was Orange - with a market share of 2.6% -, which this year surpassed Colt, which obtained 2.3%.

Market share by revenue from leased lines (percentage)



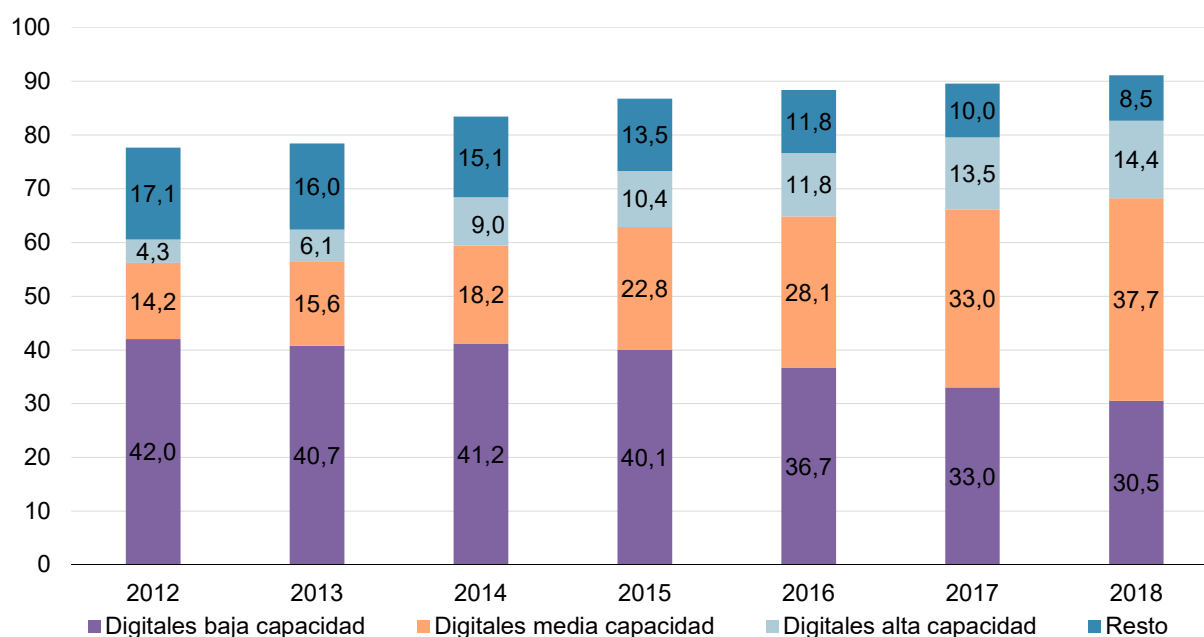
Source: CNMC

If we conduct an analysis on the number of leased lines, this figure was 91,120, slightly higher than that recorded in 2017 - with a growth of 1.7%, which was reflected in 1,566 more lines.

When considering the number of lines depending on the aforementioned different capacities<sup>44</sup>, a consistent trend can be seen in revenue by capacity: low-capacity lines (speeds of less than 34 Mbps) fell by 7.5%, down to 30,521 lines, a trend which has been seen since 2014; medium-capacity lines (between 34 and 622 Mbps) increased by 14.1% with 37,680 lines in total, confirming the change that took place in 2017, and establishing itself as the capacity accounting for the most leased lines; and lastly, high-capacity lines (greater than 622 Mbps) increased by 6.9% compared to the previous year, reaching 14,434 lines, showing a stronger upward trend for this type of line.

Lines with higher capacities were the ones that experienced the greatest growth. Lines offering 622 Mbps increased by 40.0%, in line with the trend seen in revenue. Lines offering 10 Gbps increased in number by 20.8%, while in terms of *Ethernet* lines, those with the highest capacities were the ones that experienced the greatest increases: *Fast Ethernet* lines increased by 14.8%, while *Gigabit Ethernet* lines grew by 6.5%, slightly slower growth than they have been experiencing since 2015.

Evolution of the number of leased lines (thousands of lines)



Source: CNMC

## 2.2 Mobile communications

### 2.2.1 Mobile telephony

<sup>44</sup> Low capacity corresponds to transmission speeds of less than 34 Mbps, medium capacity to speeds of between 34 and 622 Mbps, and high capacity to speeds of over 622 Mbps.

## Position of the sector

In 2018, revenue relating to retail mobile telephone services (voice, messages and added value services) fell, although the traffic from voice calls and messages increased.

Meanwhile, the demand for lines continued with the upward trend seen in recent years, registering a 3.2% increase in 2018. It is worth mentioning that this increase in lines is concentrated exclusively in the contract segment, while for prepaid services the demand for lines registered another year-on-year decline.

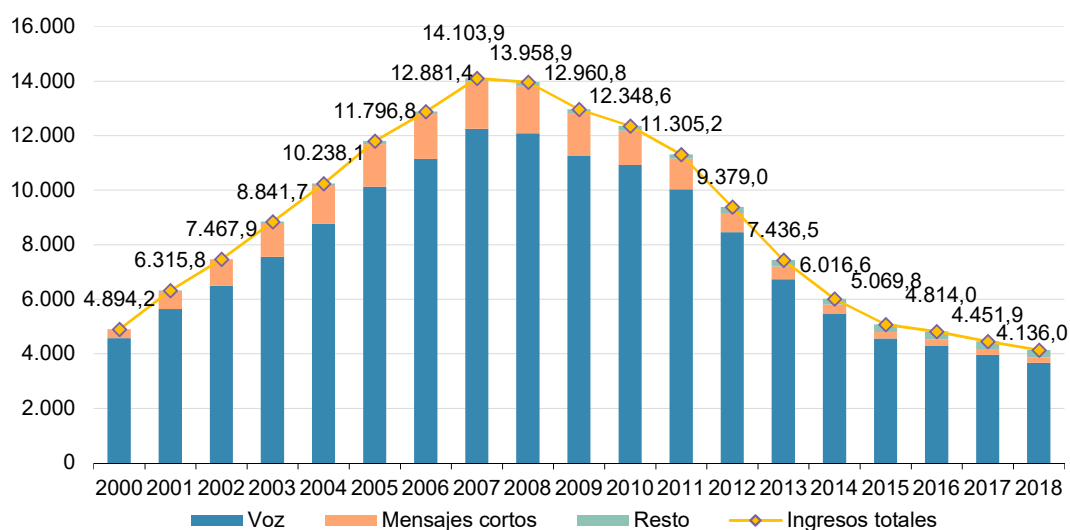
Consumers continued to make extensive use of portability to switch between mobile communications providers. The beneficiaries of this process were mainly the MASMOVIL group and, to a lesser extent, the MVNOs as a whole.

## - Revenue

In 2018, the revenue from retail services stood at €4,136 million. This figure represents a 7.1% fall compared to the previous year.

Voice and short message services registered a decrease in revenue of 7.5% and 7.4% respectively. As is well known, the evolution of the message service - SMS or MMS - in the residential segment has been severely affected in recent years by the proliferation of instant messaging applications, such as WhatsApp and Telegram, which work with a permanent connection to mobile Internet. The strong substitutability between these services, together with the lower cost, in relative terms, associated with this type of application, has led to a constant decline in both revenue and traffic for the messaging system, mainly in the residential segment.

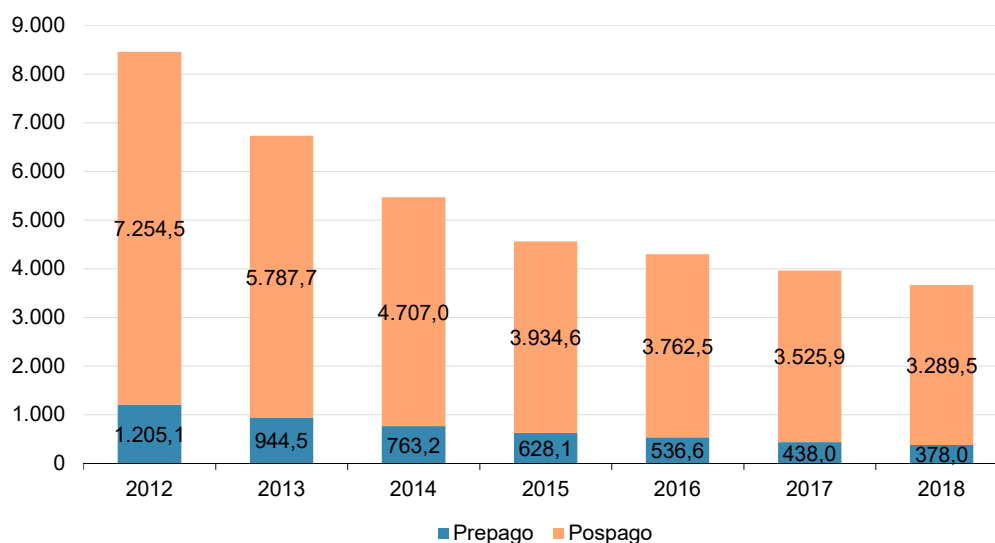
Evolution of the revenue from retail mobile services (€ million)<sup>45</sup>



Source: CNMC

The decline in revenue from voice traffic was seen in both the postpaid and prepaid segments, although the latter registered the greatest fall (13.7%).

Evolution of revenue from voice traffic (€ million)



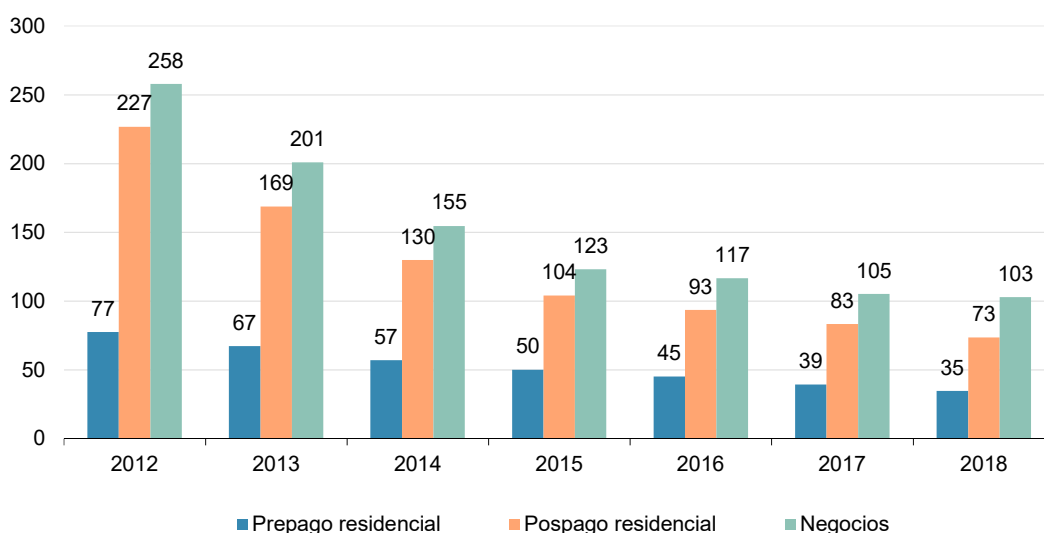
Source: CNMC

The following graph shows that the average revenue per line for the mobile operators - also called ARPU (average revenue per user) - has fallen drastically in recent years.

<sup>45</sup> The retail services analysed include voice (which, in turn, includes revenue from voice traffic and registration and subscription fees), short messages and other services (section comprised of services of lesser importance, such as the mobile radio system TETRA, the SPICA network or the telemetry or remote control services).

Likewise, ARPU differences between the different business segments have also fallen significantly in this same period. So, the residential prepaid segment reduced its ARPU by 11.9% compared to 2017, with an average revenue of €35 per line and year. Meanwhile, in the business segment, where postpaid contracts are the norm, there was a 2.4% decline. Lastly, the postpaid residential segment experienced a fall of 11.8%.

Average annual revenue per line (€/line)



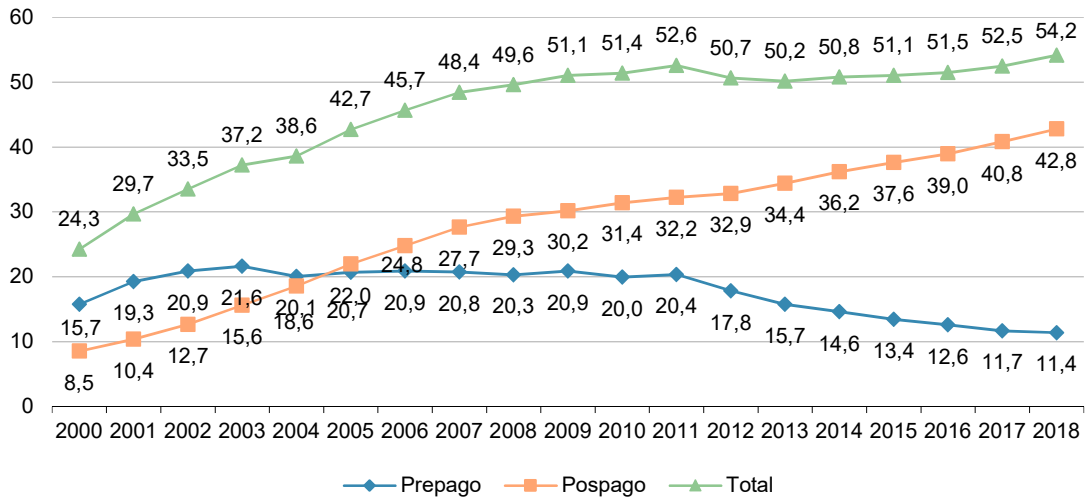
Source: CNMC

## - Lines

The number of mobile telephone lines - excluding data-exclusive lines and those linked to machines - for the year 2018 was 54.2 million, which represents an increase of 1.7 million lines compared to the previous year. It is worth mentioning that the 4.8% increase in lines in the postpaid segment offset the 2.6% fall seen in the prepaid segment. Meanwhile, the number of lines associated with machines - lines linked to telemetry or remote control services - reached 5.9 million, which represents an increase of 19% in the volume of lines dedicated to this type of service.

Mobile telephony reached a penetration rate of 116.1 lines per 100 people, which represents an increase of 3.2 percentage points in one year. In line with the evolution in the total number of lines, these results showed an improvement in penetration for the fourth year running.

Evolution of mobile telephone lines (millions of lines)

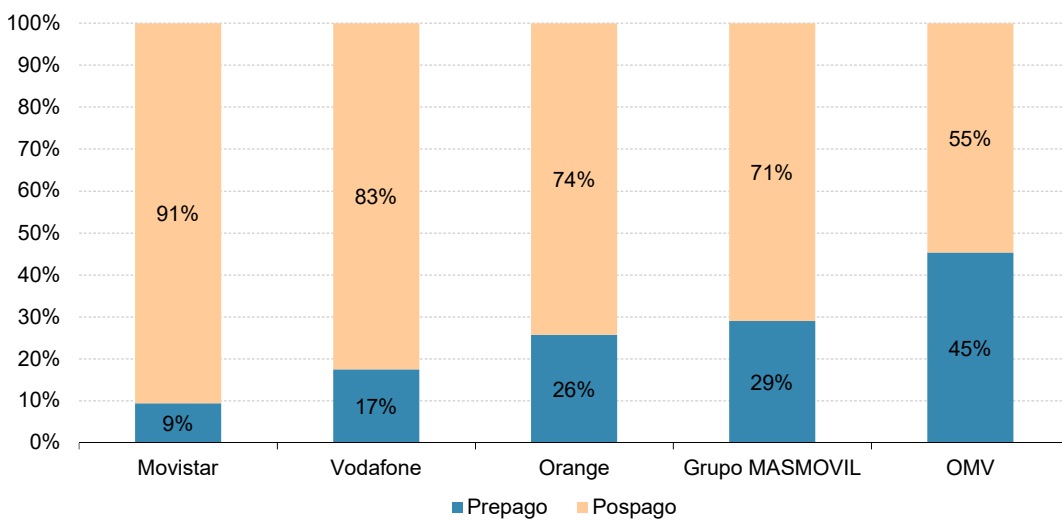


Source: CNMC

The following graph shows the number of mobile lines by operator according to contract type: prepaid or postpaid. A positive correlation can be seen between the operator’s market share and the proportion of its total portfolio made up of customers of each contract type. So, the postpaid contract type accounts for a very high percentage of the customers of the leading market operators. This proportion declines noticeably for operators with smaller market shares. As a result, for the MVNOs as a whole, the prepaid segment accounts for the majority.

Likewise, it is important to note that postpaid lines are also the contract type with the highest revenue per line. Therefore, in the residential segment, revenue per postpaid line is 2.1 times higher than the figure for prepaid lines.

Total lines by contract type (percentage)



Source: CNMC

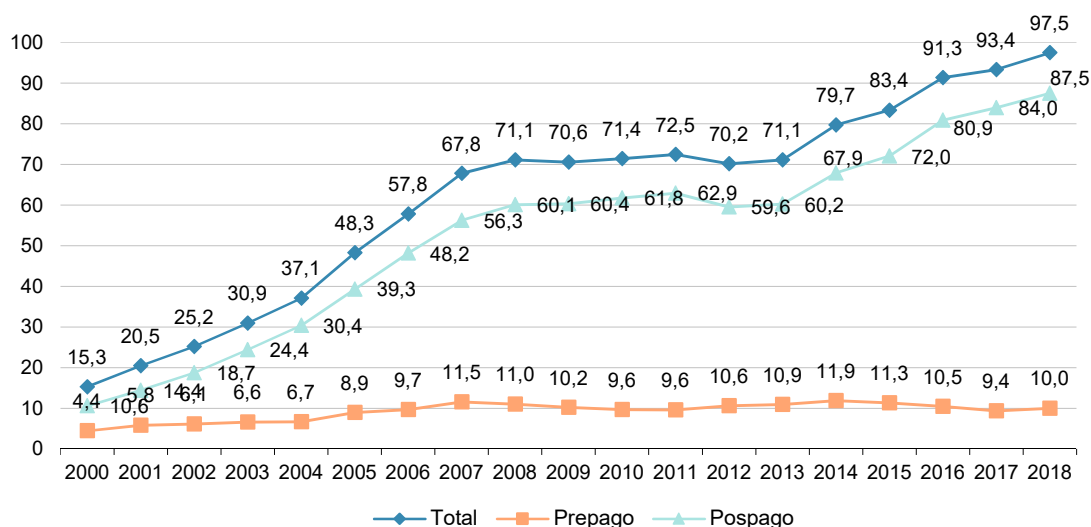
- Traffic

## Voice calls

In 2018, voice traffic increased by 4.4% compared to that recorded in the previous year.

This growth was observed in all market segments. Specifically, the postpaid segment registered a year-on-year voice traffic increase of 4.2%, and in the prepaid segment the figure was even greater, at 6.4%.

### Evolution of traffic by mobile communication network (billions of minutes)



Source: CNMC

Traffic between mobile communication networks grew by 5.4%: traffic between different networks (off-net traffic) increased by 7.8%, and traffic within the same network (on-net traffic) increased by 2.9%. It is worth remembering that most of the current tariffs on offer also include calls terminating on fixed networks. The traffic linked to this type of call fell by 5.3% over the last year.

With regards to international communications, the international roaming service grew by a remarkable 13.7%, while the international call service increased by 2.2%.

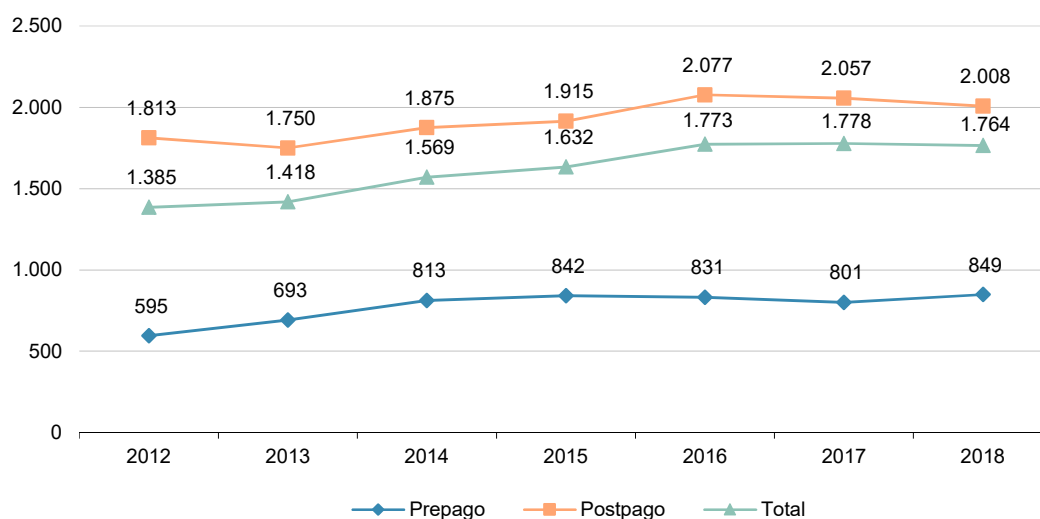
In terms of international roaming services, it should be remembered that these have been regulated at a European level since 2007, when Regulation (EC) 717/2007 was approved, which established a glide path for wholesale and retail prices for roaming voice communications within the European Union (EU).

Subsequently, Regulation (EC) 531/2012 - amended by Regulation (EU) no. 2015/2120 of 25 November 2015 - established that, from 15 June 2017, the tariff set by the providers of international roaming services should be equal to the price they charge for those same services on a national level - a system called Roaming Like at Home, RLAH.

Given that, in 2018, most consumers had signed up for a flat rate which included the consumption of a certain amount of national traffic, the implementation of RLAH led to 83.1% of the traffic from calls made while roaming being treated as traffic included under these flat rates.

The increase in the total consumption of mobile voice did not lead to a significant increase in the consumption per mobile telephone line. When analysing the consumption of traffic per line according to the contract segment, a decrease of 2.4% was seen in the postpaid segment, while in the prepaid segment it increased by 6%.

Minutes by line and year according to the contract segment<sup>46</sup> (minutes/line)



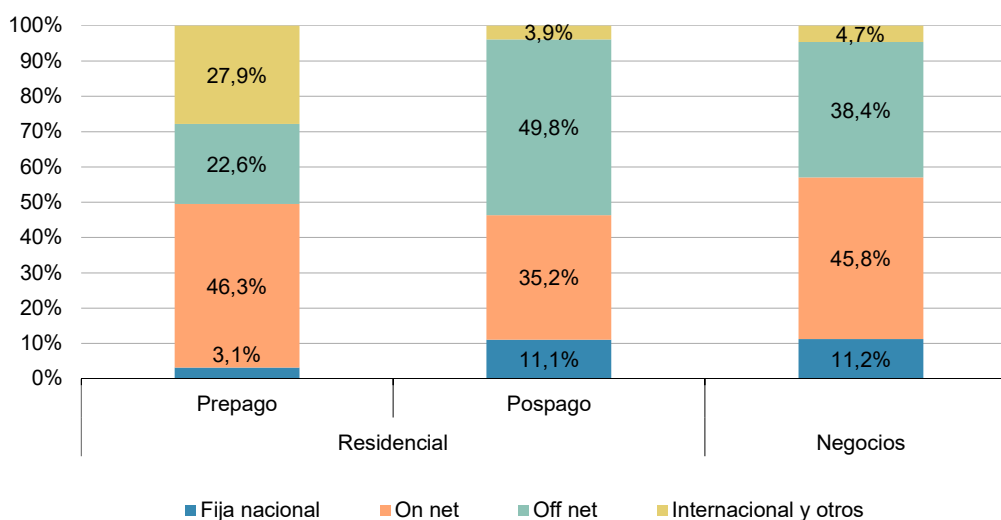
Source: CNMC

Breaking the traffic down into the various market segments reveals some clearly distinctive consumption patterns. The prepaid segment showed a traffic percentage in international calls that was significantly higher than the other segments, while, on the other hand, the business segment was the one that saw a higher ratio of calls to fixed networks.

<sup>46</sup> The “Total” item reflects the average consumption per line in the market, and takes into account the proportion of the market accounted for by each segment (prepaid and postpaid).



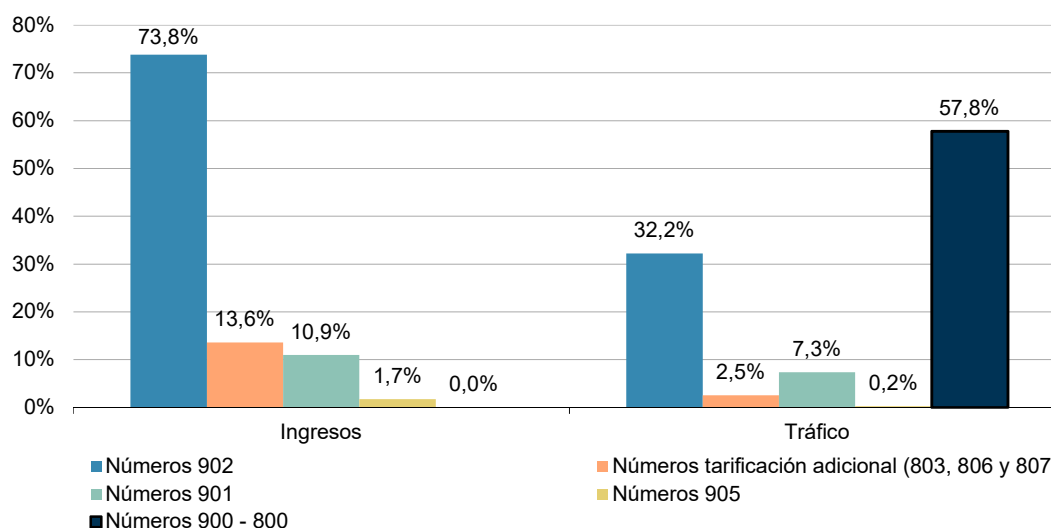
Traffic distribution (percentage)



Source: CNMC

In terms of special rate services - or intelligent network services-, a total of €192.2 million was earned in 2018. Below is a graph that shows the proportion accounted for, in terms of both revenue and traffic, by the various intelligent network services, in accordance with the numbering to which each is linked.

Distribution of the different special rate services (percentage)



Source: CNMC

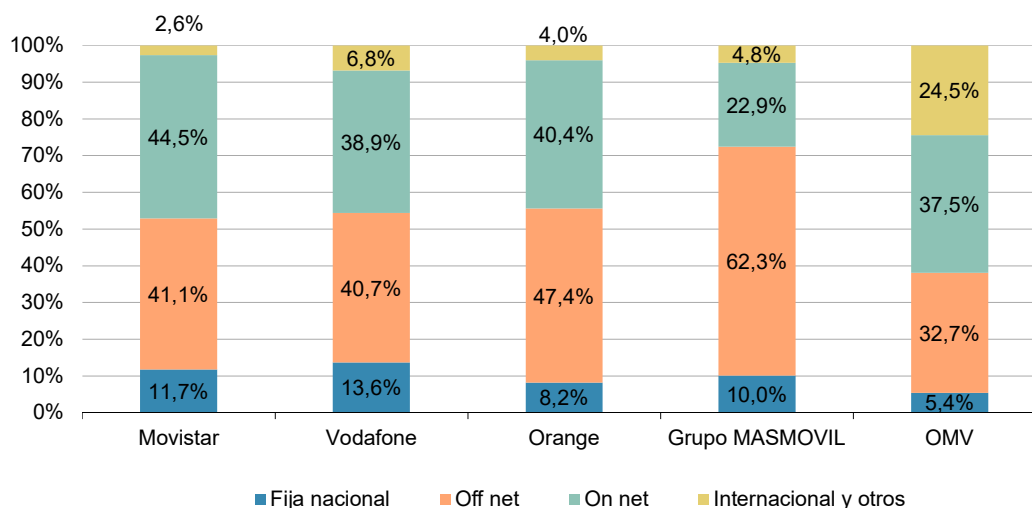
As can be seen, the service with the highest volume of revenue was that based on 902 numbers, a service paid for entirely by the user making the call (the regulation of these numbers specifically prohibits payment to the number called); the next services by revenue were those for the 803, 806 and 807 numbers. These numbers include various services, such as leisure and entertainment services or those exclusively for use by adults. These are followed by 901 number services, whose main feature is shared payment between the person making the call and the person receiving it. The next ranked in terms of volume of revenue is that

based on 905 numbers, aimed at the management of mass calls. The services provided with 900-800 numbers are in last place in terms of total revenue, since they are free for the end customers. However, their traffic represents 57.8% of the total.

When analysing the distribution of traffic generated by the customers of each operator, clear differences can be seen between them. The operator with the highest market share generated voice traffic that largely terminated on its own network. In contrast, for operators with a smaller market share, most of their traffic terminated on a different network (off-net calls). This result is logical, given that the higher the market share, the higher the probability that the operator's customers will want to communicate with other customers on the same network. The exception can be found with some MVNOs, with on-net traffic that is much higher than one would expect given their market share.

Also noteworthy is the high share of traffic represented by international calls for MVNOs. This is due, in large part, to the existence of many MVNOs specialising in this type of service, such as Lycamobile and Youmobile, among others. The volume of international traffic is so high for these operators, that some even exceed the total international traffic reported by Movistar, the operator with the highest market share in mobile telephony.

Traffic distribution by destination (percentage)

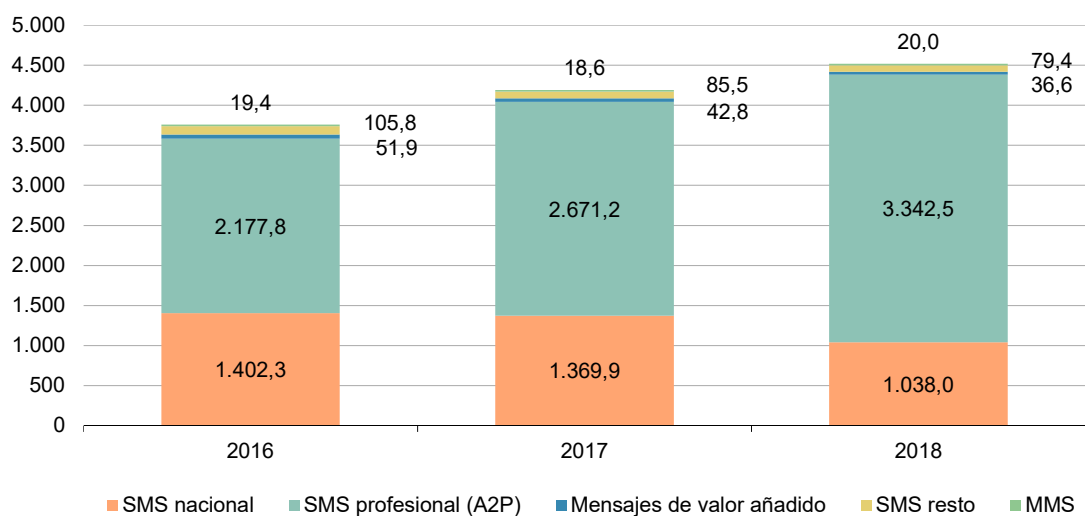


Source: CNMC

## Messages

In 2018, the use of messaging services increased by 7.8%. The reason for this rise is the increasing use of professional A2P (Application to Person) messages. This figure reveals that it is currently common for companies to massively use this type of messaging to communicate with their customers. This type of traffic represented 74% of total messaging traffic, whereas SMS messages between subscribers accounted for just 23% of the messages sent in that same period.

Evolution of message traffic (millions of messages)



Source: CNMC

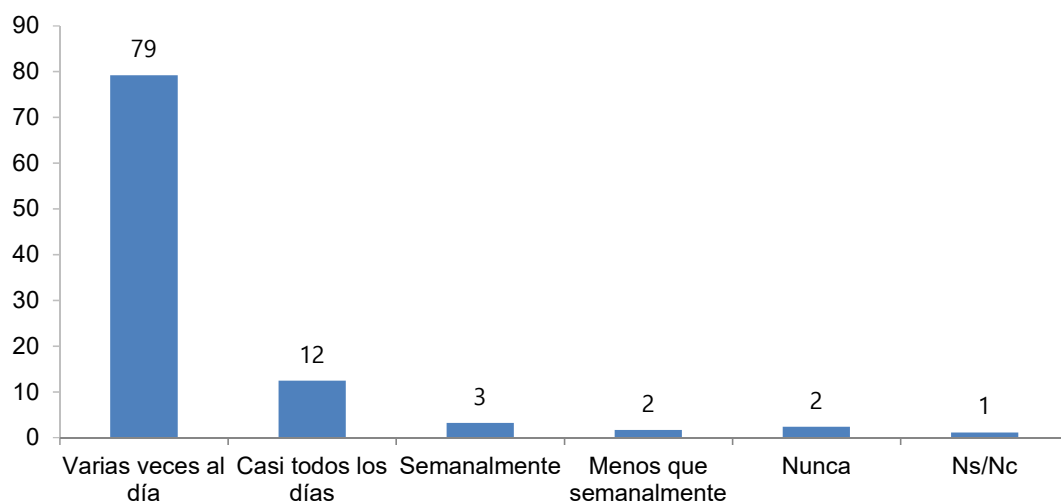
In terms of the added value message service<sup>47</sup>, its traffic registered a year-on-year decrease of 14.4%.

The volume of MMS messages reached 20 million, a figure which represented an increase in demand of 7.5% in the last year. Despite this sporadic growth in 2018, the use of MMS messages has declined drastically in recent years, becoming a service with practically non-existent consumption.

The rise in the use of mobile broadband in voice terminals has resulted in an intense process of substitution of traditional SMS for instant online messaging services, such as WhatsApp, Telegram and others. As well as not resulting in additional costs for users over and above those for the mobile broadband connection, these OTT services have similar or even better features than SMS services, given they make it possible to not only send and receive messages, but also to communicate as members of a group of individuals and send all types of files such as photos, videos and voice messages for free. Therefore, according to data from the CNMC Household Panel, OTT mobile messaging services are very popular: in the fourth quarter of 2018, 79% of smartphone users used them daily.

<sup>47</sup> Added value SMS messages, also known as Premium SMS messages, provide special contents linked to leisure (games, music, ringtones, TV competitions) and can also be used for charitable purposes by NGOs.

Individuals according to the frequency of use of Internet messaging (percentage of individuals with a mobile service), IV-2018



Source: CNMC Household Panel

## Competition

In 2018, users were once again very active in searching for the most competitive mobile service offers. One result of this was that, throughout the year, more than 625,300 portabilities were registered on average every month.

Furthermore, the generalisation of rates that bundle several services, both fixed and mobile communications, led to, in most cases, a reduction in the unit price per minute actually consumed. As will be shown in the following sections, these circumstances resulted in a certain dynamism in the evolution of market shares for lines.

### - Portability

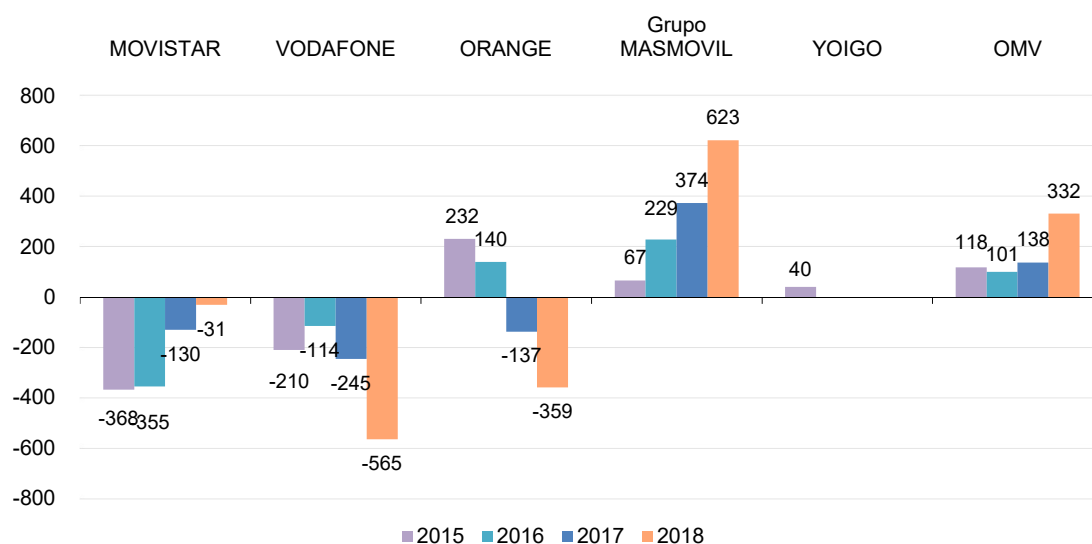
One of the most effective mechanisms for creating competitive conditions in the mobile telephony market is number portability, or in other words, the option for users to change from one provider to another while retaining their phone number.

This regulation reduces the costs to users of switching from one provider to another and it experienced a noticeable increase in 2018 compared to the figure recorded in the previous year: 7.5 million numbers were ported, which represents the largest number since this service was introduced in June 2000. Spain stands out as one of the leading countries in terms of the volume of numbers ported.

If we analyse the lines ported for each operator, we can see that the main operator in the market - Movistar - saw a net loss of 31,000 numbers. In contrast, MASMOVIL, the fourth-largest operator in the market, obtained the best result, with a net gain of 623,000 lines during 2018.

Despite the successive mergers involving MVNOs taking place in recent years, these operators have managed to maintain a positive net balance of numbers ported. So, in 2018, the MVNOs as a whole had a net balance of 332,000 lines.

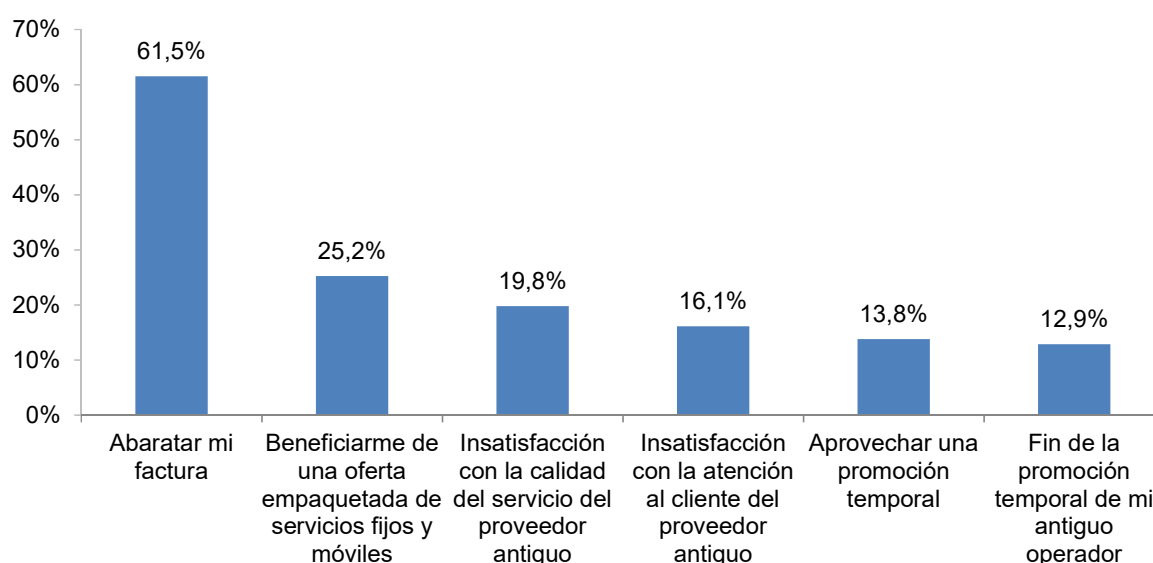
Net portability balance by operator (thousands of lines)



Source: CNMC

The following graph, based on data from the CNMC Household Panel, shows the reasons users give for switching operator. More than 61.5% of users said that they wanted to reduce their spending, and one in four said that they wanted to benefit from a convergent fixed-mobile offer.

Main reasons for consumers using portability (percentage of individuals who switched operator in the last twelve months), IV-2018



Source: CNMC-Red.es Household Panel

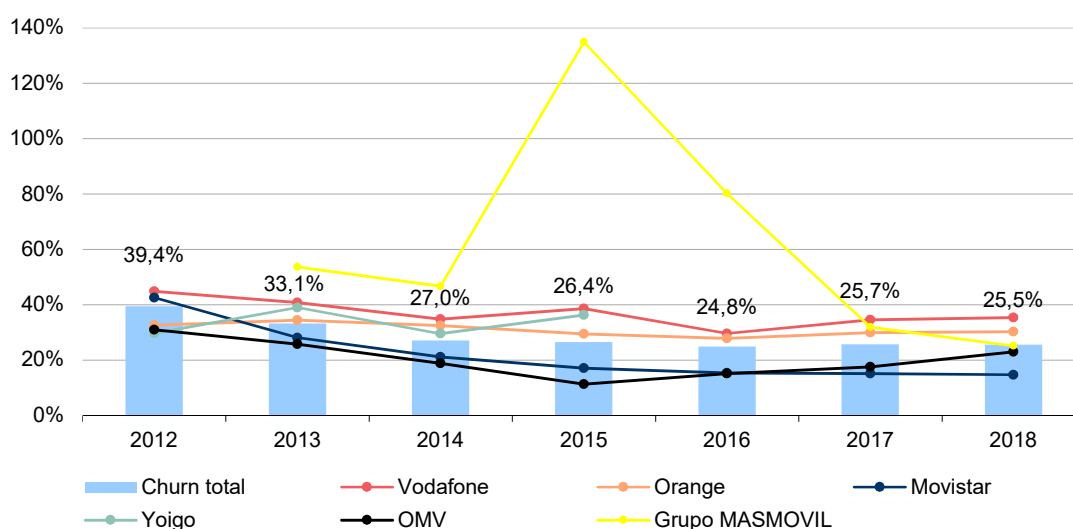
- Churn rate

The customer churn rate is the ratio of the number of customers an operator loses to the average number of total lines held by that operator in the market in the last two year<sup>48</sup>.

The churn rate is used to estimate customer loyalty to their mobile telephone operator. At year end, the overall churn rate for the market was 25.5%. As can be seen in the graph, in 2018, customer loyalty to their operator remained at very similar levels to those registered in the previous year.

When looking at operators individually, we can see that Movistar was the operator that retained its mobile telephone customers to a greater extent, achieving the lowest churn rate in the market (14.7%).

Churn rate (percentage)



Source: CNMC

$$\text{Índice de churn}_{it} = \frac{n.^{\circ} \text{ de líneas dadas de baja}_{it}}{\frac{\text{parque de líneas}_{it} + \text{parque de líneas}_{it-1}}{2}}, \text{ donde el subíndice } i \text{ se refiere al operador y } t \text{ se refiere al periodo (año).}$$

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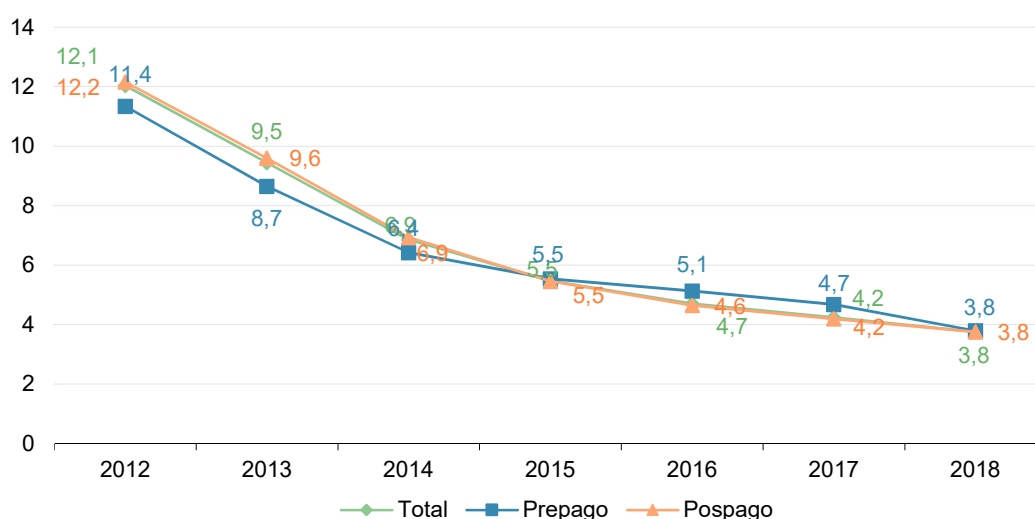
- Evolution of unit revenue<sup>49</sup> by service

Average revenue from voice services

The mobile telephony service is characterised by offering a wide range of rates, many of which are non-linear; i.e. operators do not usually price per unit of time. Therefore, the price of calls to the user may depend on the hourly or destination rate or may be affected by all manner of volume discounts, bonuses or flat-rate or partial flat-rate tariffs. Given this variety and complexity of rates, it is difficult to summarise call prices in a single indicator, although the average revenue per minute ratio is normally used as an approximation, i.e. the ratio between total revenue from voice traffic and the total number of minutes consumed by users

Analysing this variable, it can be seen that, for the eleventh consecutive year, the average revenue from voice services<sup>50</sup> as a whole has fallen compared to the previous year; in 2018, this reduction was 11.4%, establishing average revenue at 3.8 euro cents per minute. In the last decade, the total reduction in average revenue has been greater than 77.6%.

Evolution of average revenue per minute (euro cents/minute)



Source: CNMC

Without a doubt, this sharp drop in average revenue is linked to various events occurring in recent years. Firstly, the regulation of the termination price, i.e. the service which allows an operator to terminate a call on an external telecommunications network, has been instrumental in explaining the downward trend in national prices seen over the last decade. The CNMC (which replaced the former CMT -Telecommunications Market Commission- in 2013), like the other European Union National Regulatory Authorities (NRA), has been setting the termination price on a glide path since 2001. Therefore, in January 2018, the CNMC approved the decision which established a new definition and analysis of the markets for call termination on mobile networks. This decision established a new price of 0.70 euro cents per minute for the period

<sup>49</sup> Average revenue per minute and average revenue per message –unit revenue– have been used in this section as approximate measures of the final prices observed in the market.

<sup>50</sup> The voice services item includes call services to national destinations (to mobile or fixed networks), international destinations, network intelligence and international roaming.

from 1 February to 31 December 2018. This same decision also set the termination price for 2019 and 2020 at 0.67 and 0.64 euro cents respectively.

Secondly, in 2006 the CMT introduced the obligation to allow other operators access to the mobile communications networks of the main operators (Movistar, Vodafone and Orange). This enabled new players to enter the markets: the MVNOs. In this regard, it should be noted that, in December 2018, there were a total of 16 MVNOs whose capital was not majority-owned by the mobile network operators<sup>51</sup>.

A third variable - in part derived from the first two - which could explain this continuous fall in average revenue is the mass marketing of flat-rate or partial flat-rate tariffs. On most occasions, this type of tariff includes various bundled services which, generally speaking, include a limited number of minutes in both voice calls and data traffic. In practice, this tariff structure implies, in most cases, a reduction in the unit price per minute of conversation actually consumed.

In recent years, these measures – some of a regulatory nature – have had a clear impact on the market: a larger number of companies offering products and, consequently, a reduction in the level of market concentration. The evolution of these variables in the coming years will help us to identify the impact of the numerous mergers taking place recently on the level of competition in the mobile communications markets.

The average revenue in the different market segments (prepaid and postpaid) was very similar, close to 3.8 euro cents per minute in both cases

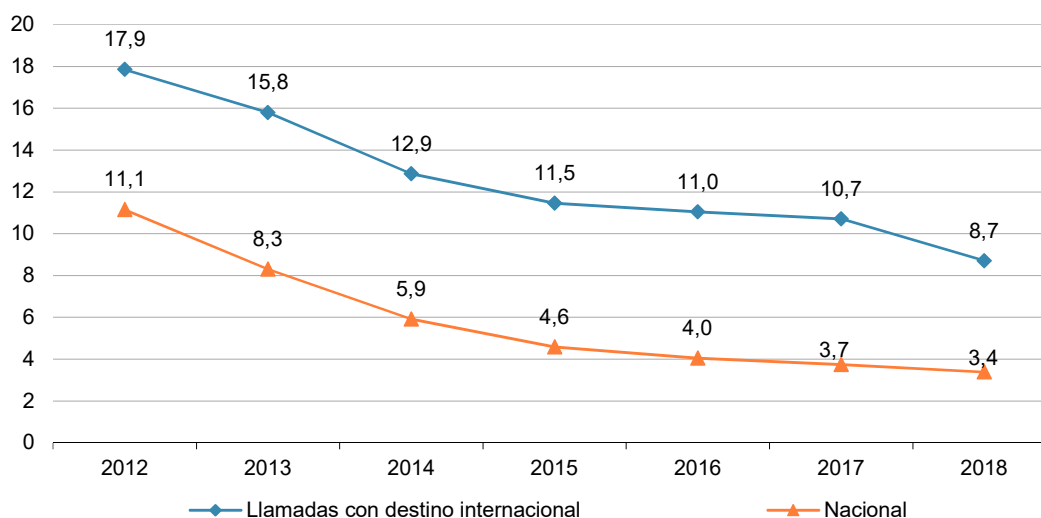
The following graph shows the evolution of the average revenue for the most heavily demanded services: mobile calls to national and international destinations.

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<sup>51</sup> The MVNOs Simyo (Orange), Lowi (Vodafone), Pepephone and Lebara (MASMOVIL group) are majority-owned by network operators. It should be noted that in 2017, Tuenti (Movistar) was integrated fully into Movistar and, as a result, ceased being classified as an MVNO.



### Evolution of the average revenue per minute by traffic type (euro cents/minute)



Source: CNMC

In recent years, the price of both services has decreased significantly, although in the specific case of calls to national fixed and mobile networks there has been an average decrease per minute of 9.4% in the last year.

Regarding calls to international destinations, there has also been a downward evolution, with a decrease in average revenue of 18.8%. The downward trend in average revenue for international calls in recent years is explained, to a large degree, by the entry since 2007 of numerous MVNOs specialising in services to international destinations at very competitive prices.

In terms of international roaming services, the application of RLAH meant that most calls made while roaming were treated as traffic included under national flat rates. As a result, operators can no longer obtain a significant volume of revenue directly linked to the billing of this type of traffic and it is therefore difficult to obtain a reference price linked to this type of service.

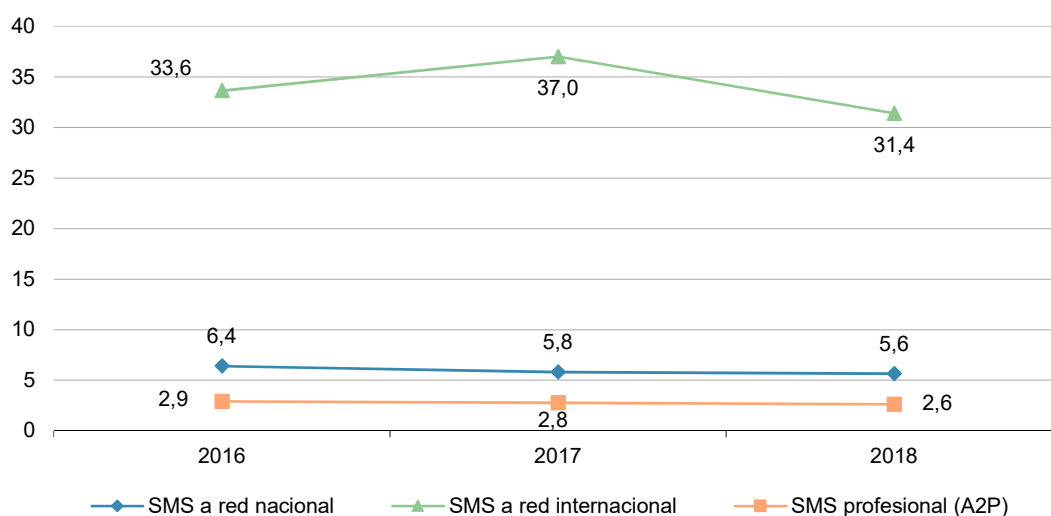
In the same vein, most traffic received while roaming within the EU is no longer charged for, as received calls are free within the national market.

### Average revenue from messaging services

The average revenue from SMS messaging to national mobile destinations recorded a slight decrease throughout 2018; specifically, it stood at 5.6 cents per SMS sent, which represents a 2.6% decrease compared to 2017. When calculating the average income from the A2P messaging service, it can be seen that in 2018 this was 2.6 cents per SMS, significantly lower than the figure reported for SMS messages between subscribers.

Lastly, the average revenue from SMS messages sent to an international mobile network stood at 31.4 cents, therefore decreasing in value compared to the figure recorded in the previous year.

### Evolution of average revenue per message (euro cents/message)



Source: CNMC

## - Market shares

In 2018, the largest operators saw differences in terms of the evolution of their market share. Using the number of mobile lines as a reference, Movistar slightly reduced its presence in the market, but once again remained the main operator. In 2018, Orange remained the second-ranked operator in terms of market share, even though its presence decreased by one percentage point. Vodafone also recorded a loss of market share in 2018.

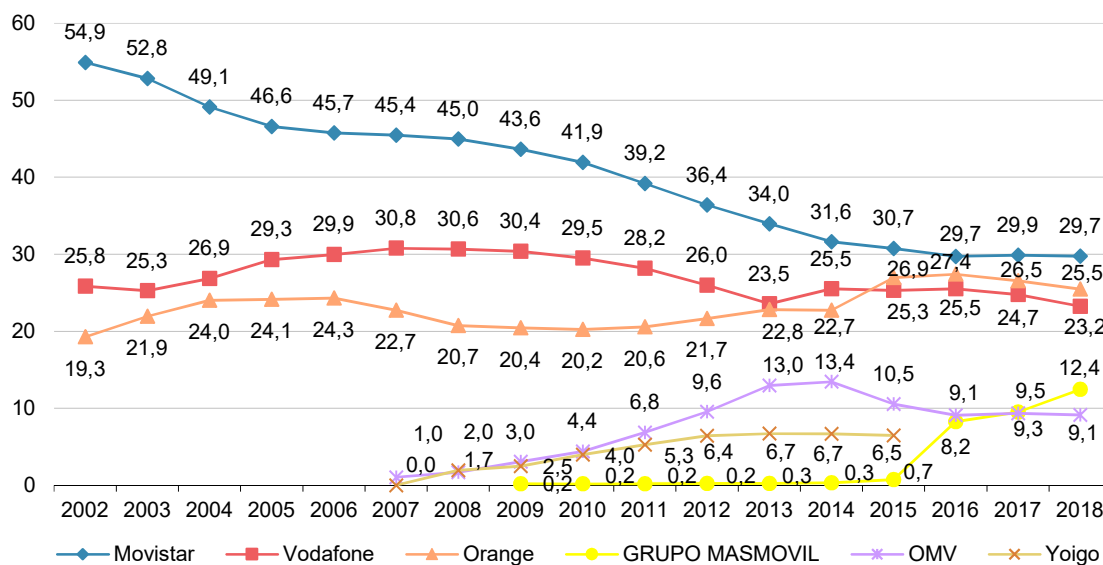
In 2018 the MASMOVIL group completed the purchase of the MVNO Lebara. This was the final acquisition by the fourth-largest mobile telephone operator after acquiring the operators Yoigo (mobile operator with a proprietary network, MNO), Llamayá (Moreminutes) and Pepephone (MVNO) in 2016.

In three years, this operator has gone from accounting for 0.7% of the mobile lines in the market, to holding 12.4% of lines in December 2018. It should be remembered that the fourth-ranked operator has a proprietary network but not across the entire country, and in areas without coverage it uses a national roaming agreement with Orange.

Regarding the MVNOs<sup>52</sup>, their presence in the market decreased by 0.2 percentage points. It is worth noting that, despite the numerous concentration and acquisition processes that have affected several MVNOs in recent years, these operators have managed to keep their market share almost stable in terms of mobile lines.

### Evolution of market share by active line (percentage)

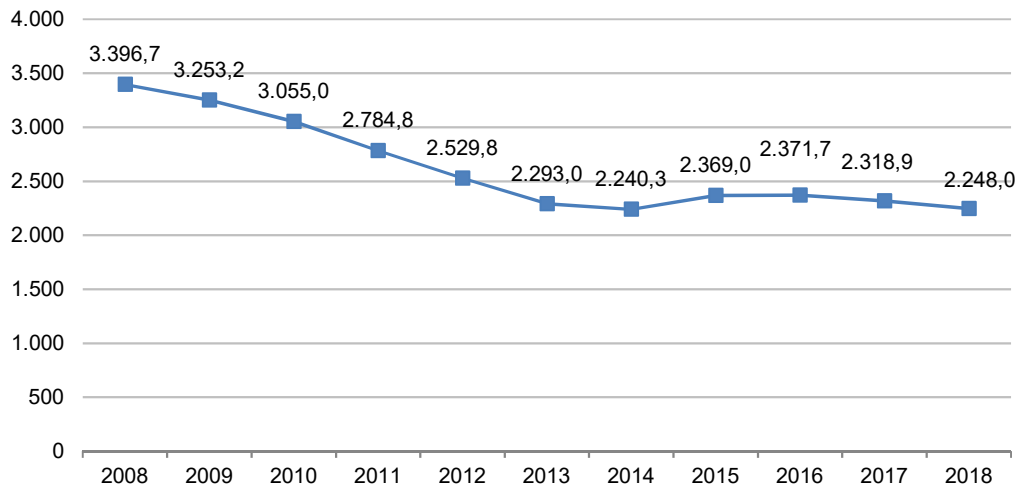
<sup>52</sup> To estimate the market shares of the MVNOs as a whole, the data corresponding to the operators Ono, Lowi, Jazztel, Simyo, Pepephone and Lebara have been excluded, as they are operators owned by Vodafone, Orange and the MASMOVIL group respectively. Therefore, when calculating the market shares of the different operators, the turnover for these five MVNOs have been added to the data reported by the network operators acquiring these MVNOs.



Source: CNMC

The Herfindahl-Hirschman index has been used to calculate the degree of concentration. As with the calculation of market shares, the concentration index was estimated grouping together the different operators in accordance with the group of companies to which they belong. The results show that, in 2018, market concentration (HHI = 2,248) was lower than the figure seen in 2017, and very near the record low seen in 2014. The results from this year consolidate the downwards trend in concentration levels that started in 2017, following two years of significant increases in this index, mainly explained by the numerous mergers and acquisitions of companies taking place in the market.

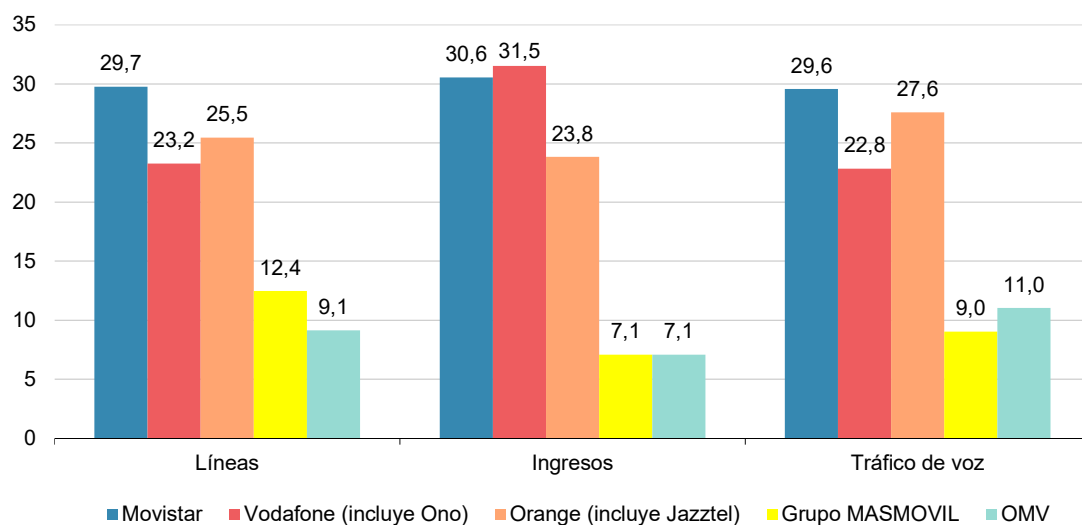
Evolution of the market concentration index (HHI)



Source: CNMC

The following graph compares the share of mobile lines by operator with traffic and revenue shares. It can be seen that the market shares of the different operators vary significantly depending on the variable being analysed. Vodafone stood out in 2018 as the operator with the greatest turnover in the mobile telephone market. However, it is worth noting that this result does not include the revenue from other mobile communications markets such as, for example, the mobile broadband access service. Regarding the MASMOVIL group and the MVNOs, a similar distribution can be seen in terms of revenue, although in traffic, the presence of the MVNOs was higher than that of the fourth-ranked operator.

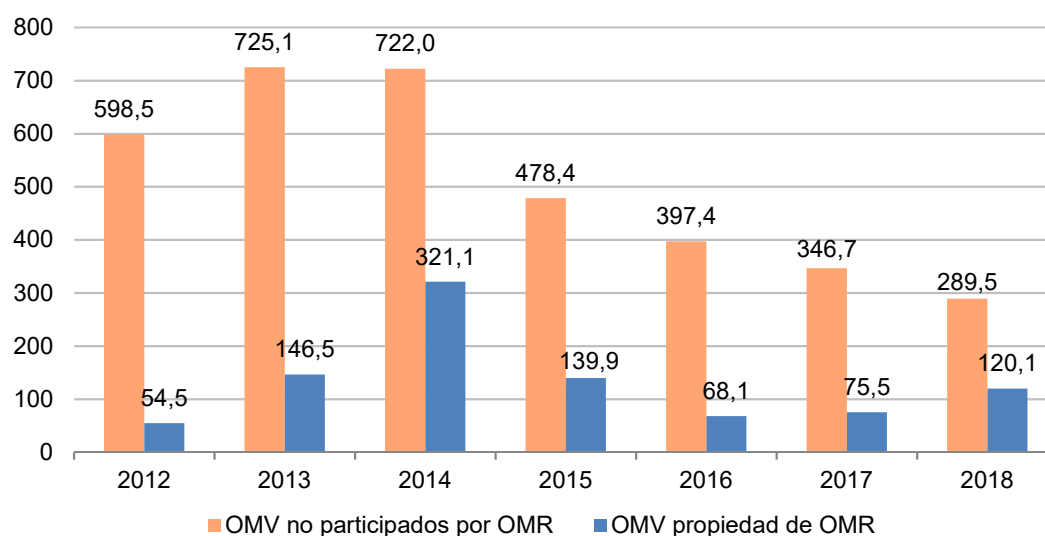
2018 market shares (percentage)



Source: CNMC

In 2018, the total revenue obtained by the MVNOs<sup>53</sup> as a whole in the mobile retail market stood at €289.4 million. This figure represents a fall of 16.5% in their billing compared to the revenue obtained in the previous year, making 2018 the fifth consecutive year with a decrease in their turnover. It should be clarified that this figure does not include revenue from the MVNOs owned by mobile network operators (MNO). The following graph compares the turnover of the MVNOs majority-owned by network operators with that of the MVNOs that are independent from these operators. The turnover of majority-owned MVNOs has increased significantly compared to the figures from 2017, mainly due to the positive evolution of their business.

Revenue of the MVNOs not majority-owned by MNOs compared to the revenue of the MVNOs owned by MNOs (€ million)



Source: CNMC

The different MVNOs did not all follow the same business strategy; rather, these operators display highly differentiated strategies. Those strategies can be grouped into: 1) operators with a specialised offering in competitive international tariffs; 2) operators based on a mobile offering integrated with other services provided by fixed networks; 3) operators with extensive distribution networks through which they can offer their mobile services to a large number of customers; and 4) operators whose main business case is the offering of highly competitive mobile tariffs by eliminating supplementary services, which affords operators significant cost savings.

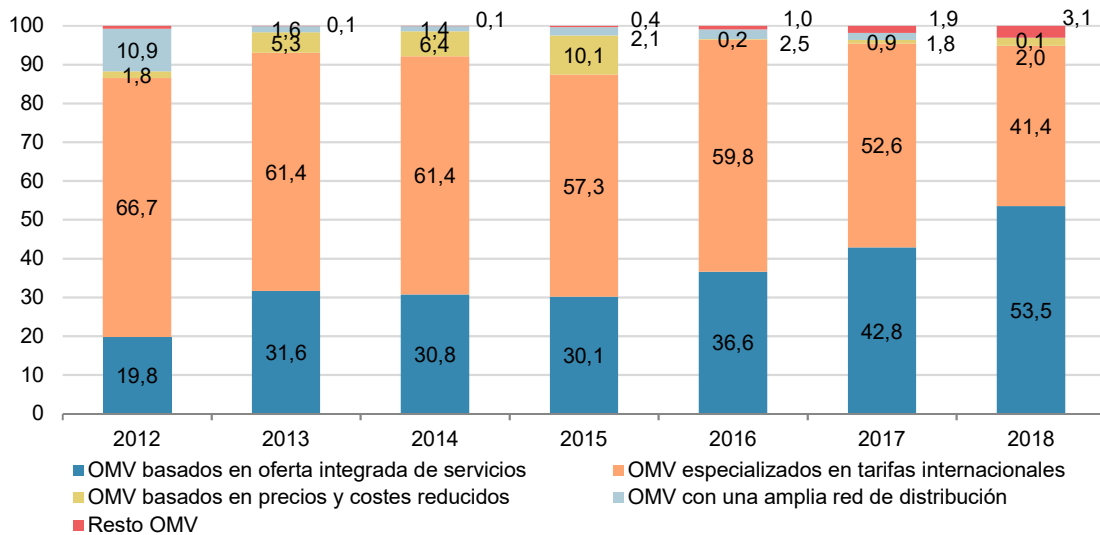
As can be observed in the graph below, the strategy based on a bundled supply of telecommunications services is the one that has had the most success among the MVNOs, reaching 53.3% of the total turnover in 2018. In contrast, a significant fall was seen in the presence of the MVNOs based on the competitive offer of international rates. It is worth noting that 2018 was the first year in which the share of telecommunications operators who bundle their services exceeds that of MVNOs specialised in international tariffs. One element that partly explains this change is the fact that operators that to date have specialised in international communications changed their commercial strategy in 2018 and now focus their

<sup>53</sup> To estimate the market shares of the MVNOs as a whole in 2018, the data corresponding to the operators Lowi, Simyo and Pepephone have been excluded, as they are MVNOs majority owned by the network operators (MNOs).

activity on the bundled supply of fixed and mobile communications services. This was the case for the MVNO Digi mobil.

As can be seen in the graph, the other categories have become less important over recent years.

Market shares by revenue of the MVNOs depending on their business strategy (percentage)



Source: CNMC

## 2.2.2 Mobile broadband

A total of 46 million lines accessed the Internet through mobile communication networks in 2018, 5.4% more than in 2017. As regards turnover, and in line with that seen in previous years, this telecommunications service was the one experiencing the most growth (+12.7%) in revenue compared to the previous year, reaching €5,274.6 million. This figure positions the mobile broadband service as one of those with the highest revenue in the telecommunications sector.

It is worth noting that there are several options when connecting to the mobile internet service: 1) connection through a mobile device exclusively linked to the data traffic service, as is the case with datacards, USB modems, tablets, etc.; or 2) connection through a mobile voice telephone which simultaneously provides voice, SMS messaging and Internet access services, among others. This category includes the use of smartphones.

Therefore, of the total number of active mobile Internet users, 44.4 million connected through their mobile phone. Meanwhile, the number of exclusive data lines - mainly USB modems and tablets - stood at 1.6 million, which represents a 7.3% decrease compared to the previous year. This result shows that most users who have acquired this type of device, mainly tablets, have chosen to connect to the Internet through a Wi-Fi network.

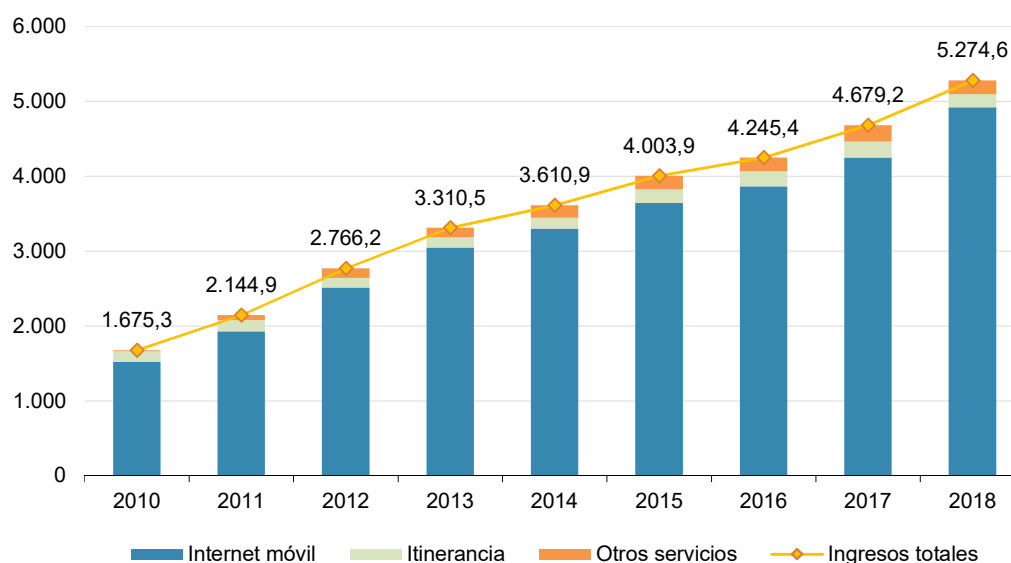
Lastly, it is worth noting that in 2018, the use of 4G networks by Spanish consumers grew noticeably, a fact that had an impact on both the number of users accessing this technology and the intensity of use of these services.

### Position of the sector

#### - Revenue

In the year 2018, the turnover from all mobile broadband services as a whole stood at €5,274.6 million, a figure which represents a 12.7% growth in the last year.

Evolution of mobile broadband revenue (€ million)



Source: CNMC

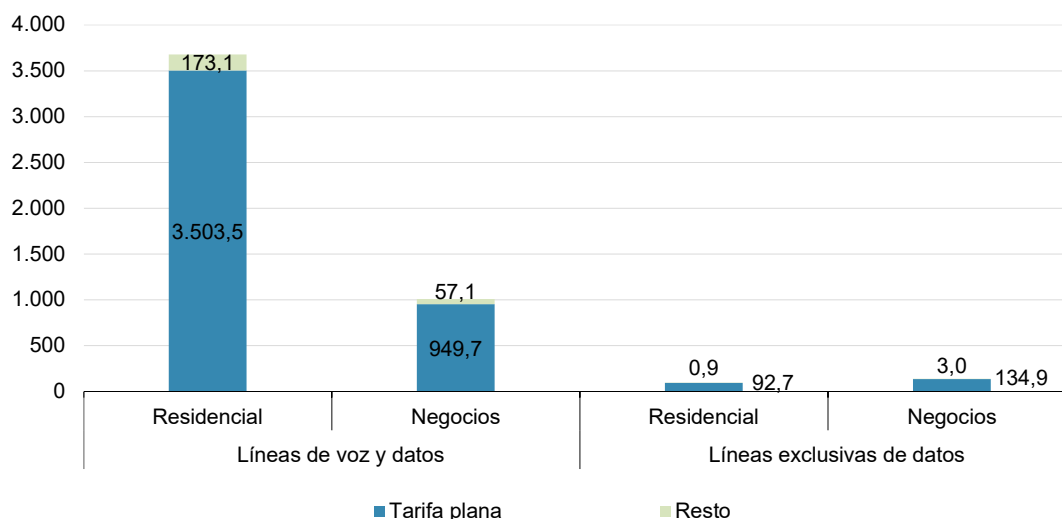
The previous graph reveals that, if this revenue is broken down according to the different services generating it, the national Internet connection service continues to be dominant in the market, accounting for 93.2%. In second place is the international roaming Internet connection service, accounting for 3.4% of total revenue. The roaming service registered a significant fall in revenue due to the fact that, since the entry into force of RLAH in June 2017, most data roaming from EU countries is classified as traffic included within the national flat-rate tariffs of Spanish consumers. As a result, operators have stopped charging for these services directly.

In last place are supplementary data traffic services, which currently account for a small proportion of revenue - just 3.4% - but which have significant future growth potential. This includes services such as, for example, the downloading of contents or transactions conducted through *m-commerce* applications.

Below is the breakdown of total revenue according to the type of device from which the mobile Internet service was accessed. The “Voice and data lines” item refers to mobile phones, while “Data only lines” refers to tablets or USB modems.

Revenue from mobile Internet services by type of device, type of tariff and business segment (€ million)





Source: CNMC

It can be seen that most of the revenue was generated in the residential segment - which accounted for 76.7% of the total revenue recorded -, while the business segment only generated 23.3%. In recent years the residential segment has increased its proportion of total revenue for these services.

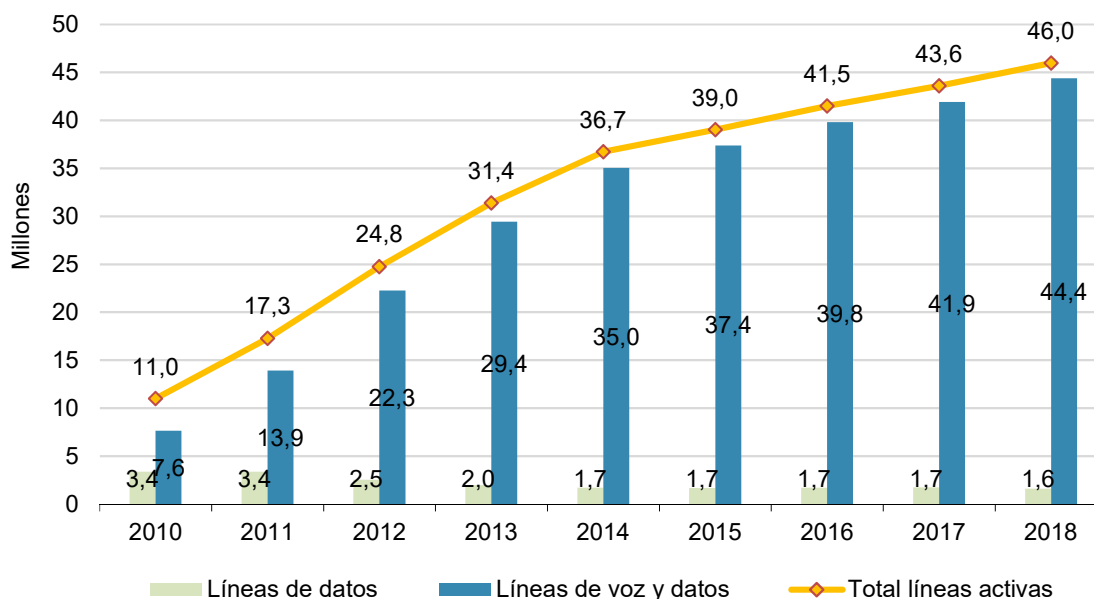
The mobile broadband service experienced exponential growth in revenue from flat rates. In fact, 95.2% of total revenue came from this type of rate. In contrast, revenue based on connectivity or session billing has plummeted in recent years, to the point that this billing option is nearly non-existent as regards data-only lines.

#### - Lines<sup>54</sup>

In 2018, 46 million lines actively connected to the mobile Internet service, implying a penetration of the service of 98.6 lines per 100 people. The following graph shows the variation in this figure since 2010, as well as a breakdown depending on the type of device used to access the Internet.

#### Evolution of active mobile Internet lines (millions of lines)

<sup>54</sup> The calculation of the volume of active lines linked to this type of service encompasses all the lines linked to a dedicated tariff implying the payment of a recurring tariff (for example, payment of a flat rate tariff) plus all lines with a data tariff which, while not being subject to the payment of a recurring amount, accessed the Internet in the last 90 days.



Source: CNMC

The number of lines associated with voice and data devices –i.e. mobile phones and smartphones– that actively connected to the Internet totalled 44.4 million. This figure implies an increase of 5.9% compared to the active lines in the previous year.

As regards data-only lines –mainly tablets and USB modems– in 2018 there were 1.6 million lines actively connected to mobile Internet services, a figure which is very similar to the one recorded in recent years.

With regard to the proliferation of flat-rate tariffs offered on the market, mobile operators reported that 42.7 million of the 46 million active mobile Internet lines were linked to a flat-rate data tariff. Of this total, 36.7 million corresponded to tariffs that bundled together data traffic with other telecommunications services. In most of these cases, the mobile Internet service has been offered bundled with the mobile voice call service. However, one can see a significant increase in the number of tariffs that jointly sell multiple fixed and mobile communications services.

#### Lines with access to a 4G network

In 2018, a total 31.4 million mobile lines accessed a network equipped with 4G technology.

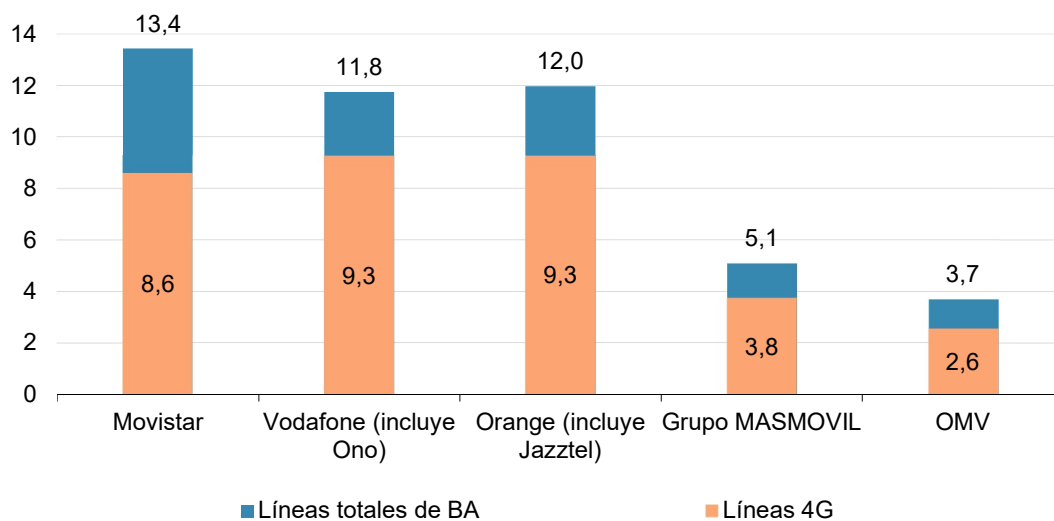
Spanish operators started to roll out this technology in mid-2013, and in recent years they have installed 4G base stations in most Spanish towns.

It is worth noting that, in 2018, most MVNOs were already offering 4G speed thanks to access agreements signed with their host operators.

If we compare this figure with the lines that made active use of the mobile broadband service in 2018, it can be seen that 68.4% of lines accessed these services through the 4G network<sup>55</sup>, allowing them to reach theoretical connection speeds of more than 100 Mbps.

The following graph shows the number of mobile broadband lines of each operator that actively access latest generation networks. It can be seen that for all operators, at least 60% of their customers repeatedly connect to 4G speed networks.

Total lines and those with access to LTE networks



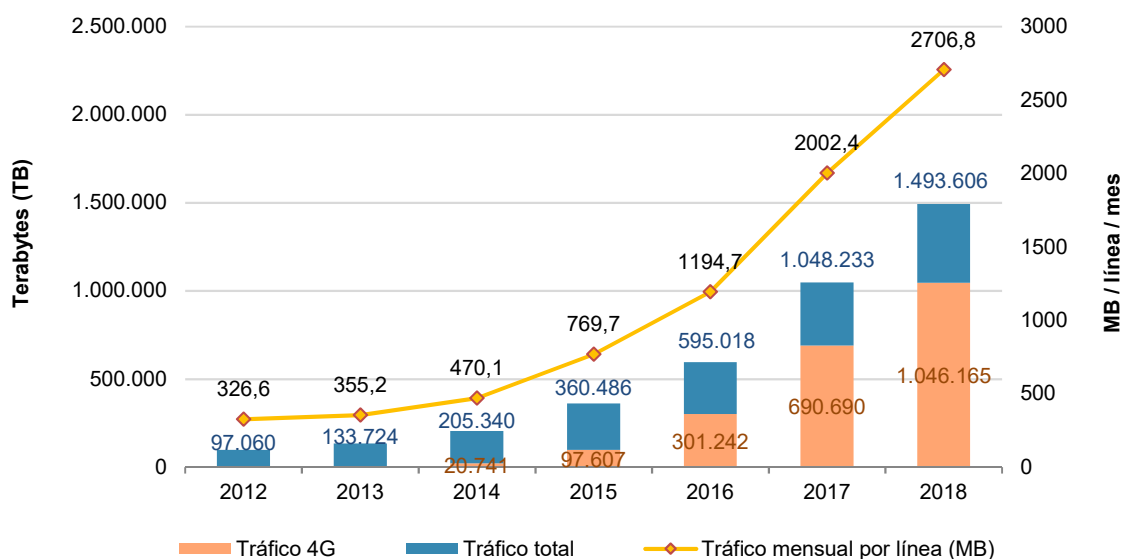
Source: CNMC

## - Traffic

The increase in the number of subscribers to mobile Internet access, whether through data lines or voice and data lines, gave rise to significant growth in data traffic managed through mobile networks with high data transmission capacity, mainly through 3G (UMTS, HSPA, HSPA+) and 4G (LTE) technologies. Therefore, total traffic originating on these types of networks amounted to 1,493,606 Terabytes, a figure representing growth of 42.5% compared to the previous year. It should be noted that 4G networks registered traffic of 1,046,165 Terabytes in their fourth year of operation, a figure which represented 70% of the total traffic recorded.

<sup>55</sup> It should be noted that, as well as having 4G technology coverage, users must have a device that is compatible with this technology.

Total and monthly traffic per line (TB and MB/line/month)

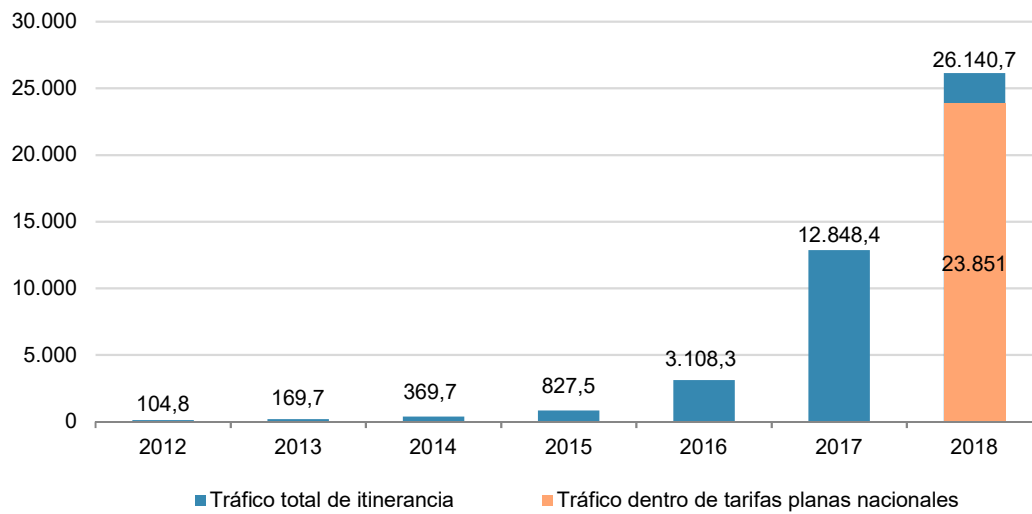


Source: CNMC

This strong growth in total traffic had an impact on the monthly traffic recorded per line. Therefore, in 2018, active mobile Internet lines recorded average monthly traffic of 2.7 Gigabytes - or 2,706.8 Mb -, up 35.2% on the figure for 2017. In this sense, a clear upward trend in the intensity of use by consumers of the mobile Internet service can be seen. The expansion of 4G technology has boosted demand for new applications which require ever higher transmission speeds.

In relation to data roaming services, the Community Regulation approved in 2015 - which amended Regulation (EC) 531/2012 - established that, as of 15 June 2017, European consumers would be charged the same price for roaming services as they paid for the equivalent national services, thanks to the system known as RLAH. As can be seen in the following graph, this aspect introduced through the regulatory framework has caused a very significant increase in roaming data traffic in the last two years. Similarly, it can be seen that in 2018, 91.2% of data when roaming was treated as part of the data traffic included in customers' national flat rates. As a result, operators did not charge directly for that traffic.

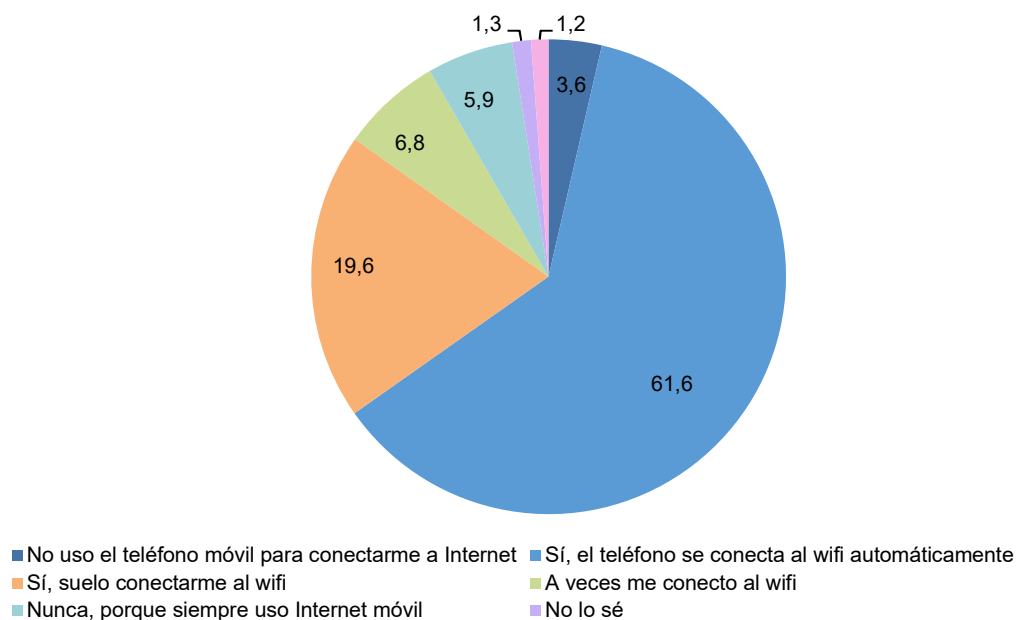
Roaming traffic (TB)



Source: CNMC

The traffic shown in this section does not include the total data traffic consumed by mobile devices as a whole. This is due to a very high percentage of these devices also connecting to the Internet through wireless Wi-Fi networks. Therefore, 81.2% of users with a smartphone said that they regularly connect to Wi-Fi networks, whereas only 5.9% exclusively used mobile networks to access the Internet.

Connections to wireless Wi-Fi networks in the home/place of work or study to access the Internet over a mobile phone (individuals with smartphones), IV-2018



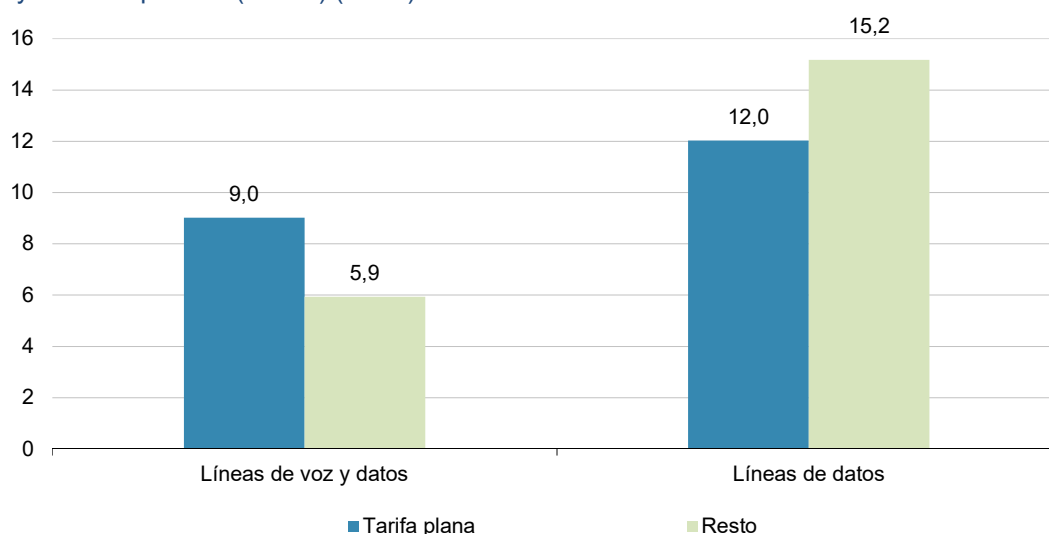
Source: CNMC Household Panel

## Competition

### - Prices

The figures in the previous sections show that voice and data lines account for most of the active lines and the revenue obtained. However, the figures analysed show that the average revenue per line - or ARPU - of data-only lines is higher than that generated by voice and data lines. This can be explained by the fact that customers who contract a data-only line make more intensive use of these services and, consequently, need tariffs which allow a larger volume of data traffic.

#### Monthly revenue per line (ARPU) (€/line)



Source: CNMC

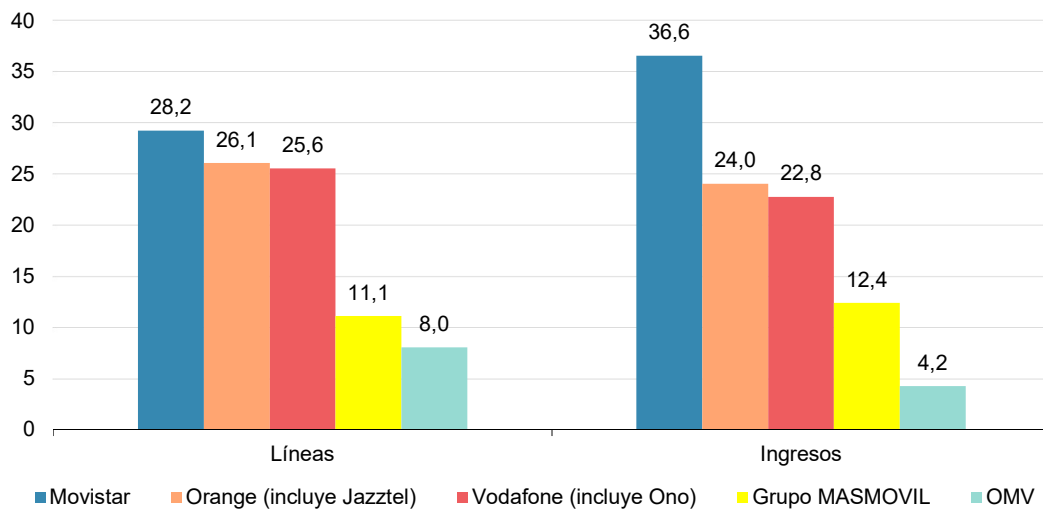
#### - Market shares

The following graph shows the market share held by the different operators in mobile Internet services, for both voice and data devices (mobile phones) and data only lines (USB modems).

Firstly, market shares based on mobile Internet service lines show concentration levels similar to those of mobile telephony. As seen in the section on mobile telephone services, the different acquisition processes recorded in 2014 had a clear effect on the concentration levels observed in the mobile broadband market. Similarly, the MASMOVIL group and the MVNOs as a whole accounted for 19.1% of mobile broadband lines.

If we analyse market share based on total revenue, we can see that Movistar led the market, accounting for 36.6% of total revenue. Vodafone accounted for 24% of the market, followed by Orange (22.8%). The MASMOVIL group and the MVNOs accounted for 16.6% of total mobile broadband revenue.

Market shares in 2018 (percentage)



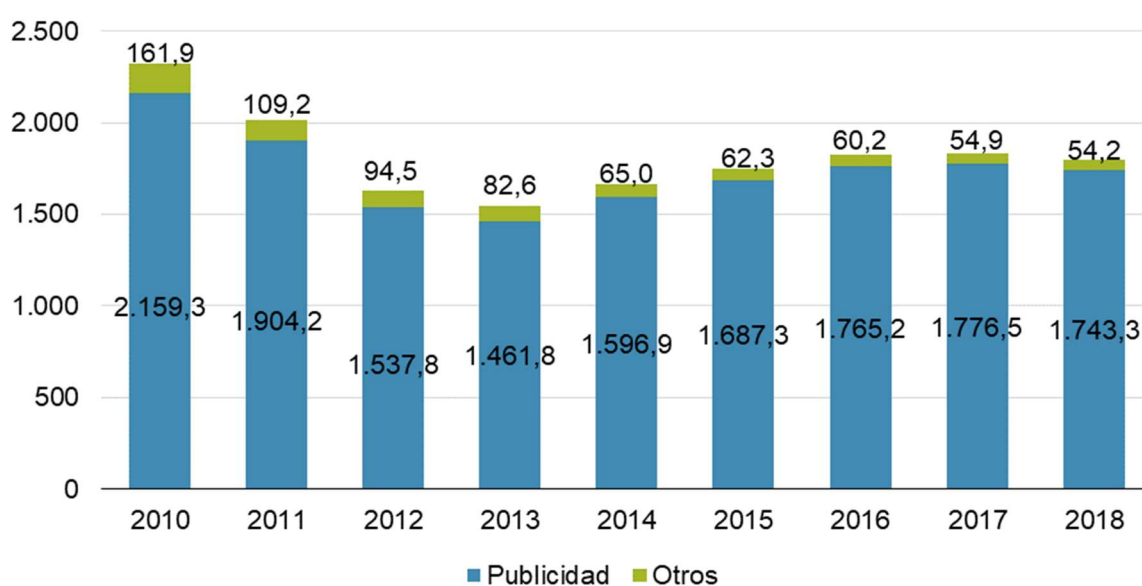
Source: CNMC

## 2.3 Audiovisual services

### 2.3.1 Free-to-air television

The total advertising revenue obtained by broadcasters in the free-to-air television segment was €1,797.5 million, a very similar figure to the €1,831.4 million recorded in the previous year. These figures show a scenario that has remained stable in recent years.

Total free-to-air television revenue (€ million)



Source: CNMC

In an analysis based on the ownership of the broadcasters, public television channels accounted for €105.8 million of advertising revenue - 6.1% of the total advertising revenue for free-to-air television -, and an average annual audience of 24.3%.

In contrast, private television channels earned €1,637.5 million in advertising revenue, and an average audience of 65.1%.

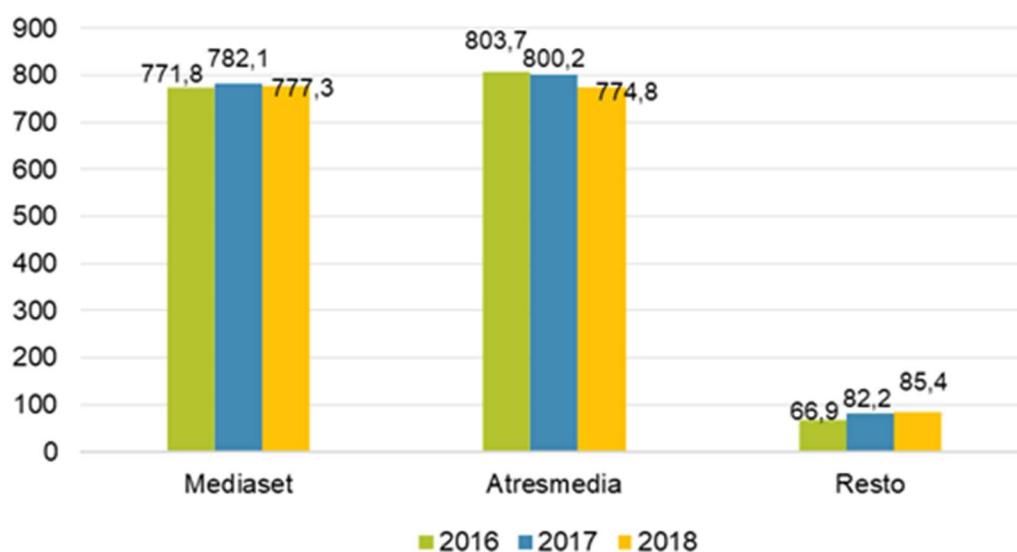
The remaining audiences, to take the total up to 100%, were associated with themed pay tv channels (7.6%) and local television channels (3%).

### Advertising revenue of private DTT operators

In 2018 there were eight private nationwide DTT operators, which in total broadcast 21 channels.

Advertising revenue for private operators (€ million)





Source: CNMC

Revenue continued being very polarised around the two main market operators, Mediaset España (with seven channels) and Atresmedia (with six channels), which together accounted for €1,552.1 million, which is 89% of free-to-air television advertising revenue, maintaining an almost identical share to the figure achieved in 2017, of 89.1%.

A long way behind were the remaining private television operators, which in total earned €85.4 million, achieving a share of 4.9% of total advertising revenue from free-to-air television, and with a slight increase in revenue of €3.2 million compared to 2017.

## Audiences

The figures for the classification by audience, both by channel and by group, hardly registered any changes. The relative positions of the different channels remained very stable, and they all recorded very minor changes- with movements of one or two decimals upwards or downward -, with the sole exception of Telecinco, which was the channel with the highest growth, recording an increase of 0.8 points.

Furthermore, for the seventh consecutive year it remained the channel with the largest audience, with an audience share of 14.1%. In second place was Antena 3 with an average audience of 12.3%, and in third place was La 1 from Televisión Española, with 10.4%. In 2018, these two channels recorded the same audience as in the previous year.

The free-to-air television channels as a whole achieved an audience share of 92.4%, showing slight growth of 0.2 points compared to 2017, whereas pay television channels accounted for an audience share of 7.6%.

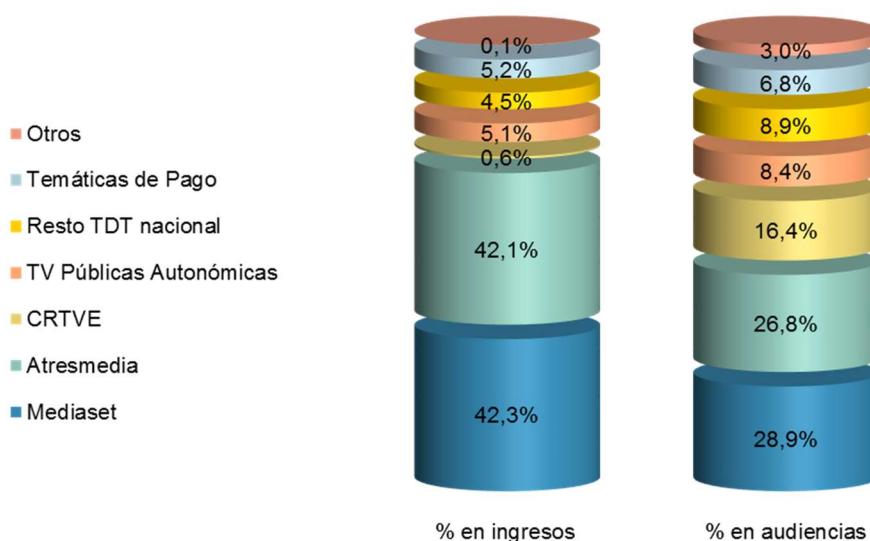
Evolution of audiences by group and channel (percentage)

	2015	2016	2017	2018	Variation 2018/2017
<b>Mediaset</b>	<b>31.0</b>	<b>30.2</b>	<b>28.7</b>	<b>28.9</b>	<b>0.2</b>
Telecinco	14.8	14.4	13.3	14.1	0.8
Cuatro	7.2	6.5	6.2	6	-0.2
FDF	3.5	3.2	3.1	2.9	-0.2
Divinity	2.3	2.3	2.2	2	-0.2
Energy	1.5	1.9	2	1.9	-0.1
Boing	1.6	1.5	1.4	1.3	-0.1
Be Mad	n/a	0.4	0.6	0.6	0.0
<b>Atresmedia</b>	<b>26.8</b>	<b>27.1</b>	<b>26.5</b>	<b>26.8</b>	<b>0.3</b>
Antena 3	13.4	12.8	12.3	12.3	0.0
La Sexta	7.4	7.1	6.7	6.9	0.2
Neox	2.6	2.5	2.5	2.4	-0.1
Nova	2.4	2.2	2.2	2.4	0.2
Mega	0.9	1.8	1.7	1.6	-0.1
Atreseries	n/a	0.8	1.1	1.2	0.1
<b>CRTVE Group</b>	<b>16.7</b>	<b>16.8</b>	<b>16.7</b>	<b>16.4</b>	<b>-0.3</b>
La 1	9.8	10.1	10.4	10.4	0.0
La 2	2.7	2.6	2.6	2.7	0.1
Clan TV	2.4	2.2	2	1.8	-0.2
24H	0.9	0.9	1	0.9	-0.1
Teledeporte	0.9	0.9	0.7	0.6	-0.1
<b>G. Vocento (NET TV)</b>	<b>3.4</b>	<b>2.9</b>	<b>3.1</b>	<b>2.9</b>	<b>-0.2</b>
Paramount Channel	2	1.8	1.9	1.7	-0.2
Disney Channel	1.4	1.1	1.2	1.2	0.0
<b>U. Editorial (VEOTV)</b>	<b>4.2</b>	<b>2.2</b>	<b>2.7</b>	<b>2.6</b>	<b>-0.1</b>
Discovery Max	2.1	1.9	1.7	1.6	-0.1
GOL	n/a	0.2	1	1	0.0
<b>Trece TV</b>	<b>n/a</b>	<b>2.1</b>	<b>2.1</b>	<b>2.0</b>	<b>-0.1</b>
<b>Dkiss</b>	<b>n/a</b>	<b>0.4</b>	<b>0.9</b>	<b>0.8</b>	<b>-0.1</b>
<b>Ten</b>	<b>n/a</b>	<b>0.3</b>	<b>0.4</b>	<b>0.3</b>	<b>-0.1</b>
<b>Real Madrid TV</b>	<b>n/a</b>	<b>0.2</b>	<b>0.4</b>	<b>0.3</b>	<b>-0.1</b>
<b>Temáticas de pago</b>	<b>6.8</b>	<b>7.0</b>	<b>7.8</b>	<b>7.6</b>	<b>-0.2</b>
<b>Forta</b>	<b>7.5</b>	<b>7.4</b>	<b>7.6</b>	<b>7.9</b>	<b>0.3</b>
<b>Private regional channels</b>	<b>0.8</b>	<b>0.5</b>	<b>0.4</b>	<b>0.5</b>	<b>0.1</b>
<b>Other*</b>	<b>2.8</b>	<b>2.9</b>	<b>2.7</b>	<b>3.0</b>	<b>0.3</b>
*Other includes local television channels					

Source: CNMC and Kantar Media

Audiences are important for broadcasters as they help establish the price of advertising spaces. The following graph shows the relationship between advertising revenue and audiences for 2018.

Market shares in advertising revenue and audiences (percentage)



Note: percentages calculated using the total television advertisement revenue, €1,839.5 million, which includes €1,743.3 million from free-to-air television and €96.1 million from pay television.

Source: CNMC and Kantar Media

## Television consumption

The way in which television consumption is measured by viewer and day has been updated in recent years. In addition to measuring linear consumption (the traditional consumption measured historically), a new variable called “on-demand” was added in 2015. This refers to the viewing of on-demand programmes or programmes recorded by the user, which are viewed within 7 days of being broadcast.

Additionally, another new variable called “guest consumption” was added in 2017. This refers to the consumption of viewers who are not the habitual residents in the home where the television is being watched.

Taking into account the new variables, total television consumption in 2018 was 234 minutes per viewer and day, which equates to 3 hours and 54 minutes. This figure can be broken down into 216 minutes of linear consumption, plus 6 minutes of on-demand consumption, and 12 more minutes of guest consumption. In total, there was a decrease in television consumption of 6 minutes compared to 2017.

Evolution of television consumption by type (minutes/viewer/day):

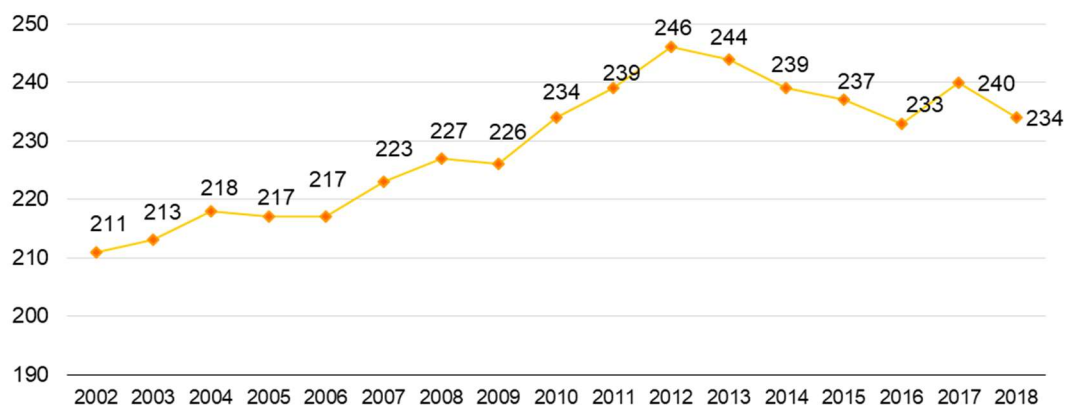
	2015	2016	2017	2018
Traditional linear consumption	234	230	224.5	216
“Guest” consumption	3	3	4.5	6
“On-demand” consumption	n/a	n/a	11	12
<b>Total consumption</b>	<b>237</b>	<b>233</b>	<b>240</b>	<b>234</b>

Source: Kantar Media

When solely taking into account the linear consumption variable, the time that viewers spent watching television in 2018 was 216 minutes (3 hours and 36 minutes), which represents a decrease of 8.5 minutes compared to 2017.

Essentially, television consumption, measured in terms of minutes, by viewer and day, decreased in 2018 to reach the same levels seen in 2010. In the time series shown in the graph, it can be seen that television consumption has gradually declined since reaching its highest point in 2012, at four hours and six minutes.

Average television consumption (minutes/viewer/day)



Source: Kantar Media

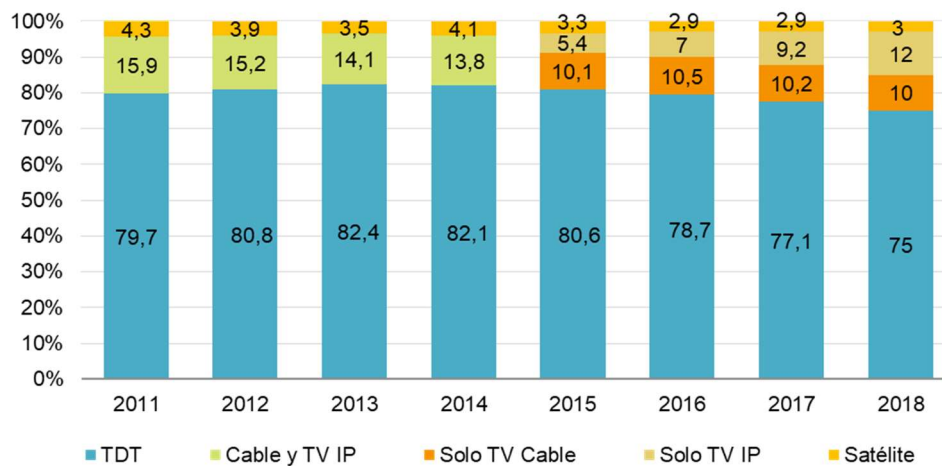
### Consumption by broadcast medium

By broadcast medium, digital terrestrial television (DTT), with a 75% share of total consumption - measured in terms of viewing time - continues being the most heavily-used platform. Meanwhile, the platforms used by pay television as a whole achieved a share of 25% in terms of television consumption time.

In other words, of every 4 minutes of television consumed in Spain during 2018, three minutes were watched using the digital terrestrial television platform DTT, and one minute was watched using the cable, satellite or IPTV networks<sup>56</sup> used by pay television.

<sup>56</sup> IPTV refers to the pay television services provided by operators over the xDSL/FTTH network, using reserved bandwidth.

Audience by broadcast medium (percentage)<sup>57</sup>



Source: Kantar Media

This figure is in line with the significant increase recorded in recent years in the penetration of pay television services in Spain, which accounts for 6.9 million subscribers, and more specifically with the increase in users who subscribe to a pay television service through IPTV (through xDSL/FTTH networks), which in total accounted for 4.6 million subscribers by the year end. This will be examined in more depth later, in the section relating to pay television services.

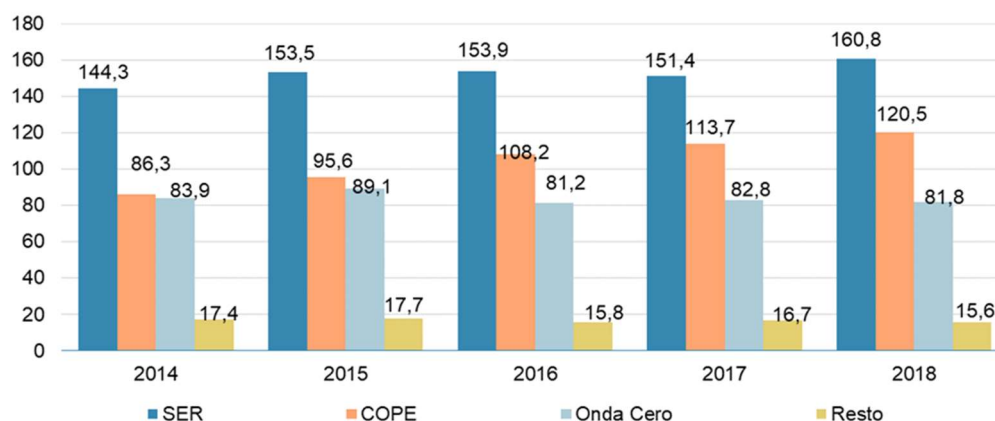
In accordance with the above, and as can be seen in the graph, IPTV services have been expanding in the last four years, to the extent that by late 2018 they accounted for 12% of the total time that Spaniards spent watching television.

<sup>57</sup> The figures may not add up to 100% due to rounding to decimal places.

### 2.3.2 Radio

As with free-to-air television services, radio broadcasting services also base their business model on revenue from the sale of advertising space. Radio services saw a positive evolution of their revenue in 2018, with year-on-year growth of 3.9% and a turnover of €378.8 million.

Revenue of the main radio operators (€ million)

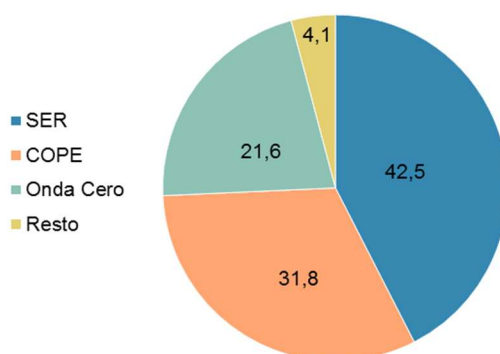


Source: CNMC

In relation to the market structure, the radio broadcasting market in Spain is characterised by a significant concentration of audiences and advertising revenue.

In line with that seen in previous years, of the €378.7 million earned by the radio sector in 2018, the group comprised of the three large nationwide private operators: Sociedad Española de Radiodifusión (SER), Onda Cero of the Uniprex group and COPE, owned by Radio Popular, jointly accounted for 95.5% of total advertising revenue, leaving the remaining 4.1% of the market in the hands of the other operators (including regional radio stations, both public and private, and local stations).

Revenue of the main radio broadcasting groups (percentage)

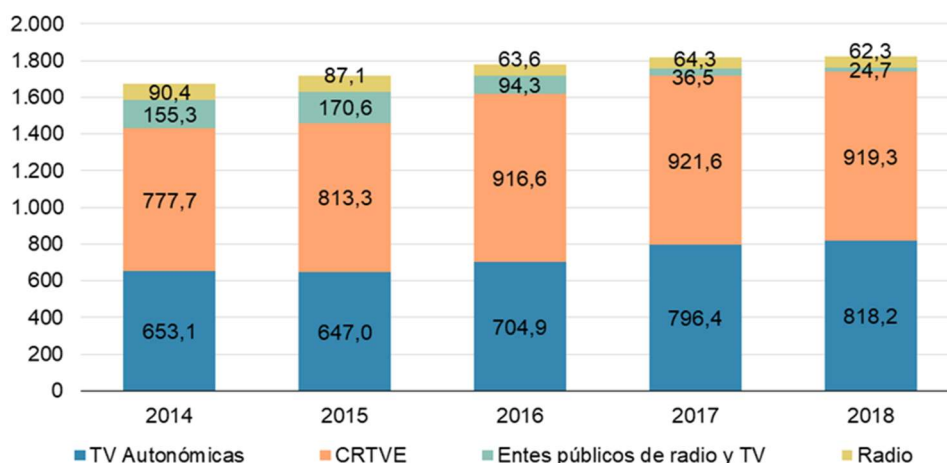


Source: CNMC

### Television and radio subsidies

The subsidies<sup>58</sup> from the various public administrations received by radio and television operators were very similar to the figures recorded in the previous year. Subsidies totalled €1,824.5 million, with year-on-year growth of 0.3%.

Subsidy breakdown (€ million)<sup>59</sup>



Source: CNMC

### Subsidies for CRTVE (Spanish Radio and Television Corporation)

Of the total subsidies, 50.4% were assigned to the funding of the Spanish Radio and Television Corporation<sup>60</sup> which in 2018 received €919.3 million to fulfil its public service mission.

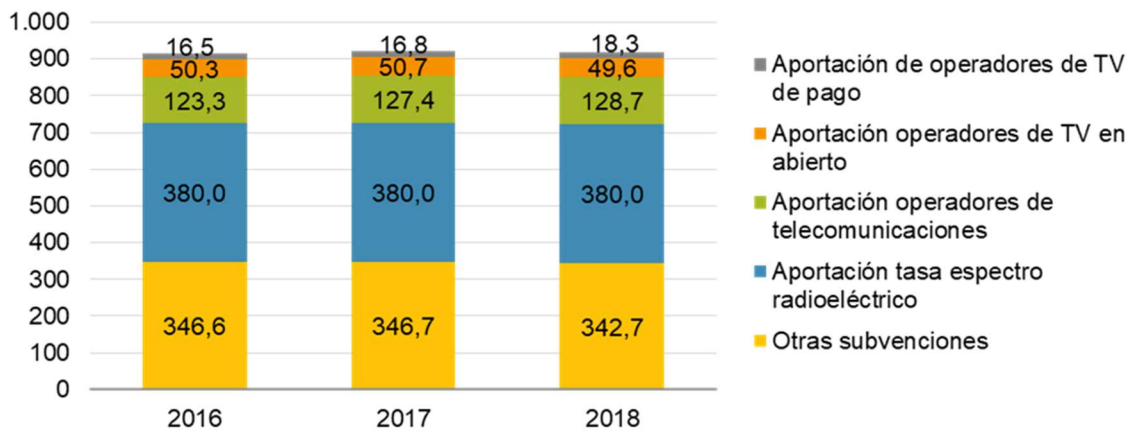
This figure was 0.2% lower than that for 2017, and refers to the total subsidies received by the Corporation, which offers, as well as the free-to-air public television service with five channels on a national level and one international one, the RNE radio service and other activities, which include the management of the RTVE Institute and the RTVE Orchestra and Choir.

<sup>58</sup> This includes operating subsidies, capital subsidies and transfers for public-private partnerships.

<sup>59</sup> Radio subsidies only include subsidies for the regional stations: RNE is included in subsidies for CRTVE.

<sup>60</sup> This includes the total subsidies for the Corporation, including TVE, RNE and all other activities.

Subsidies received by the RTVE Corporation (€ million)



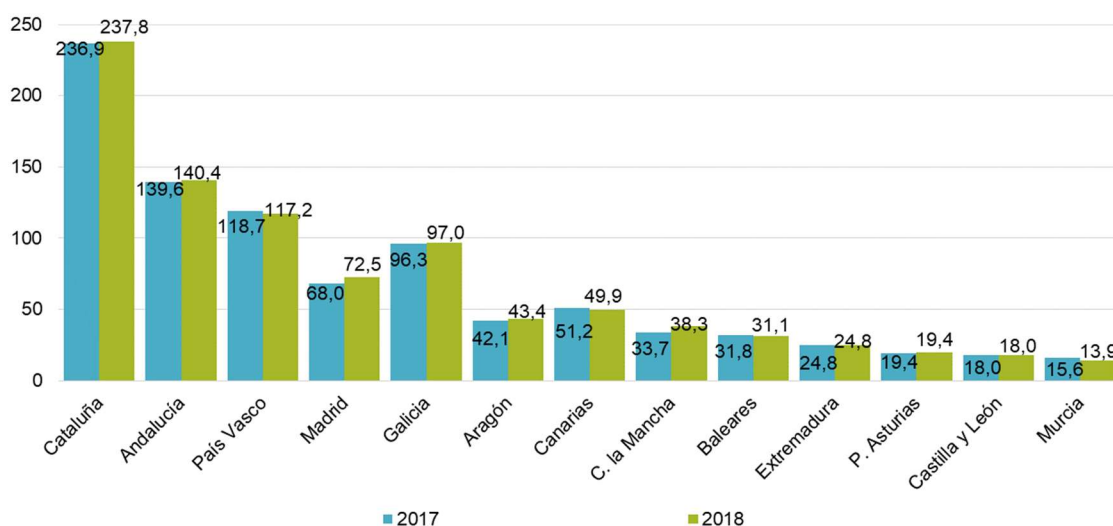
Source: CNMC

**Subsidies for regional radio and television operators**

Other subsidies totalled €905.2 million, 0.9% more than in 2017. These can be broken down into €903.8 million for regional radio and television services, and €1.4 million for other operators.

As can be seen in the following graph, public revenue received by regional radio broadcasters was relatively unchanged from that received in the previous year.

Subsidies received by regional operators (€ million)



Source: CNMC



### 2.3.3 Pay television

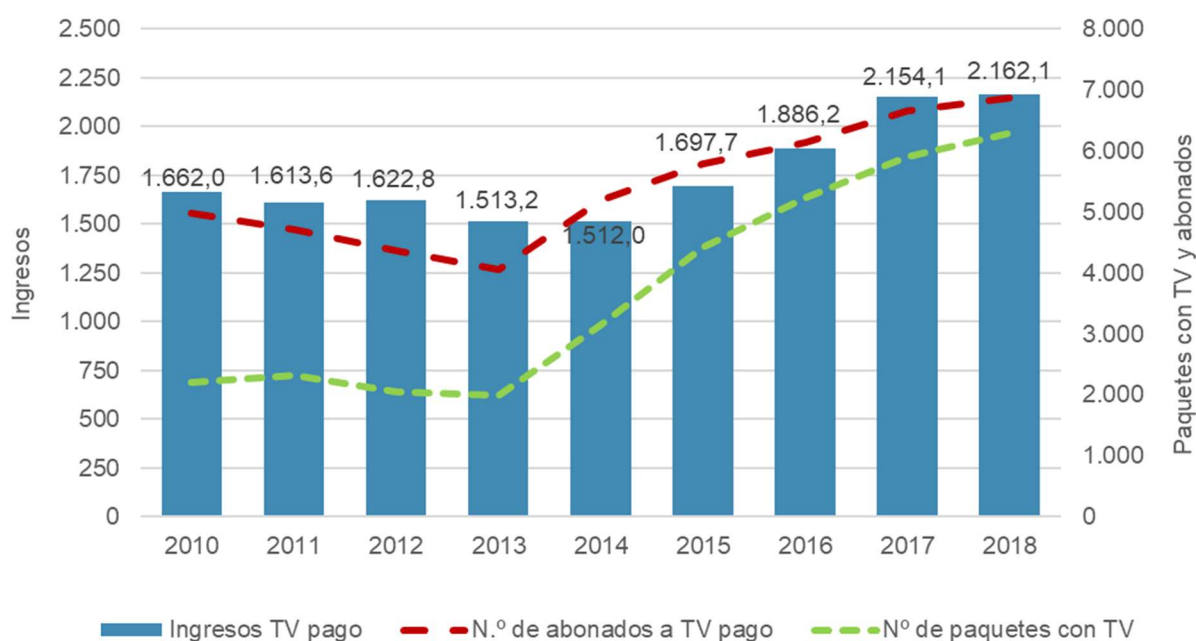
The growth of pay television revenue in Spain has slowed and, following several periods of significant growth, in 2018 it experienced a slight increase of 0.4%, ending the year at €2,162.1 million.

In terms of subscribers, the growth experienced was slightly better, recording a 3.4% increase, which translates into 227,276 net subscriptions.

Once again, the increase in pay television subscribers was related to the evolution of the number of bundles that combine telecommunications services with pay television, and which have experienced continuous growth since late 2013.

At the end of 2018 there were almost 6.9 million subscribers to pay television and almost 6.3 million bundles that included the pay television service. These figures represent an increase of almost 2.8 million subscribers in the last 5 years and over 4 million pay television bundles in the same time frame.

Pay television revenue, subscribers and bundles (€ million, subscribers and thousands of bundles)



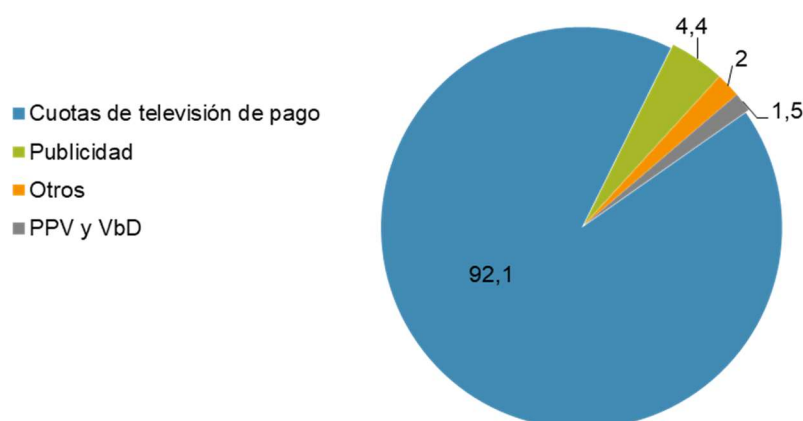
Source: CNMC

### Revenue by item

By item, the bulk of pay television revenue came from monthly fees, which totalled €1,990.4 million, 1.1% more than in 2017.

The other items were revenue from advertising, at €96.1 million and a growth of 14.8%, and revenue from video rentals, pay-per-view (PPV) and video on demand (VoD), which accounted for €33.1 million, a 12.8% decline from the previous year.

#### Pay television revenue by item (percentage)



Source: CNMC

### Revenue and subscribers by technology

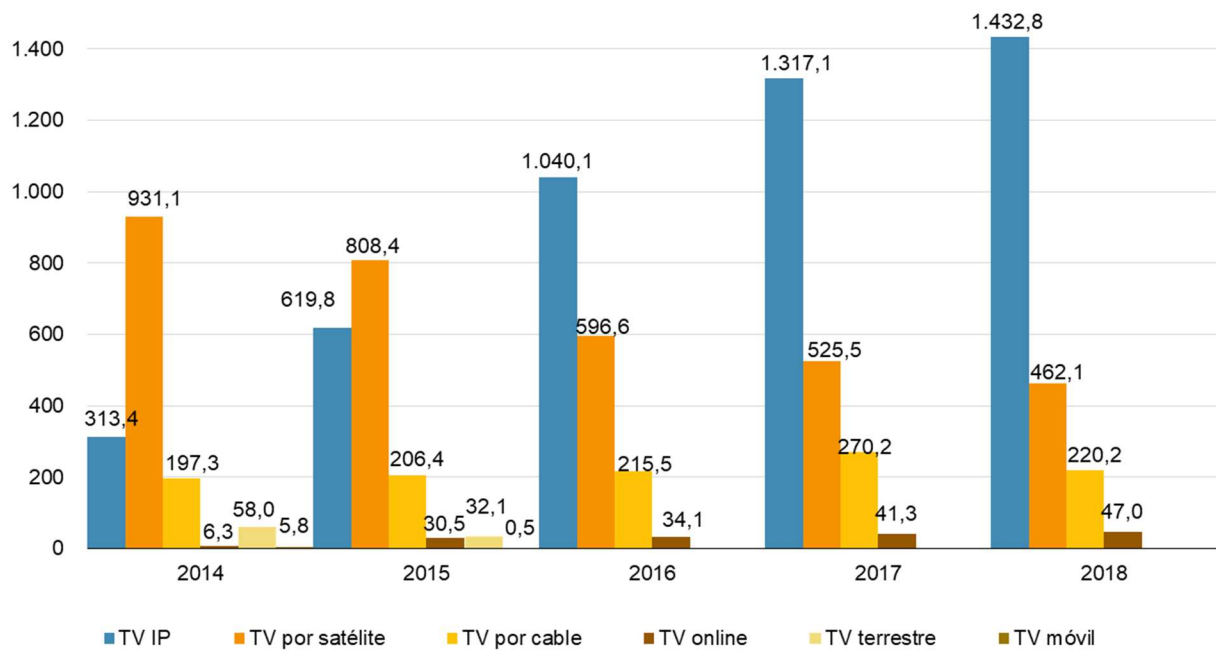
As regards the different broadcast media, the improvement in the high-speed telecommunications networks has led to IPTV services - which are delivered to the end user through xDSL/FTTH networks - becoming the dominant technology to offer pay television services, relegating satellite television services to second place.

Figures for both revenue and subscribers reflect the dominance of IPTV services in the pay television market, with an 8.8% increase in revenue, turnover of €1,432.8 million and a 13.6% increase in subscribers, which translated into 548,000 net subscriptions in 2018 and nearly 4.6 million subscribers by year end.

These services represented 66.3% of total pay television revenue in 2018, and 66.4% of subscribers.

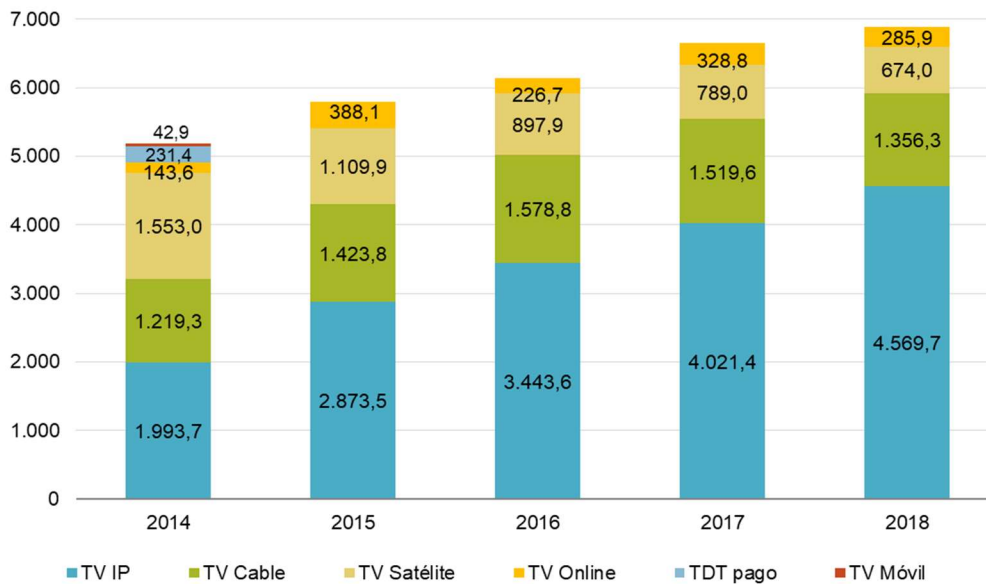
#### Pay television revenue by broadcast medium (€ million)<sup>61</sup>

<sup>61</sup> For platforms that have subscribers to online TV, the online TV figure refers to subscribers who pay a monthly fee for this type of access. This figure only includes data from operators with head offices in Spain, and not those from HBO, Netflix, Amazon Prime Video and Sky.



Source: CNMC

Evolution of the number of pay television subscribers by broadcast medium (in thousands)

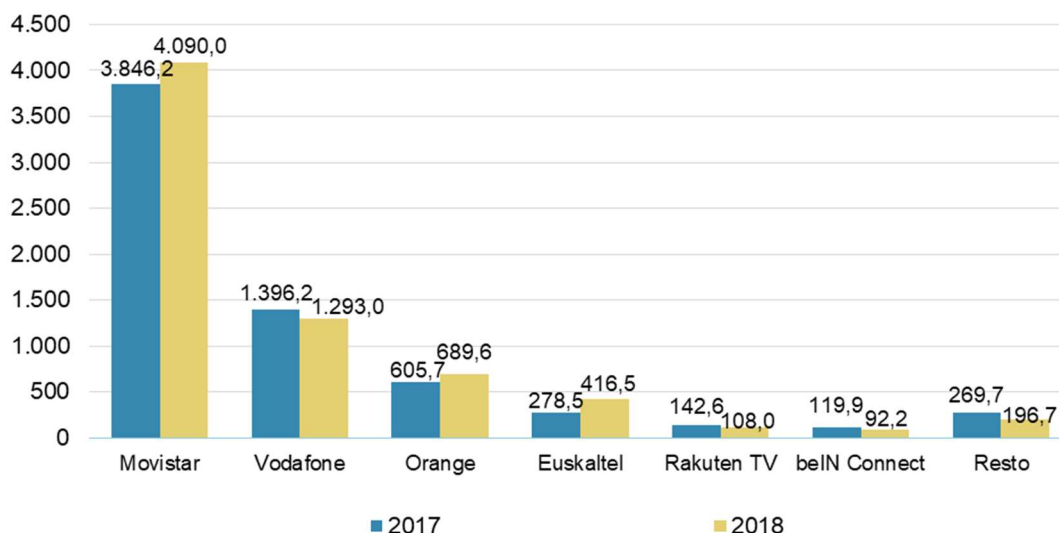


Source: CNMC

## Subscribers by operator

At year end, the operator with the highest market share was Movistar, with 59.4%. At the end of 2018, it had a total 4.1 million pay television subscribers, which breaks down into 3.4 million through xDSL/FTTH (IPTV) networks, and 674,000 through satellite.

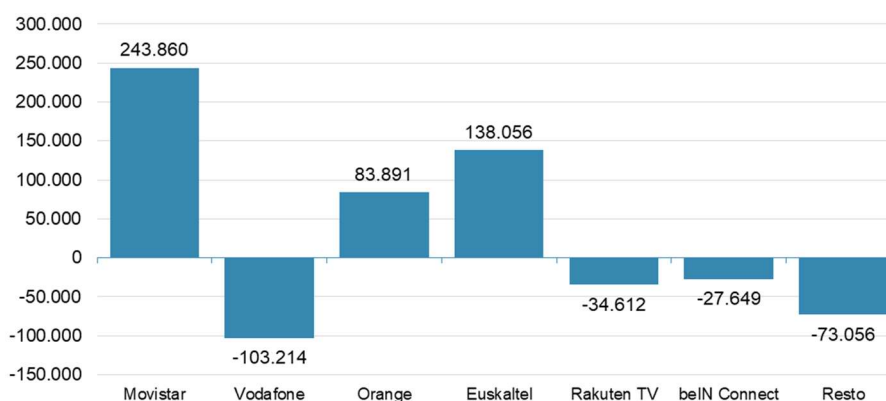
Number of subscribers of the main pay television operators (thousands of subscribers)



Source: CNMC

After Movistar, the second largest operator was Vodafone with 1.3 million subscribers, of which 860,000 were signed up to cable television services, 415,000 to IPTV services, and 17,000 to online TV. Despite being in second place by size, this operator experienced a loss of 103,000 subscribers throughout the year, which could be linked to the decision to stop broadcasting Premium football content as part of its offer.

Variation in net subscribers 2017/2018 by operator (subscribers)

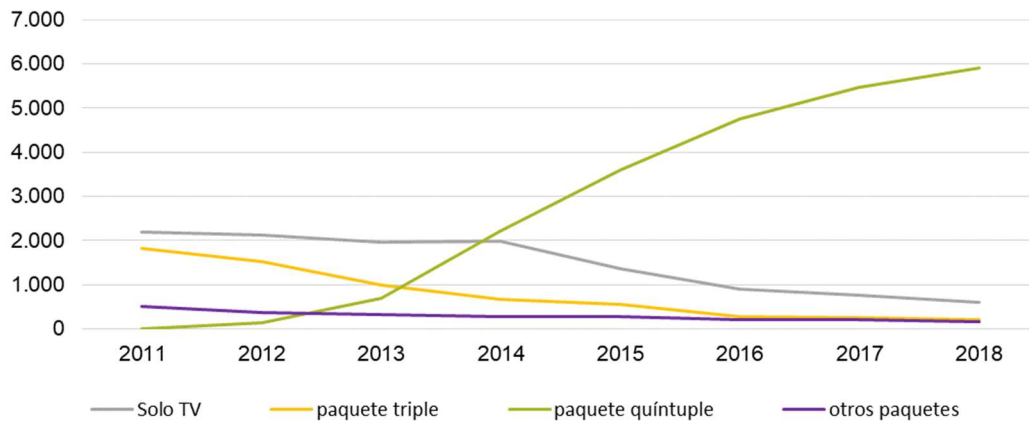


Source: CNMC

### Pay television and telecommunications bundles

As can be seen from the following graph, the significant increase experienced by pay television since late 2013 is closely linked to the popularity of combined offers that integrate pay television with other telecommunications services.

Evolution of subscribers to pay television by type of bundle<sup>62</sup> (thousands of subscribers)



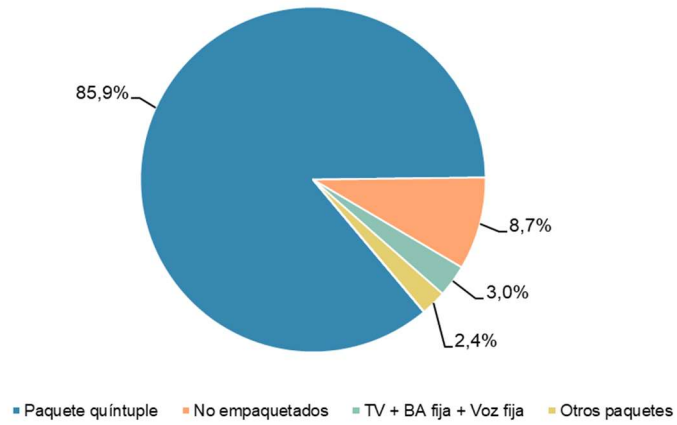
Source: CNMC

In late 2018, only 598,000 pay television subscribers had purchased the service individually, 3% fewer than in 2017. The remaining 91.3% of subscribers (6.3 million customers) purchased the pay television service with a telecommunications service, with the quintuple-play bundle<sup>63</sup> being the most popular option, with 5.9 million subscribers at year end.

<sup>62</sup> Others include any other combination of services with pay television that do not correspond to a triple-play or quintuple-play bundle.

<sup>63</sup> This combines pay television with fixed voice, mobile voice, fixed broadband and mobile broadband.

Subscribers to pay television by contract type (percentage)



Source: CNMC

### 3. WHOLESALE SERVICES

#### 3.1 Fixed network interconnection

Interconnection between networks allows for the exchange of traffic which originates on the network of one operator and terminates on the network of a different operator. The concept of interconnection is linked to various services such as termination, access and transit, whether national or international. The termination service consists of the operator with a fixed network obtaining revenue for calls to customers on its network which originate on another network, whether fixed or mobile. In the access service, the operator supplying the line to the subscriber obtains revenue from delivering the preselected traffic to the interconnected operator - if the operator has contracted Wholesale Line Rental (WLR) -, and the traffic to short numbers and special rate services (intelligent network) managed by the interconnected operator. To these two wholesale services we can add the transit service, which allows an operator to deliver calls to another operator with which it is not directly connected, by routing them through a third operator. The latter, in addition to charging for termination in accordance with the type of call, adds a margin for routing the call through its network to deliver it to the destination operator.

For the fixed termination service, which corresponds to market 1 of the European Commission's recommendation on relevant markets that are candidates for being regulated ex ante<sup>64</sup>, the price established in 2014, in the last review of this wholesale market, remained in effect. This decision established that the price that operators can charge each other for providing this service is cost-oriented, based on a bottom up LRIC model for a theoretical efficient operator<sup>65</sup>. The price determined by the model was 0.0817 euro cents per minute, which represented a decrease of around 80% compared to the prices being charged until that moment by Telefónica de España S.A.U.<sup>66</sup> For alternative operators, the decrease in their respective termination prices was even greater, as until then they had been able to set a termination price on their fixed network up to 30% higher than the Telefónica local level.

The direct consequence of applying the new fixed termination price was a drastic fall in revenue from this service in 2015 compared to the previous year. Since that year, given that the price of 0.0817 cents a minute has remained unchanged, revenue corresponding to this service has remained in line with the volume of termination traffic.

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<sup>64</sup> Recommendation of the European Commission relating to the relevant markets for products and services within the electronic communications sector that may be subject to ex-ante regulation (2014/710/EU).

<sup>65</sup> As recommended by the European Commission, the price is calculated using a model of the costs incurred by an efficient operator, applying the long run incremental cost (LRIC) methodology through a bottom-up financial/technical model of the network. The EC considers that the cost model for fixed networks could be based on NGN networks.

<sup>66</sup> Despite the fact that trade names are used to designate the operators in this report, Telefónica is used in the fixed network interconnection analysis instead of Movistar, given that the obligations arising from the analyses of wholesale fixed network access and termination markets correspond exclusively to Telefónica de España S.A.U. Also, the revenue declared by Telefónica de España S.A.U., includes revenue from Telefónica Móviles España S.A.U. for the provision of wholesale services included in this section.

In late 2018, the CNMC launched a public consultation on the review of the fixed call termination market, where it proposed a price reduction of around 34%. The current fixed call termination price (0.0817 cents per minute) would fall to 0.0640 cents per minute for 2019, 0.0591 for 2020 and 0.0543 per minute for 2021.

Furthermore, the procedure to define and analyse the wholesale market for access and call origination on fixed networks was carried out in 2016. The decision on this case, of 17 January 2017, removed some of the obligations on Telefónica imposed after the previous market review. In particular, as of July 2017, the obligation for preselection in isolation was removed, and this could only be purchased if linked to the Wholesale Line Rental (WLR) service.

In December 2018, the updates of the two reference interconnection offers for Telefónica de España were approved: that based on IP technology and that based on TDM technology.

Access services were included in the former, meaning that all interconnection services are now available through IP technology. In the TDM-RIO, the interconnection structure was simplified, leaving a single interconnection level, as with IP. The key difference between the two offers is the number of interconnection points required: 21 for TDM (due to the geographical structure of Telefónica) and 1 for IP (with redundancy for security reasons).

On a financial level, the price per minute for access was significantly reduced through applying a cost-orientated methodology to the Telefónica network that took into account the greater efficiencies of next generation networks, and the price per call for billing and collection has been adjusted to reflect the higher costs Telefónica bears for this service. These prices will be applicable to both services, TDM and IP.

The price for the access service was set independently of the time of call at 0.5104 cents per minute for 2019, 0.4327 for 2020 and 0.3268 for 2021. The termination price remained at 0.0817 euro cents per minute due to market 1 not having been reviewed again.

## Interconnection services

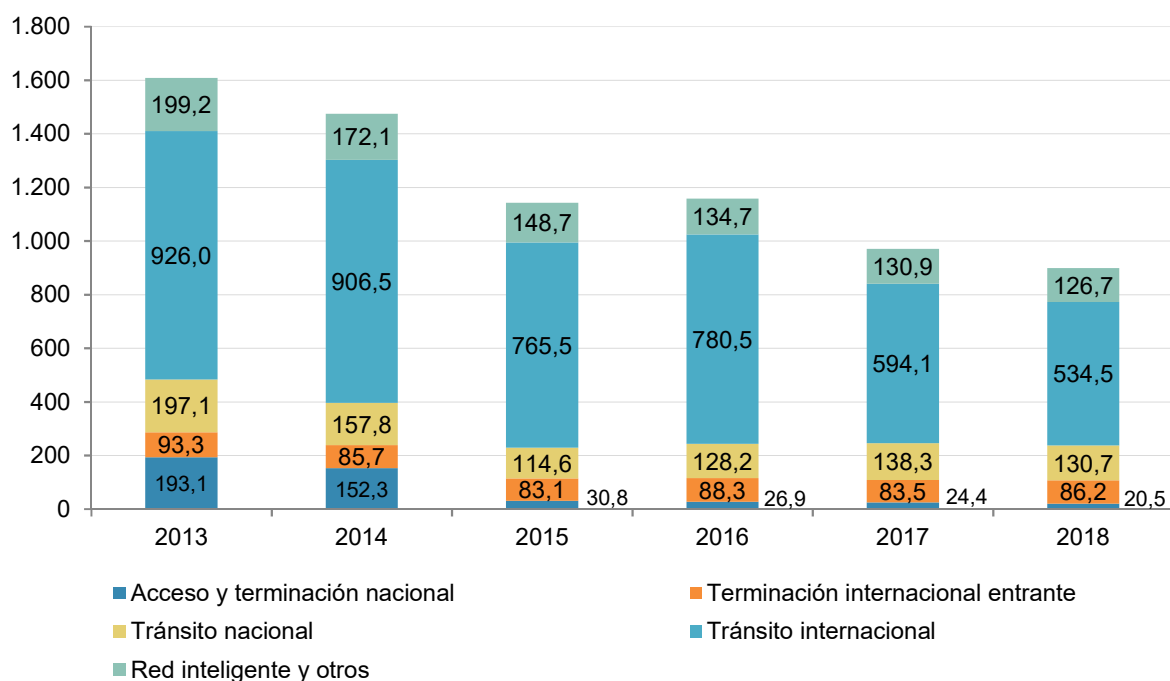
The heterogeneous nature of the different services included in this section means that total revenue and traffic figures do not show significant year-on-year changes. However, transit services in particular may record strong fluctuations from one year to another, to a great extent determined by the price offered in the wholesale market and by the proportions of total transit accounted for by the different types. Although they are not regulated services, transit services represent a significant proportion of the total.

Therefore, the following analysis focuses mainly on fixed network access and termination services, which are those regulated by the CNMC as a result of the obligations established in the corresponding analyses of the wholesale origination and termination markets.

In 2018, revenue from wholesale fixed interconnection services stood at €898.6 million, 7.5% less than in the previous year, and traffic decreased by 3.5%.



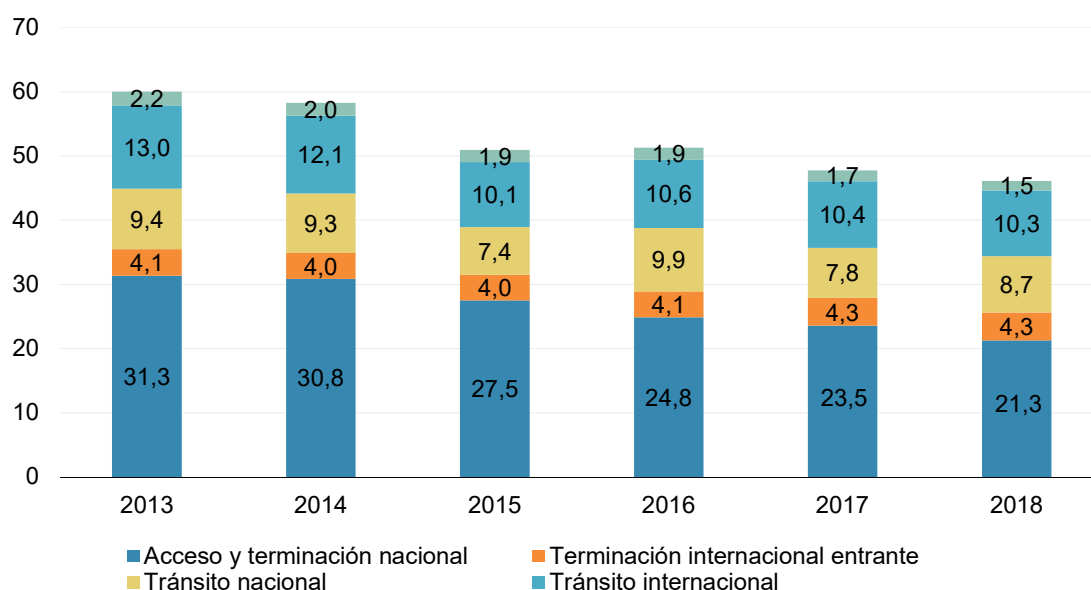
Revenue from interconnection services (€ million)



Source: CNMC

The revenue corresponding to the fixed access and national call termination services - the only interconnection services still regulated - continued falling to €20.5 million in 2018, in line with the recorded fall in traffic. The proportion of total fixed interconnection service revenue accounted for by these services has varied between 2% and 3% over the past four years, compared to the 10% it represented in 2014. In the year 2015, the year when the new termination price came into force and also when the capacity-based interconnection option disappeared, revenue fell by almost 80%, and since then termination revenue has varied in proportion to traffic volume.

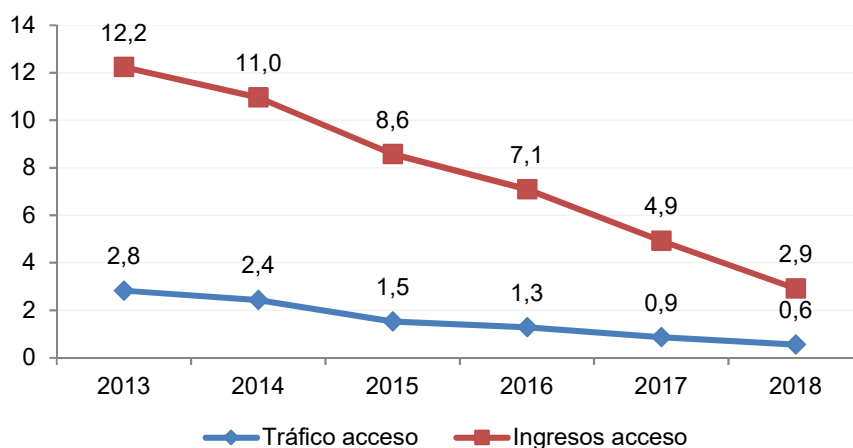
Traffic by interconnection service (billions of minutes)



Source: CNMC

As seen in previous years, the access service declined in terms of both revenue and traffic. Revenue stood at €2.9 million, 40.9% lower than in the previous year, and traffic fell by almost the same proportion, down to 0.56 million minutes. This wholesale traffic is directly related to demand for the indirect access service at a retail level. In 2018, the total number of indirect access customers decreased again (by 16.4%), and the traffic generated by these customers, fell by an even greater proportion.

Evolution of access revenue and traffic<sup>67</sup> (€ million and billions of minutes)

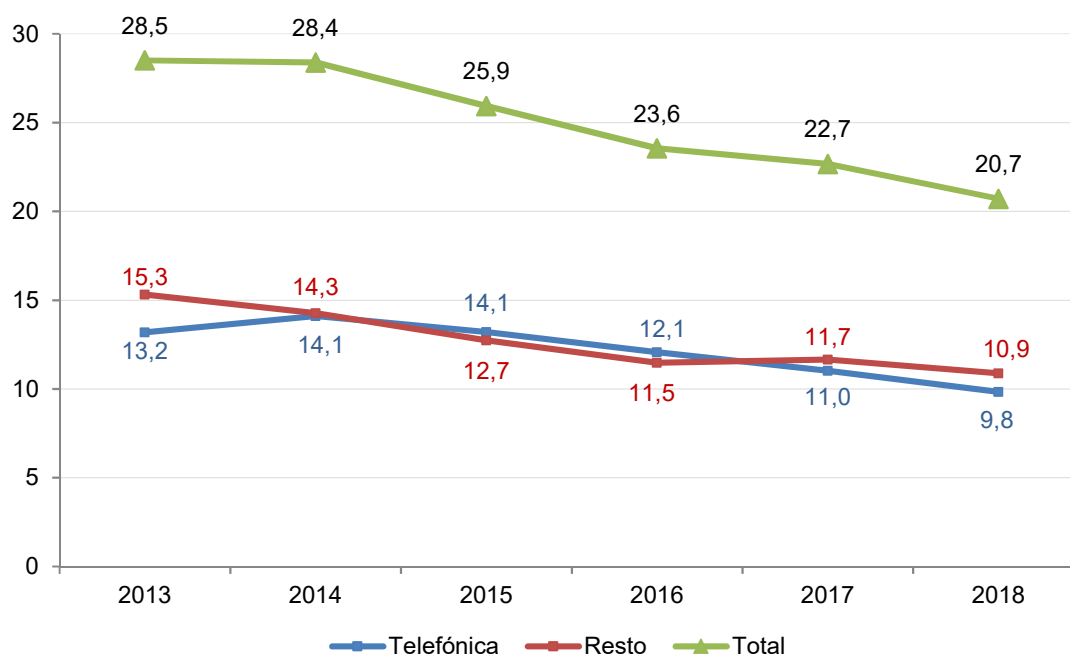


Source: CNMC

<sup>67</sup> Including voice and Internet.

The national wholesale call termination service registered a decrease in traffic of 8.6%, a very similar rate to its fall in revenue of 9.5%. This service is directly related to the retail traffic originating in the fixed or mobile network of one operator which terminates on the fixed network of another operator. The fall in termination minutes was caused, in part, by the significant decrease in retail traffic generated by fixed telephony customers to geographical numbers (16.2%), in addition to the 5.3% decrease in traffic to national fixed numbers originating in mobile networks.

Evolution of the national call termination minutes of Telefónica and the other fixed network operators (billions of minutes)



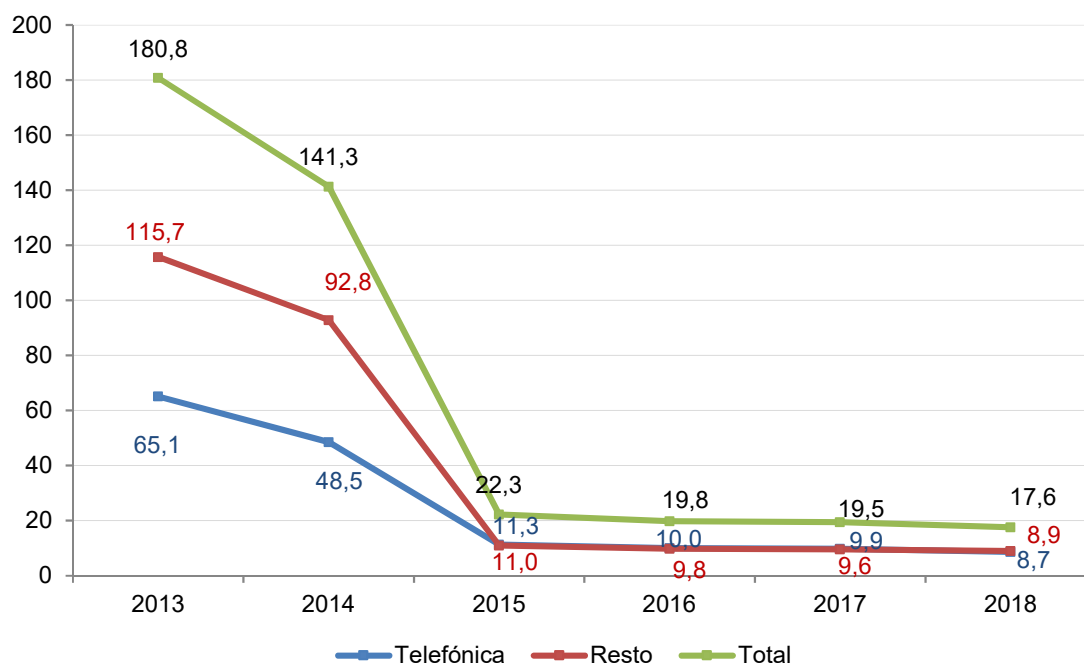
Source: CNMC

In 2018, the wholesale call termination traffic of Telefónica and the rest of the operators fell, although the reduction seen by alternative operators was lower. The traffic managed by each direct access operator is closely linked to its number of fixed telephone lines and to the evolution of retail traffic which terminates in a different network to the one where the call was originated, which can be mobile or fixed.

It must be taken into account that the concentration process that the sector has experienced in recent years may have affected wholesale termination traffic, as depending on the corporate structure resulting from the takeovers, operators that used to exchange traffic may have stopped doing so after the merger<sup>68</sup>.

<sup>68</sup> This statement is dependent on the decisions of the operators in terms of the resulting corporate structure following the various takeovers. Vodafone and Ono continue reporting their data separately, meaning that the effect of Vodafone acquiring Ono is not reflected in this section's data. This is also the case for Euskaltel, R and TeleCable. In contrast, since 2016 Orange has been reporting Jazztel's data integrated with its own.

Evolution of national call termination revenue for Telefónica and the other fixed network operators (€ million)



Source: CNMC

### Average revenue

Following the Termination Rates Recommendation published by the EC<sup>69</sup> and the Common Position on termination rates produced by the ERG<sup>70</sup>, in the latest review of the fixed termination market, approved in October 2014, it was considered that, given the long period of time since the liberalisation of the sector, there was no excuse for preserving the price asymmetry in favour of alternative operators and that, furthermore, this could harm competition and consumer welfare. Therefore, the fixed termination market saw the removal of the asymmetry that had existed until November 2014 for alternative operators, and the termination rate was set at 0.0817 cents per minute.

Another key change was the disappearance of the capacity-based interconnection service. Until November 2014, there were two interconnection billing options: by time and by capacity. In the time option, traffic is charged by the minute whereas in the capacity option it is charged

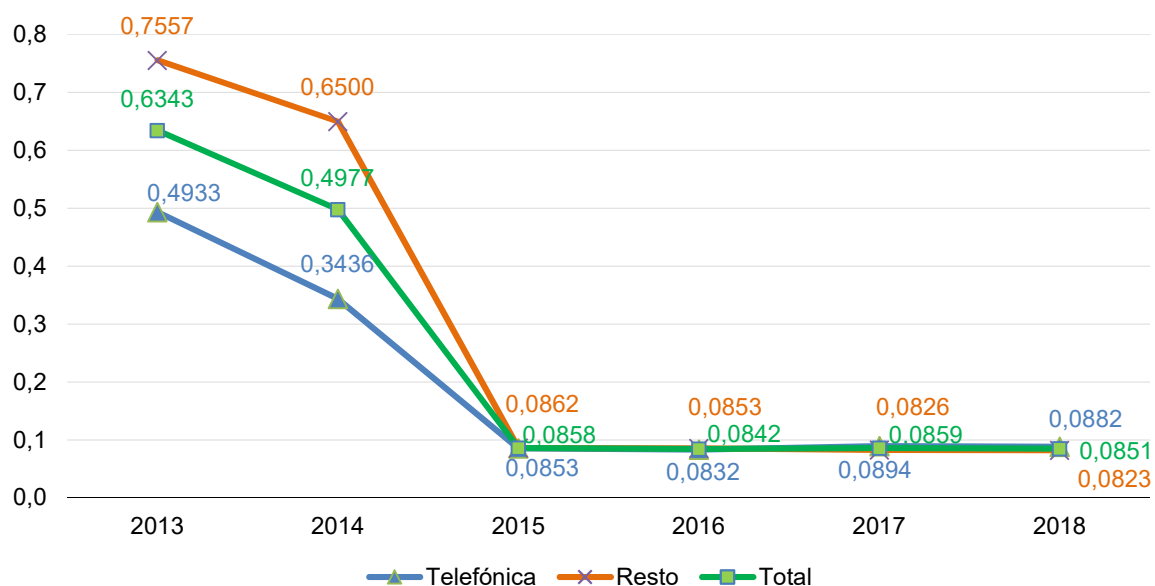
<sup>69</sup> In May 2009, the European Commission published a specific recommendation on cost orientation in termination prices for both fixed networks and mobile networks (2009/396/EU), where it established that the cost criterion to be used is that of avoidable costs and, to that end, the long run incremental cost (LRIC) of providing the service is established.

<sup>70</sup> In February 2008 the ERG adopted a common position on termination rate symmetry, in which it called for symmetry in fixed network rates, arguing that asymmetry for an excessive amount of time can lead to inefficiencies and adversely affect competition and consumer welfare.

by the capacity of the link contracted, regardless of the volume of minutes passing through this. Therefore, with this option the average revenue per minute varies depending on the degree of effective occupation of the links. Telefónica was the only operator obliged to offer its termination service under both billing options. In November 2014, after the analysis of the fixed termination market, the capacity-based interconnection termination service disappeared.

The new regulated termination price is set as a maximum price, symmetrically for all operators and with the obligation of only billing for consumed traffic, without time period differences. In TDM interconnection, operators interconnected in exchanges associated with the 21 nodal areas of Telefónica's current network structure enjoy this price (0.0817 cents per minute), as do those interconnected at the lower levels in these areas. In any other case, they must negotiate with Telefónica on the transit conditions to reach the numbering outside the scope of the nodal areas where they are present. In IP interconnection, on only needing one point of interconnection, the termination price in any geographical destination across Telefónica's network is the regulated rate, without the need for transit.

Average revenue for national call termination for Telefónica and other operators (euro cents/minute)



Source: CNMC

Ultimately, the average consolidated revenue from call termination on fixed networks in 2018 was 0.0851 cents per minute<sup>71</sup>.

In terms of the access interconnection service, Telefónica was also obliged to offer capacity-based interconnection. As occurred with termination in fixed networks, the latest market analysis 2/2007 removed the obligation on Telefónica to provide capacity-based

<sup>71</sup> This price is slightly higher than the regulated price of 0.0817 cents/minute. To obtain this price, alternative operators must connect to Telefónica's 21 nodal areas through TDM interconnection. If they are not connected to all of these, Telefónica can charge double transit termination for that traffic at commercial prices.

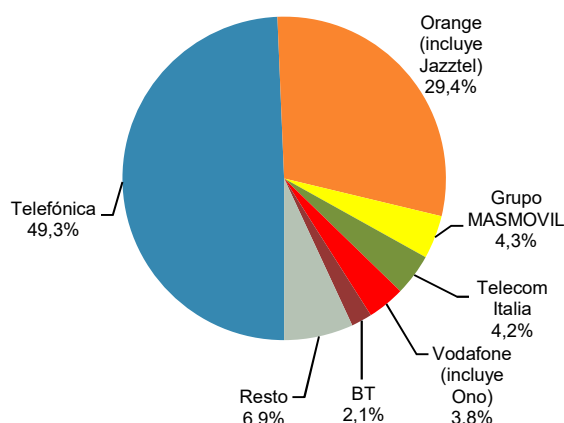
interconnection. However, this obligation remained temporarily until the approval of the new TDM-RIO, which took place in December 2018. The access service was included in the IP-RIO, and a three-year glide price path was established, the same for both RIOs.

### Market shares

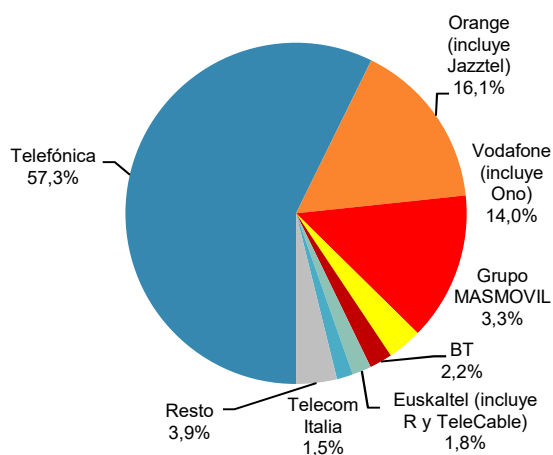
Telefónica had a 49.3% market share by revenue - including all interconnection services. The total distribution of revenue and traffic between the various operators fluctuates from one year to another, depending on which interconnection services each operator offers, and in particular, it is affected by the importance of the transit services and, more specifically, those whose destination is an international number. This, together with the price diversity of the various interconnection services, causes the differences between market share by revenue and traffic.

Market shares by total revenue and traffic for interconnection services in 2018 (percentage)

Revenue



Traffic



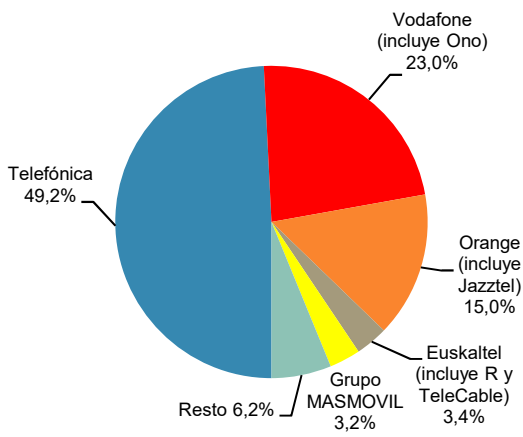
Source: CNMC

In contrast, when only analysing the national termination service, where the market is divided between the main direct access operators who operate on a national or local level, it can be seen that shares in terms of revenue and traffic are highly proportional to each another<sup>72</sup>.

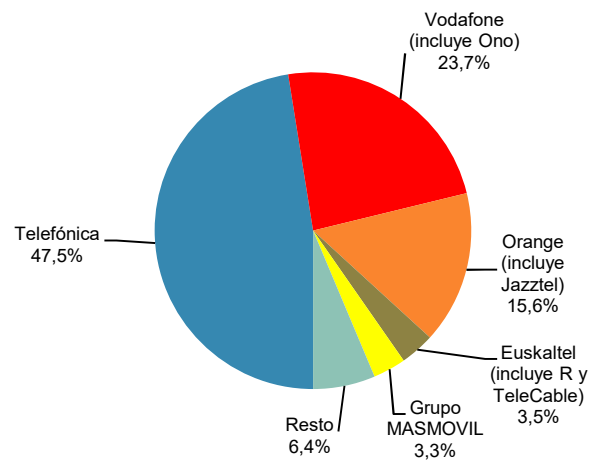
Market share by revenue and traffic for national call termination interconnection services in 2018 (percentage)

<sup>72</sup> In November 2014, the asymmetry in fixed network termination rates in favour of the alternative operators was removed.

Revenue



Traffic



Source: CNMC

### 3.2 Fixed broadband

In the year 2018, the ex-ante obligations imposed on Telefónica de España S.A.U (Telefónica) were in effect by virtue of the fixed broadband access market review that the CNMC approved in February 2016. It should be noted that, for the first time, the decision established different obligations depending on the competitive pressure that existed in each geographical area (geographical segmentation principle).

Specifically, market 3a, wholesale local access provided from a fixed location, is defined as the set of infrastructures that allow the operator to establish a transmission channel to the end user. Thus, the reference market includes the wholesale services of unbundling of the copper pair and unbundling (both physical and virtual) of fibre. In fact, one of the obligations imposed on Telefónica was to provide a new service for virtual unbundled access to Telefónica's FTTH network (called NEBA local<sup>73</sup>) except in certain towns where it is considered that there is competition between next generation networks. This new NEBA local service, which became operational in January 2018, has showed significant progress, as will be seen later on.

Last year, the alternative operators continued to access Telefónica's copper pair, albeit to a much lesser extent, in order to provide direct services to users through the wholesale regulated local loop unbundling service. With this access service, alternative operators have to connect their trunk network to Telefónica's exchanges and position their equipment in these to be able to unbundle the pairs of the subscribers connected to these exchanges (the local loop) and connect them to their network. Telefónica has three local loop unbundling services. Firstly, fully unbundled access: through this service, Telefónica transfers the use of copper pair to the operator in the entire frequency range. Secondly, shared unbundled access: Telefónica transfers the use of high pair frequencies to the operator – which are used for xDSL services – and reserves the use of low frequencies to continue offering the user the plain old telephone service (POTS). Lastly, the non-POTS shared access service, i.e. without telephone subscription to Telefónica, which is comparable to the fully unbundled loop in the sense that it is the alternative operator that provides all the services to the end user: xDSL and telephone over IP (VoIP) in the high frequency range.

In addition, Telefónica is obliged to provide alternative operators with access to their passive infrastructures (ducts, conduits, manholes, etc.). In recent years, this wholesale service has allowed alternative operators to deploy their FTTH networks with time and cost savings. Similarly, the technical and financial conditions, including cost-oriented prices, were established through the approval of the Reference Cabinet and Duct Offer (MARCo).

Furthermore, market 3b (wholesale central access provided in a fixed location for mass market products), which corresponds to the residential market for wholesale broadband access in a fixed location, differentiates between two sub-national markets, a competitive one and a non-competitive one.

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<sup>73</sup> The name NEBA local refers to a service for virtual access to the fibre network, similar to the services known as VULA (Virtual Unbundled Local Access) in other European countries. This new service is based on the existing NEBA service, and offers access at the local exchange level (Optical Distribution Frame, ODF) instead of at a provincial level.



In the area defined as non-competitive, it was established that there was insufficient rollout of proprietary infrastructures, both for traditional networks (based on unbundled access to the copper pair) and for new NGA networks (based on the rollout of proprietary fibre and/or cable networks). Therefore, it was deemed necessary to offer the operators a regulated wholesale indirect access service (and without speed limitations), on both FTTH lines and Telefónica's traditional access network over the copper pair. Among the wholesale indirect access services, Telefónica is obliged to offer the wholesale service of indirect broadband ethernet access (copper NEBA and fibre NEBA). The NEBA service in turn makes it possible to offer services with guaranteed quality so that they can provide telephony through VoIP or business services.

Similarly, despite the NEBA service having broad coverage on a national level, in the areas where there is still no service availability, Telefónica must continue providing the wholesale services called GigADSL (concentration service at the ATM level) and ADSL-IP (the latter at both the regional and national levels). However, due to the residual use of the GigADSL service, at the end of 2017, the CNMC approved a decision to authorise Telefónica to discontinue the provision of the regulated GigADSL service.

In the areas considered competitive, the CNMC established the removal of the obligations previously established by the decision of 22 January 2009, following a six-month period to allow operators to adapt to the new regulatory environment. However, until the new NEBA local (VULA) wholesale service was operational, Telefónica had to provide the NEBA service over FTTH in the lines in this area, except for the exchanges in towns with competition through NGA networks.

In terms of the new market 4 established in the Recommendation (wholesale high-quality access provided in a fixed location) corresponding to the business market for wholesale broadband in a fixed location, the CNMC imposed on Telefónica the obligation to offer a regulated wholesale indirect access service, without speed limitation, adapted to the specific needs of the business segment (NEBA business offer) across the entire country.

Finally, it is worth noting that in recent years, numerous commercial access and co-investment agreements have been signed between competitors. Here, it is worth noting that during 2018, Telefónica reached agreements with Orange, the MASMOVIL group and Digi by virtue of which it undertook to provide them with wholesale access services to its fibre network, in both regulated and non-regulated areas. That same year, Vodafone also signed an agreement with the MASMOVIL group. Therefore, this operator has access to the next generation networks of the three largest operators, as in 2016 it reached a commercial co-investment and access agreement with Orange, which has been updated in following years. More recently, in 2019, Orange and Vodafone signed an agreement to jointly expand the coverage of their fibre networks through infrastructure sharing and the bilateral provision of wholesale access services.

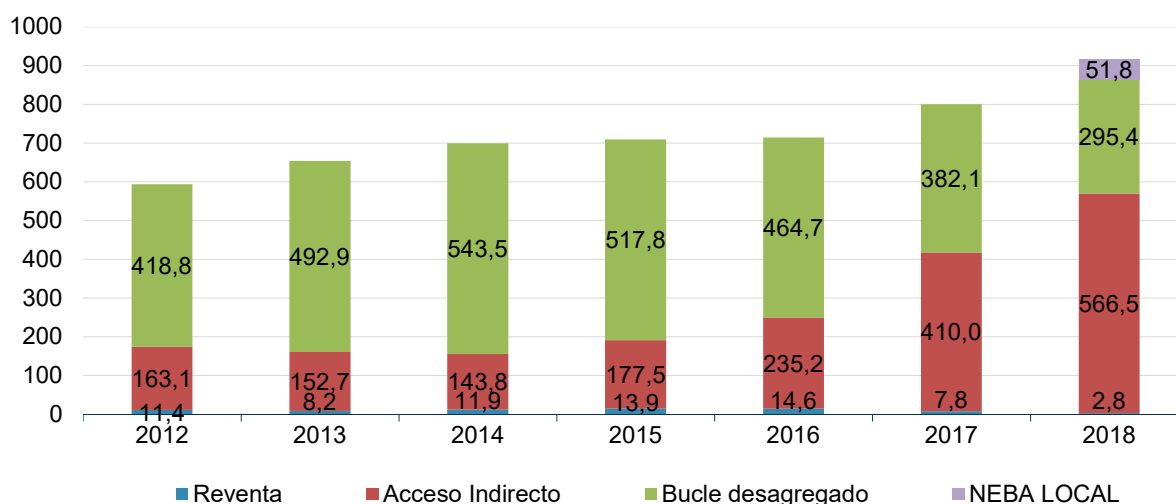
## Revenue

In the year 2018, total revenue from wholesale broadband services (local loop unbundling, VULA (NEBA local), broadband indirect access over copper and fibre) and resale, increased by 14.6% to stand at €916.5 million.

The local loop unbundling service, which ceased being the wholesale service with the greatest volume of lines in 2018, saw its revenue decline again, a trend that began in 2015. This fall is explained by lower demand for this service from the alternative operators who are gradually accessing the retail market with their proprietary networks, specifically through FTTH and HFC networks, and by the use of other regulated wholesale services such as NEBA FTTH or the new NEBA local (VULA) service.

Specifically, revenue from the local loop unbundling service reached €295.4 million, 22.7% less than in the previous year. Furthermore, revenue from broadband indirect access services increased by 38.2%, up to €566.5 million, driven by the increase in the use of NEBA FTTH and the wholesale services provided by alternative operators, mainly Orange and, to a lesser extent, Vodafone. In contrast, revenue from the resale service<sup>74</sup> fell by 63.4%, to stand at less than three million. Lastly, it is worth noting the presence of the NEBA local service which became commercially available in early 2018 and ended the year with revenue of almost €52 million.

#### Revenue by wholesale broadband access service (€ million)

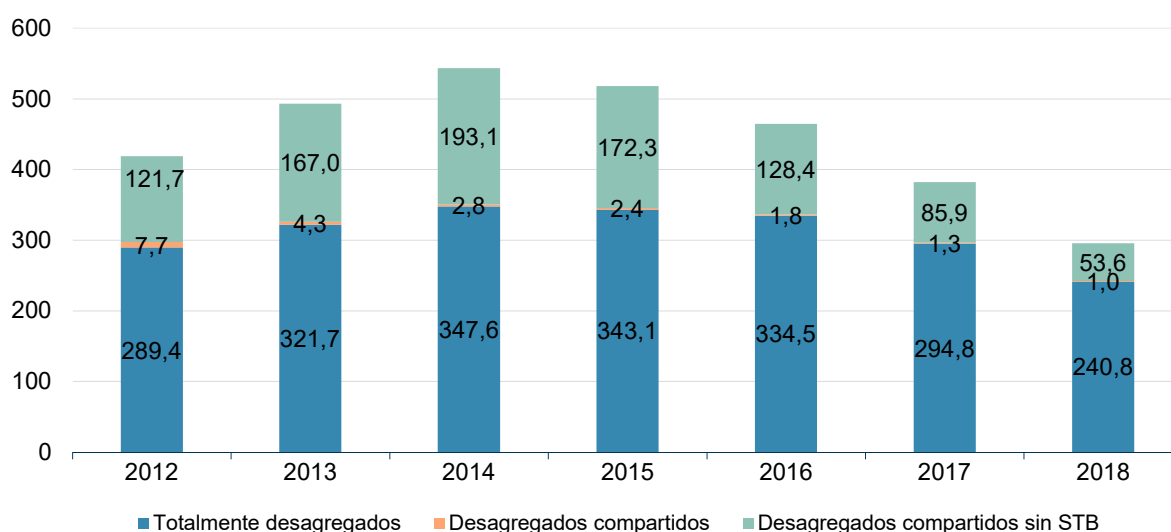


Source: CNMC

In relation to the different local loop unbundling services, revenue from the full local loop unbundling service (the wholesale access service with the greatest demand) stood at €240.8 million, which represented a fall of 18.3% in 2018 compared to the previous year. Meanwhile, revenue from the non-POTS shared loop service fell by 37.7% to €53.6 million. These services allow alternative xDSL operators to offer broadband and voice services while removing the connection between the customer and Telefónica. Orange and Vodafone are the main operators who make use of these options to offer their services to consumers. Finally, revenue from the shared loop service fell by 20.6%, down to €1 million.

#### Evolution of revenue from local loop unbundling by type of service (€ million)

<sup>74</sup> Resale revenue for the years 2014, 2015 and 2016 includes revenue derived from Vodafone's ADSL resale lines provided to Pepephone. In mid-2017, Vodafone ceased providing the resale service to Pepephone.



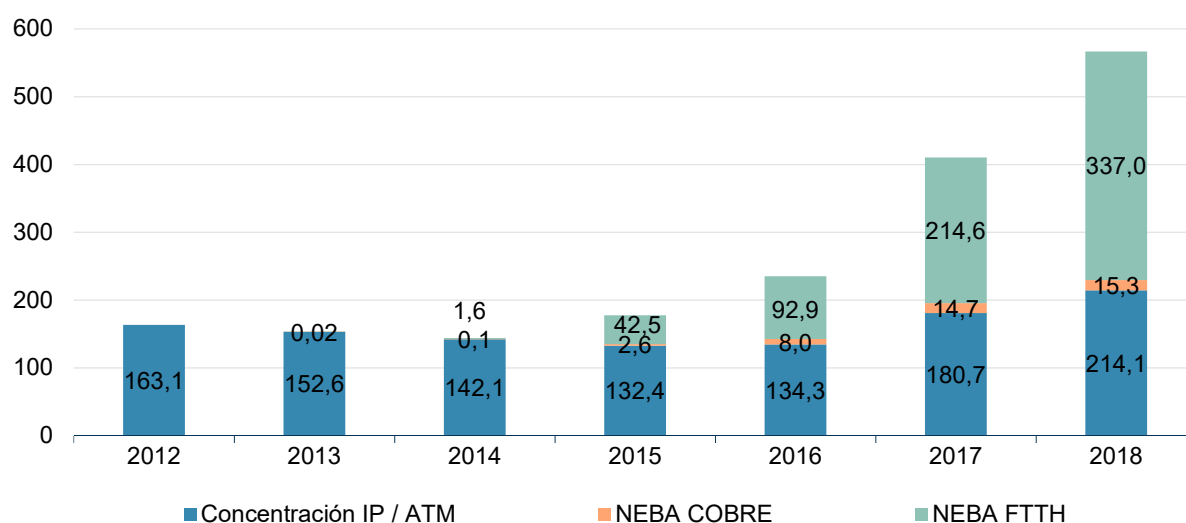
Source: CNMC

As regards indirect broadband access, the following graph shows the revenue breakdown for each of the various services. On the one hand, revenue from the IP and ATM concentration service increased by 18.5%, up to €214.1 million. This increase was driven by the wholesale services provided by alternative operators over their proprietary HFC or FTTH networks, and additionally over copper pairs.

On the other hand, the most significant progress was seen, once again, in revenue from the NEBA FTTH service provided by Telefónica, which stood at €337 million, 57.1% higher than in 2017. Operators made greater use of the NEBA fibre service in areas where they had not yet rolled out their proprietary networks, including areas where the NEBA local (VULA) service was still not available. Likewise, Telefónica and the main operators reached agreements to provide, among others, a NEBA fibre service under commercial conditions. This allows operators to offer higher quality services than are possible through the other indirect access options (GigADSL<sup>75</sup> and ADSL-IP) that Telefónica offers. Finally, revenue associated with the regulated NEBA over copper service increased slightly to €15.32 million, 4.1% more than in 2017.

Evolution of revenue from indirect access by service type (€ million)

<sup>75</sup> This wholesale ATM concentration service ceased to be offered towards the end of 2017 and is no longer used.



Source: CNMC

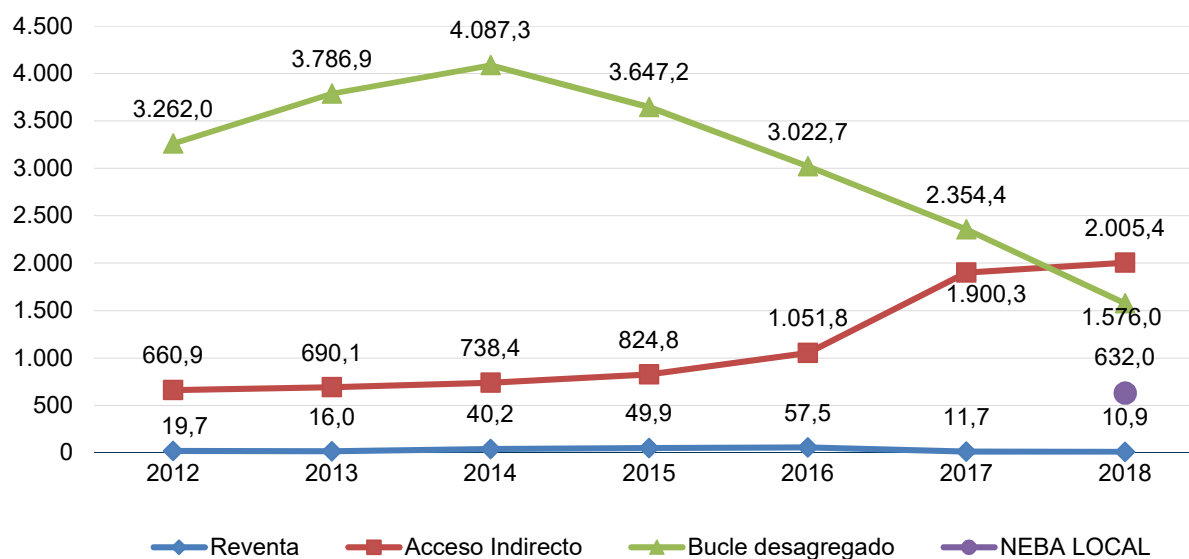
## Lines

The analysis of the number of wholesale lines shows that the local loop unbundling wholesale service followed the same trend as seen for its revenue, with a decrease in the volume of lines. It is worth recalling that the main alternative operators, such as Vodafone and Orange, use this service to offer broadband services. In recent years these operators have intensified the rollout of their FTTH networks, leading to a reduction in their demand for this regulated service. Meanwhile, the broadband indirect access service experienced a significant increase in the demand for lines, driven by the NEBA service provided by Telefónica (especially over the fibre network) under regulated and commercial conditions, and by the increase in wholesale access agreements between alternative operators (particularly the access agreements signed by Orange and the MASMOVIL group with Vodafone and Orange, respectively). Lastly, the new NEBA local service ended the year with great progress in its number of lines.

Specifically, unbundled loops fell by 778,000 lines (reduction of 33.1%) in the last year, down to 1.58 million loops. The total number of connections for the indirect access services exceeded two million, which represents an increase of 5.5%. Furthermore, resale lines<sup>76</sup> ended the year with 11,000 fewer lines. Lastly, the new NEBA local service ended the year with 632,000 lines.

### Evolution of wholesale broadband lines (thousands)

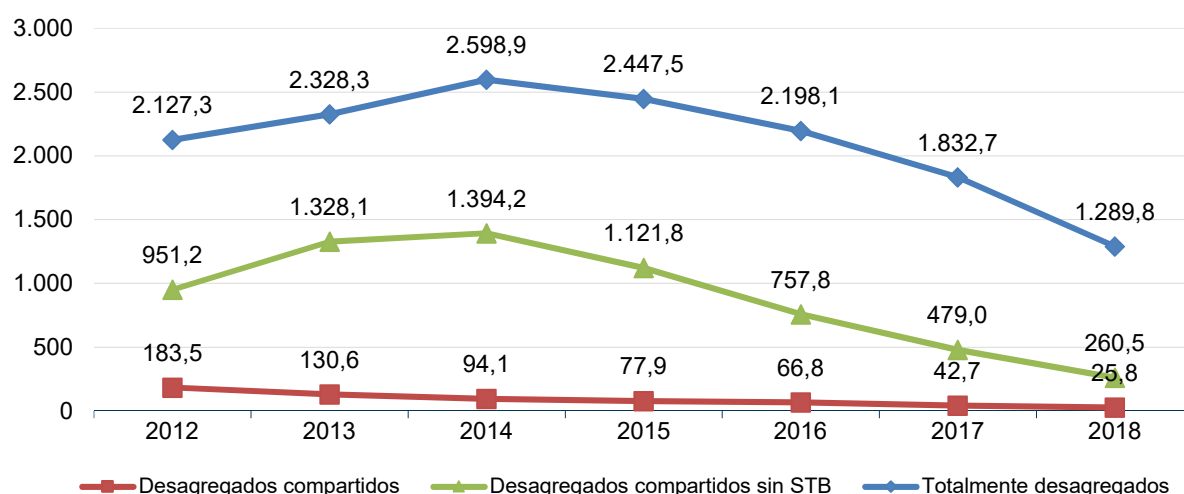
<sup>76</sup> Resale lines for the years 2014, 2015 and 2016 include Vodafone's resale ADSL lines provided to Pepephone. In mid-2017, Vodafone ceased providing the resale service to Pepephone.



Source: CNMC

The following graph shows the evolution of the volume of unbundled loops broken down by service type. The shared without POTS local loop wholesale service accounted for just over 260,000 loops (most for Orange), which represents a 45.6% decrease over the last year. Meanwhile, the fully unbundled loop service, which is the one used by Orange and Vodafone, fell to 1.29 million loops - 29.6% fewer than in the previous year. Finally, the number of shared unbundled loops fell by 39.7%, down to 25,757 lines.

Evolution of unbundled loops by service type (thousands)



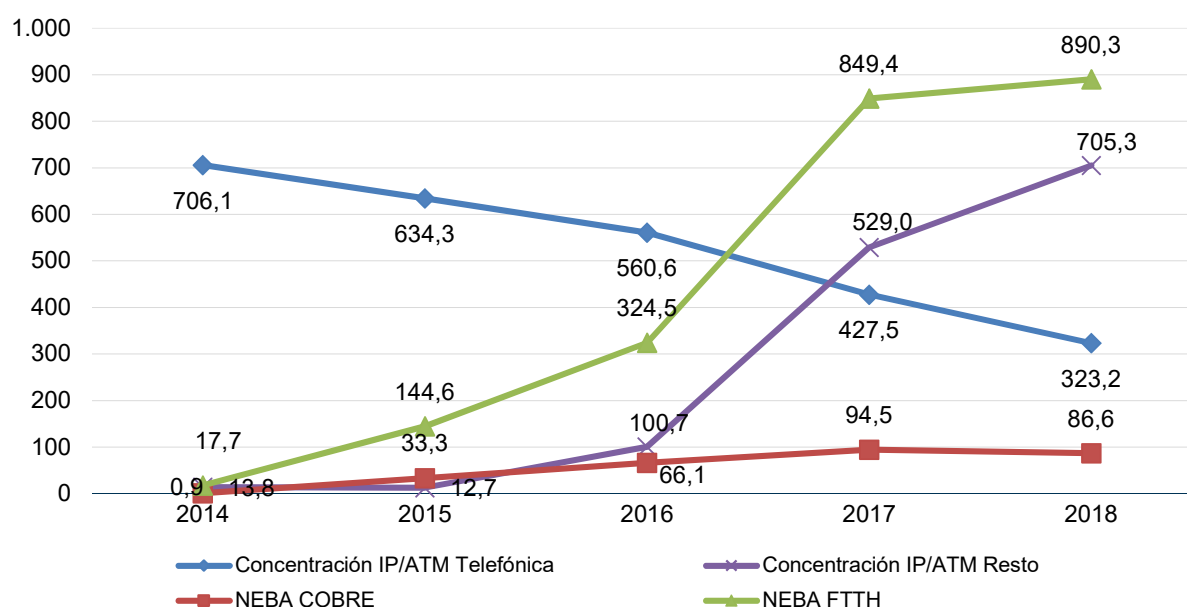
Source: CNMC

The following graph shows the evolution of the lines for the various indirect access services. The effective availability, since 2014, of the wholesale indirect broadband ethernet access service (NEBA fibre and copper) has led to the progressive migration of lines from Telefónica's

ATM/IP concentration service, sold under the names GigADSL and ADSL-IP, to the new service, as can be seen in the graph. Similarly, demand for this service from alternative operators has increased in areas where they do not have coverage with their proprietary networks. Specifically, last year, Telefónica's GigADSL and ADSL-IP lines taken as a whole fell by 24.4%, down to 323,000 lines. In contrast, the NEBA FTTH and copper service reached almost 977,000 lines, 3.5% more than in the previous year.

Furthermore, in recent years alternative operators have significantly increased the volume of wholesale ATM/IP concentration lines offered through their proprietary HFC or FTTH networks and over copper pairs. This way, in late 2018, the alternative operators, mainly Orange and Vodafone, accounted for more than 700,000 indirect access lines, which represents a 33.3% increase in the last year.

Indirect access lines by service type (thousands)



Source: CNMC

### 3.3 Leased lines

The wholesale leased lines service is provided between operators to provide a certain point-to-point transmission capacity. Wholesale leased lines are divided into two categories: terminal lines – which extend to the end customer's premises to connect them to the operator's networks – and trunk circuits – which connect two nodes in the operator's trunk network.

This section includes the aggregated data corresponding to both line types (trunk and terminal), but also those used to connect ULL (unbundled local loop) rooms.<sup>77</sup> Therefore, it includes the lines provided by Telefónica de España S.A.U.<sup>78</sup> (Telefónica) under conditions regulated in the Leased Line Reference Offer (most of the terminal lines and those for connection of ULL rooms) and under commercial terms (most of the trunk lines and those provided by Telefónica to Telefónica Móviles España S.A.U. to connect the latter's base stations).

#### Revenue

Revenue generated by the leasing of lines between operators was €696.1 million, practically unchanged from the amount recorded in the previous year - specifically, the increase was €0.1 million.

To report the data from this service, we have divided revenue into four categories: first, Telefónica's commercial offer; and second, the other circuits divided into low, medium and high<sup>79</sup> capacity (which corresponds to the same speeds as the classification made for retail).

Most of the revenue from these services came from Telefónica's commercial offer, which accounted for €580.4 million, an amount very similar to that obtained in the previous year - a fall of €10.6 million, which represents a 1.8% year-on-year reduction. Although its proportion of the total has decreased over the last two years, it accounts for a very high proportion of total revenue for this service specifically for this year, accounting for 83.4%.

Lines classified as high capacity accounted for €64.7 million, recording an increase of €9.8 million, which translates into a 17.9% year-on-year increase. This line type has been growing since 2016, a trend which is reflected in the number of such lines.

Low and medium capacity lines accounted for €39.5 and €11.4 million respectively, which represents a slight increase compared to the previous year, of 0.7% and 5.8%.

If we look in more depth at this analysis and examine specific capacities - without including lines under Telefónica's commercial offer - the circuits that most increased their revenue were

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<sup>77</sup> Leased lines used for connecting ULL rooms allow Telefónica's exchanges to be connected to the alternative operators' network. They are one of the different signal delivery options included for ULL.

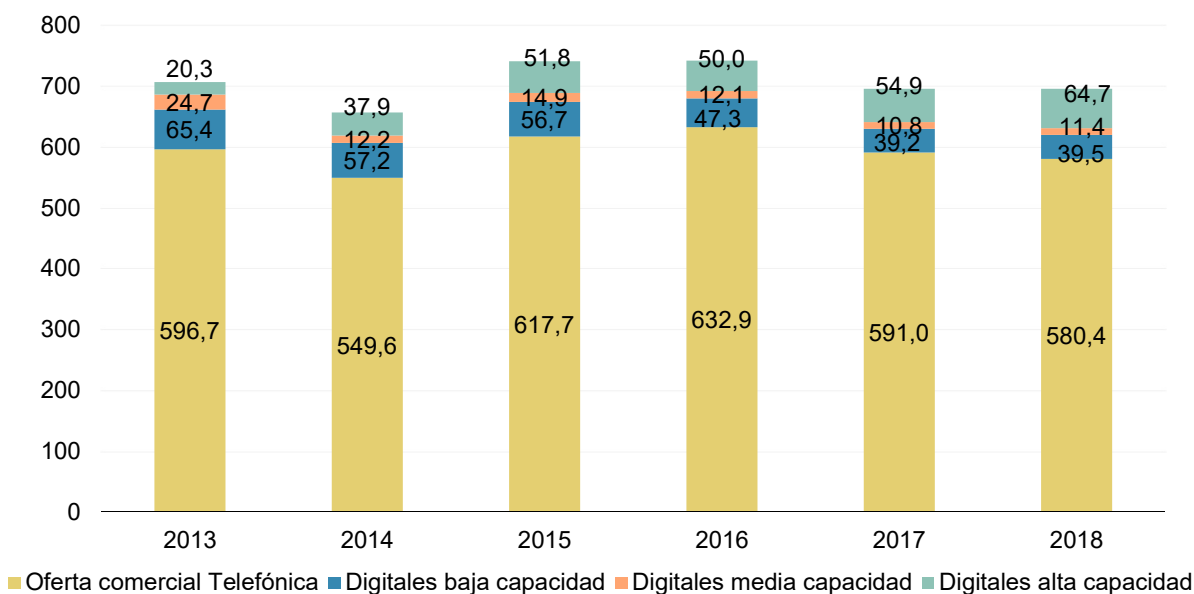
<sup>78</sup> Despite the fact that trade names are used to designate the operators in this report, in the case of the wholesale leased line services, Telefónica is used instead of Movistar, given that the terminal and trunk leased lines regulated under the Leased Line Reference Offer, arising from the obligations imposed on Telefónica de España S.A.U. in the corresponding market analyses, are included. Also, Telefónica's revenue includes revenue from Telefónica Móviles España S.A.U. for the provision of the wholesale services included in this section.

<sup>79</sup> Low capacity corresponds to transmission speeds of less than 34 Mbps, medium capacity to speeds of between 34 and 622 Mbps, and high capacity to speeds of over 622 Mbps.

the ones with the highest capacities - 10 Gbps with a 22.5% increase - and *Ethernet*-type circuits, with the increase achieved by *Gigabit Ethernet* circuits standing out in particular, increasing their revenue by 19.2%, translating into a net gain of €5.6 million.

As has been mentioned, the operators are constantly demanding greater capacities in accordance with the new needs of the end customers. This trend, coupled with the proliferation of *Ethernet*-type lines, resulted in this revenue being the one growing the most.

Revenue from lines leased to operators<sup>80</sup> (€ million)



Source: CNMC

## Number of lines

The number of lines stood at 279,972, 39.6% more than in the previous year, reaching a record high for this service.

<sup>80</sup> Revenue from other lines and other revenues are excluded.



The analysis of the number of lines by capacity - low, medium and high <sup>81</sup>- gives us the following results. As a whole, the largest proportion of lines was accounted for by low-capacity lines, with a total 231,022, which represents an increase of 50.8% compared to 2017. High capacity lines also increased in number compared to the previous year, growing by 9.8%. In contrast, medium capacity lines fell in number by 1,138, which represents a 10.1% drop.

As seen in 2017, the increase in low capacity lines was due to the purchase of 2 Mbps lines for voice channels.

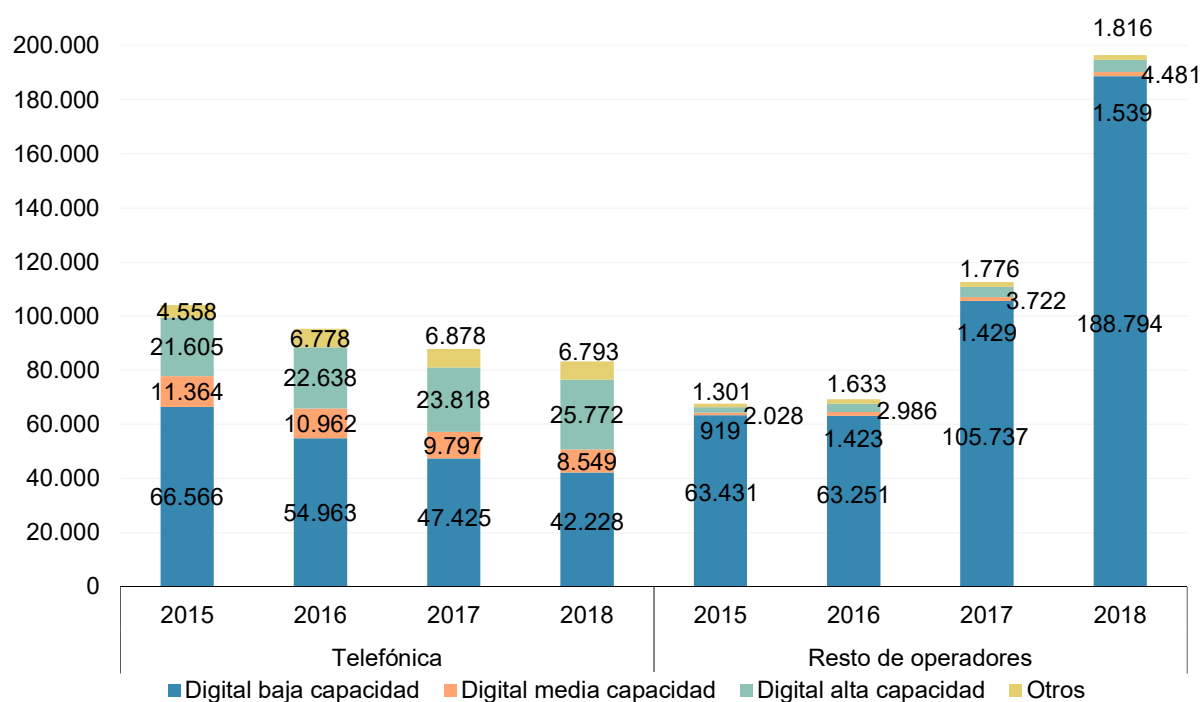
If we analyse the lines per operator, we see that while Telefónica de España was the leader in terms of revenue, this trend was not reflected in the number of leased lines. As we have mentioned, a large number of 2 Mbps lines are leased under specific conditions, which is why the figures on the number of lines do not reflect the total revenue obtained. A total 83,342 lines were leased from Telefónica de España - including carrying capacity lines and the rest-, a figure somewhat lower than that seen in 2017. High capacity lines leased from Telefónica were the only ones that saw an increase in number compared to the previous year to stand at 25,772, which represents an 8.2% increase. To be more precise, 1 Gbps and 10 Gbps lines were the ones that increased most in terms of those leased.

The number of lines leased from other operators was 196,630, which represents growth of 74.5% compared to the previous year. Based on the aforementioned capacity split, we can say that low capacity lines were the ones that registered the greatest increase in number, with growth of 78.9% compared to the previous year, to stand at 188,794 circuits which, as has been mentioned, is an exceptional situation as it is due to the leasing of 2 Mbps lines. High capacity lines also showed an increase in the number leased of 20.4%, and 10 Gbps circuits saw the greatest increase in demand for the third consecutive year. Medium capacity lines grew by 7.7% and the leasing of *FastEthernet* lines (100 Mbps) was responsible for this rise.

#### Number of lines leased to operators by capacity

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<sup>81</sup> Low capacity corresponds to transmission speeds of less than 34 Mbps, medium capacity to speeds of between 34 and 622 Mbps, and high capacity to speeds of over 622 Mbps.



Source: CNMC

## Market shares

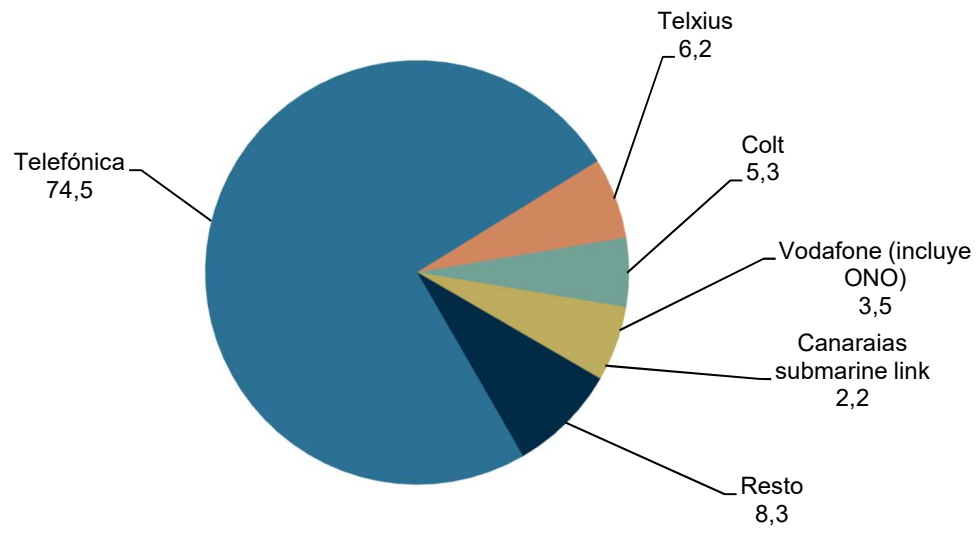
If we analyse market shares in terms of the total revenue obtained, we see that the ranking of the main operators in this service is unchanged from last year.

Telefónica, with carrying capacity revenue, was in first place with a market share of 74.5%, experiencing a slight decrease in its share of 0.1 percentage points and a decrease in its revenue of €14.8 million, a downward trend in total revenue that has been seen since 2016.

In second place was Telxius (majority-owned by the Telefónica group) with a market share of 6.2%, although it saw a reduction of €5.4 million, which represents a loss of 0.5 percentage points.

In third place was Colt with a market share of 5.3%, losing 0.2 percentage points of its market share and a total of €2.4 million.

Market shares by revenue from lines leased to operators (percentage)



Source: CNMC

### 3.4 Mobile communications

The wholesale mobile telephony market is comprised of various services aimed at allowing third-party operators access to a mobile communications network and interconnecting all networks, whether fixed or mobile. The most relevant interconnection services are as follows: national termination, i.e. the service which enables the completion of a mobile communication originating from a network other than the destination network; the international roaming service, used by customers of foreign operators who, although their operator does not have proprietary infrastructure in Spain, may continue using the mobile services via an external national network; the international termination service –which makes it possible to terminate calls originating from abroad on a Spanish mobile communications network–; and the service enabling access to mobile networks by third-party mobile operators without proprietary infrastructure.

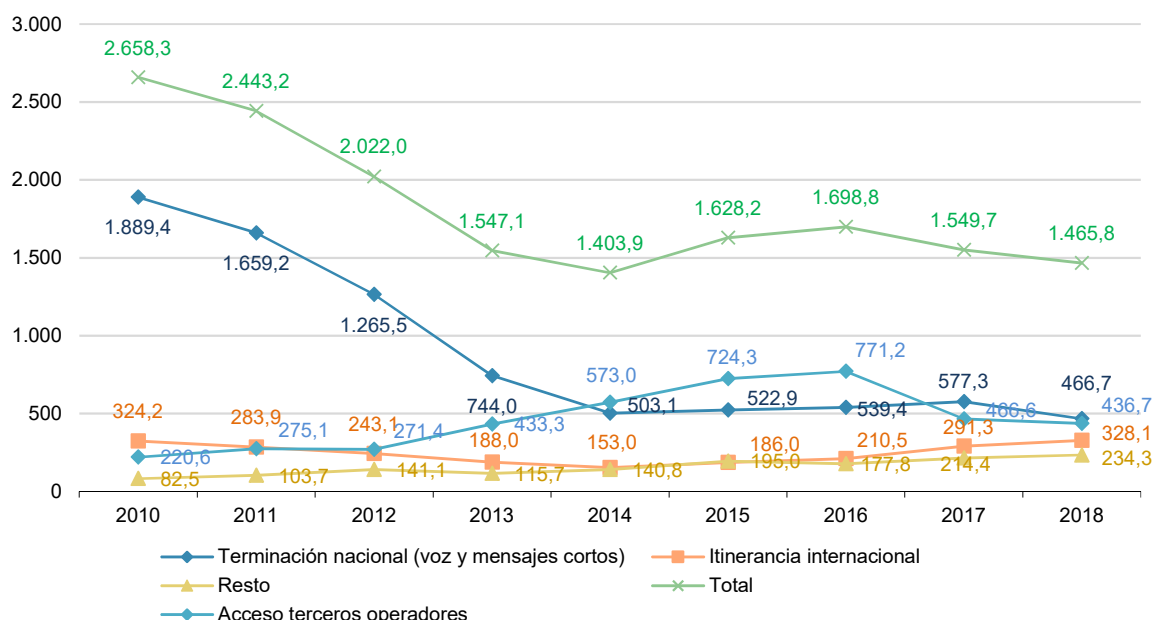
Revenue from these wholesale services fell by 5.4%, while total traffic increased by 11.9%, essentially due to the increase in traffic related to the national termination and access by third-party operators services.

#### Position of the sector

##### - Revenue

In 2018, total revenue from the wholesale market stood at €1,465.8 million, a figure which, as has been mentioned, represented a fall of 5.4% compared to the previous year.

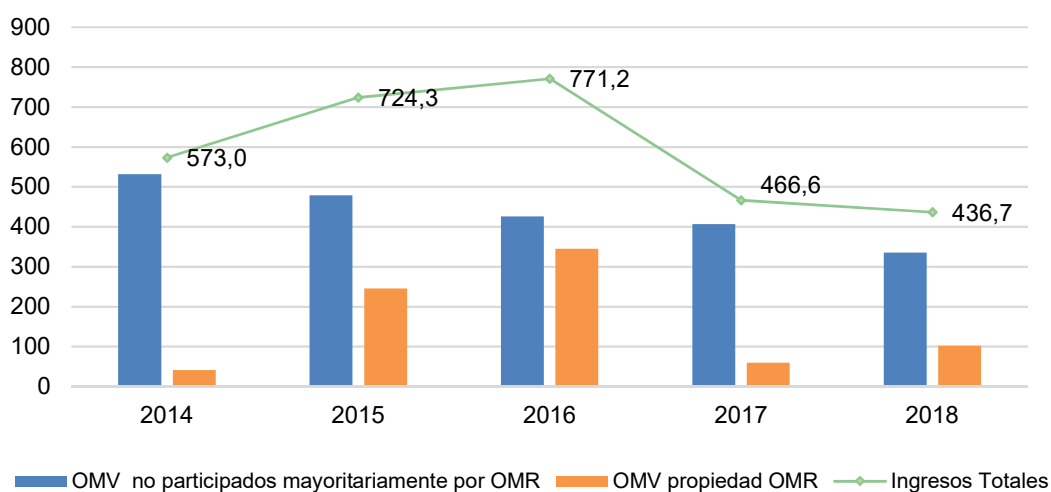
Evolution of wholesale revenue (€ million)



Source: CNMC

The service for access to mobile communications networks by third-party operators, mainly MVNO operators, recorded a fall in revenue of 6.4%, obtaining a total turnover of €436.7 million. However, to find an explanation for this fall, the turnover must be broken down on the basis of ownership of the MVNO to which the MNOs are providing the access service. When analysing the access service provided to MVNOs not majority-owned by network operators, it can be observed that revenue fell by 17.7% compared to the figure registered in the previous year. In contrast, the revenue related to access services provided by MNOs to the MVNOs they own increased significantly, by 70.3%:

#### Revenue from the access service for third-party operators (€ million)



Source: CNMC

Revenue from the national mobile call termination service registered a year-on-year decrease of 19.2%. The reason for this fall was mainly the decision approved by the CNMC in January 2018, whereby a new definition and analysis of the mobile call termination markets was approved. This decision established that the price for this service should fall from 1.09 euro cents per minute to 0.70 as of 1 February 2018. This same decision also set the termination price for 2019 and 2020 at 0.67 and 0.64 euro cents respectively.

The international roaming service recorded an increase in revenue of 12.7%. The significant increase in turnover was mainly related to data roaming traffic.

Meanwhile, the access obligation imposed by the former CMT in 2006<sup>82</sup> led to the appearance and growth of numerous MVNOs in the mobile telephony market. In 2018, the Spanish market had 27 active MVNOs<sup>83</sup>, which accounted for a market share of 9.1% of the total number of

<sup>82</sup> In relation to this, on 4 April 2017, the CNMC approved the second review of market 15, where it noted that there was no longer joint significant market power and, as a result of the analysis conducted, withdrew the access obligations within a 6-month period.

<sup>83</sup> To estimate the market shares of the MVNOs as a whole, the data corresponding to the operators Lowi, Simyo, Pepephone and Lebara have been excluded, as they are operators owned by Vodafone, Orange and MASMOVIL respectively. The revenue figures for these four operators have therefore been excluded when calculating the market shares of the MVNOs. In contrast, operators

mobile lines. The following table shows the map of active MVNOs in the Spanish market, distributed according to the operator that provides them with access to the mobile network. Likewise, the four MVNOs majority-owned by network mobile operators (Lowi, Simyo, Pepephone, Lebara and República Móvil) are also indicated.

<b>DISTRIBUTION OF VIRTUAL MOBILE OPERATORS ACCORDING TO THE HOST OPERATOR</b>			
<b>Movistar</b>	<b>Vodafone</b>	<b>Orange</b>	<b>MASMOVIL</b>
<b>Complete MVNOs</b>			
Digi Mobil	Lowi	Simyo	
Lycamobile		Euskaltel	
TeleCable		SUMA	
Aire Networks		Truphone	
Zinnia (Lobster)		R	
		Altecom	
<b>Service-provider MVNOs<sup>84</sup></b>			
	Lebara	Día Móvil	Pepephone
	Hits Mobile	You Mobile	
		LCR Telecom	
		Procono	
		Voz Telecom	
		Ocean's	
		BT	
		Quattre	
		The Telecom	
		Boutique	
		Lemonvil	
		OpenCable	
		Sarenat	
		República Móvil	

such as Tuenti, ONO and Jazztel were entirely integrated within the corporate structure of their parent companies, disappearing as active MVNOs.

<sup>84</sup> In late 2017, Pepephone began a process for the migration of its mobile lines from the Movistar network to the MASMOVIL network.

The operators Hits and Lebara access the Vodafone network thanks to an agreement signed with the MVNO operator Vodafone Enabler, owned by the Vodafone group.

The operators Voz Telecom, Ocean's, BT, Quattre, The Telecom Boutique, Lemonvil, Bluephone, Grupalia Internet, Oniti, Quattre and Vozelia access the Orange network thanks to an agreement signed with the MVNO operator SUMA.

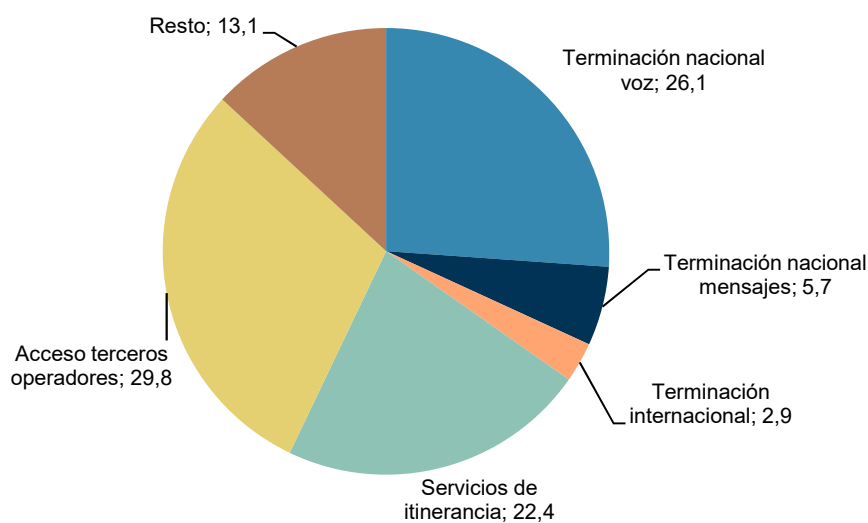
The operators Opencable and Sarenat access the Orange network thanks to an agreement signed with the operator Euskaltel.

	Oniti	
	Bluephone	
	Vozelia	
	Grupalia Internet	
<b>MVNOs majority-owned by MNOs</b>		
Lowi	Simyo	Pepephone
	República Móvil <sup>85</sup>	Lebara

Source: CNMC

Due to the aforementioned reasons, the national call termination service stopped accounting for the largest proportion of the wholesale mobile market, falling to a share of 26.1% of the total revenue billed in the market (in 2017 this figure was 33.1%). This decrease in revenue led to the access for third-party operators service once again becoming the service accounting for the highest proportion of the wholesale mobile market, with more than 29.8% of the total revenue.

Revenue by wholesale mobile service (percentage)



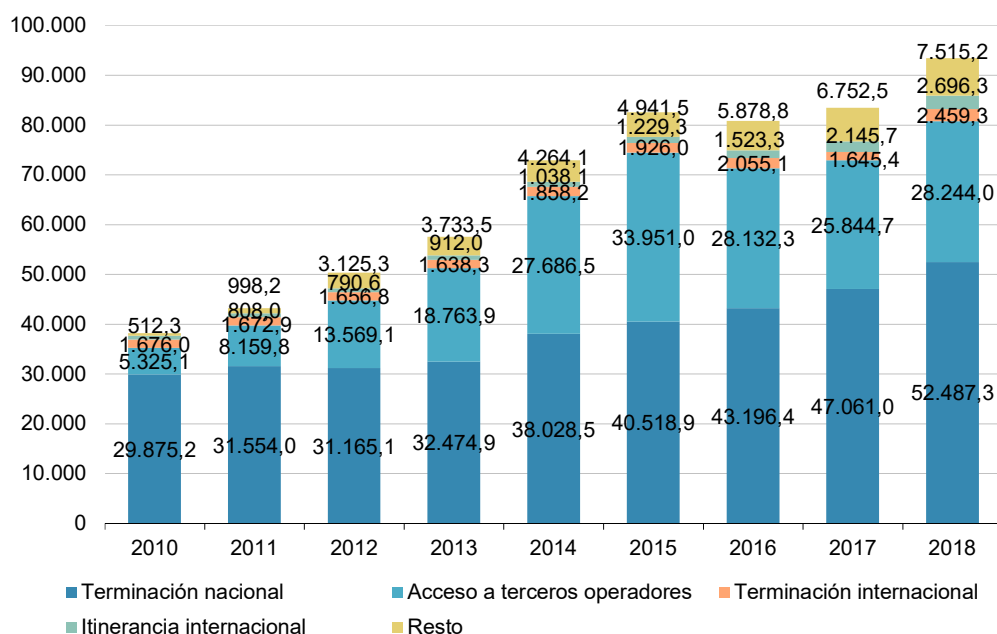
Source: CNMC

<sup>85</sup> Orange acquired the MVNO República Móvil in November 2018. Given the dates when this operation took place, the figures for República Móvil have not been integrated into the information on the Orange group, and instead have been declared in the category that includes the MVNOs as a whole.

- Traffic

The volume of traffic in the wholesale market, unlike the position seen in the revenue section, registered positive growth. Therefore, the total traffic generated in the market was 93,402 million minutes, which represents significant growth of 11.9% compared to 2017.

Distribution of wholesale service traffic (millions of minutes)

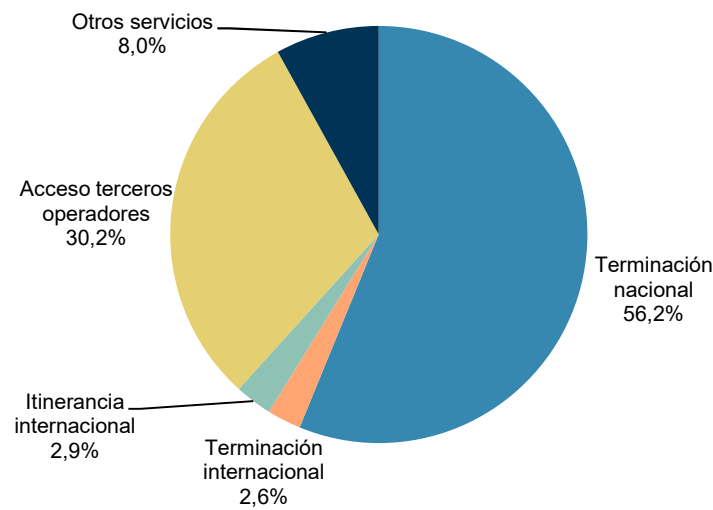


Source: CNMC

If total traffic is broken down according to the service provided, it can be seen that the national termination service accounted for the largest volume of traffic, with 56.2% of the total. In second place was the access by third-party operators service, with 30.2% of the total traffic for wholesale services, a figure which is 2.4% lower than that seen in the previous year. Meanwhile, the use of the international roaming service - in other words, customers of foreign operators who were able to enjoy mobile services through a national network - accounted for 2.9% of the total traffic from wholesale services, a figure which represented a 25.7% increase compared to the previous year. The fact that, since July 2017, international roaming services on an EU level have been treated as a national-level service has undoubtedly had a positive impact on the demand for these services.



Distribution of the volume of traffic by wholesale service (percentage)



Source: CNMC

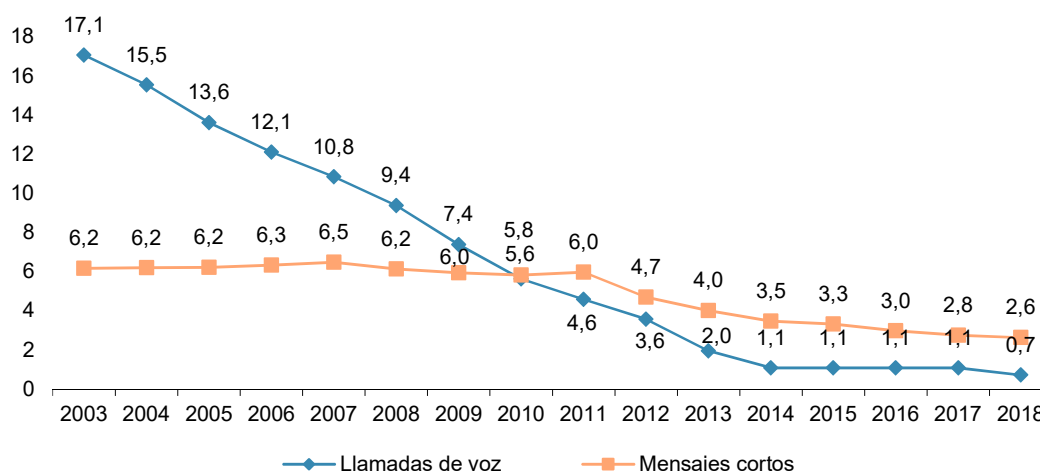
- Price evolution

This section, in keeping with that corresponding to the retail market, uses the average revenue per minute as an approximation of the prices of the different wholesale services being analysed.

It can be seen from the following graph that, in 2018, the average revenue obtained from terminating a call originating on another network fell to 0.7 cents a minute. Similarly, the termination price for a short message was 2.6 cents. In relation to the price of this unregulated service<sup>86</sup>, it is worth noting that it has fallen by 34.2% in the past six years.

<sup>86</sup> Despite not being a market regulated ex-ante by the CNMC - as national call termination is -, in October 2018, the CNMC settled a dispute on SMS termination prices involving Vodafone and Orange, establishing a termination price for SMS messages exchanged between Vodafone and Orange (CFT/DTSA/039/17/SMS TERMINATION PRICES).

Average revenue per minute from national termination (euro cents/minute and euro cents/message)



Source: CNMC

The prices applied by the different operators for the call termination service are considered essential for the appropriate development of the mobile telephony market, and this is why it is a service regulated by all European national regulatory authorities. In this sense, in January 2018, the CNMC approved the latest review of the market for call termination on individual mobile networks. In it, the operators with significant market power were identified and, as seen in previous analyses, the CNMC imposed a series of obligations on them. The main new development consisted of establishing new prices for the termination service, establishing an initial price of 0.70 cents for February 2018, which will progressively fall to 0.64 cents from January 2020. The 0.70 price represents a 36% reduction from the 1.09 cent price in effect until 1 February 2018.

Maximum price of the national call termination service (euro cents/minute)

	From 1/07/2013	From 01/02/2018	From 01/01/2019	From 01/01/2020
Termination price	1.09	0.70	0.67	0.64

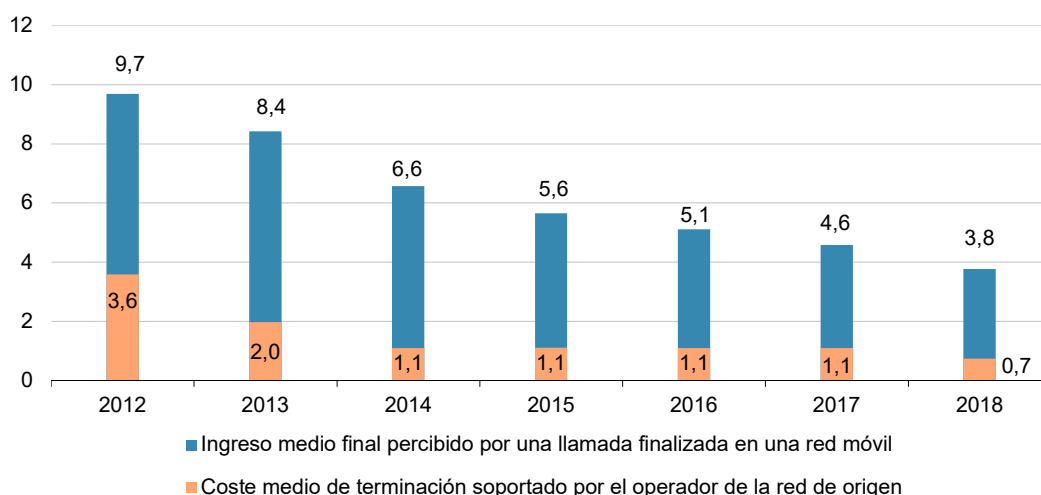
Source: CNMC

As regards the short message termination service, mobile telephone operators have modified their interconnection contracts to reduce the messaging service termination price, in an attempt to prevent the decline in this service in favour of the consumption of OTT instant messaging applications. It is worth noting that, despite this downward trend, the price for terminating a message on another network was noticeably higher than the price for a minute of conversation.

It is interesting to analyse average revenue from calls to mobile networks together with the termination price paid by the operator. The call termination cost - of 0.7 cents per minute - represented 19.4% of the average revenue obtained from a voice call terminated on a mobile network, whose average revenue per minute was 3.8 cents. Here, it is worth noting that in 2018, the retention margin has increased compared to that seen in the previous year. In other

words, the cost of termination paid by the operators for completing a call on an external network fell as a proportion of the final price that those operators charge their customers for this service.

#### Retention margin of a call to a mobile communications network (euro cents/minute)



Source: CNMC

As regards wholesale international roaming services, when provided between EU operators they are regulated by Regulation (EC) 531/2012 of the European Parliament and of the Council. Likewise, the Regulation approved in June 2017 (Regulation EU 920/2017) modified the previous Regulation to establish the prices that would be applied in the next few years between community operators in the wholesale international roaming markets. Logically, the provision of these services to non-EU mobile operators will not be affected by that regulation.

In short, a table is shown with the maximum prices that the various community Regulations have established for wholesale international roaming services on a European level.

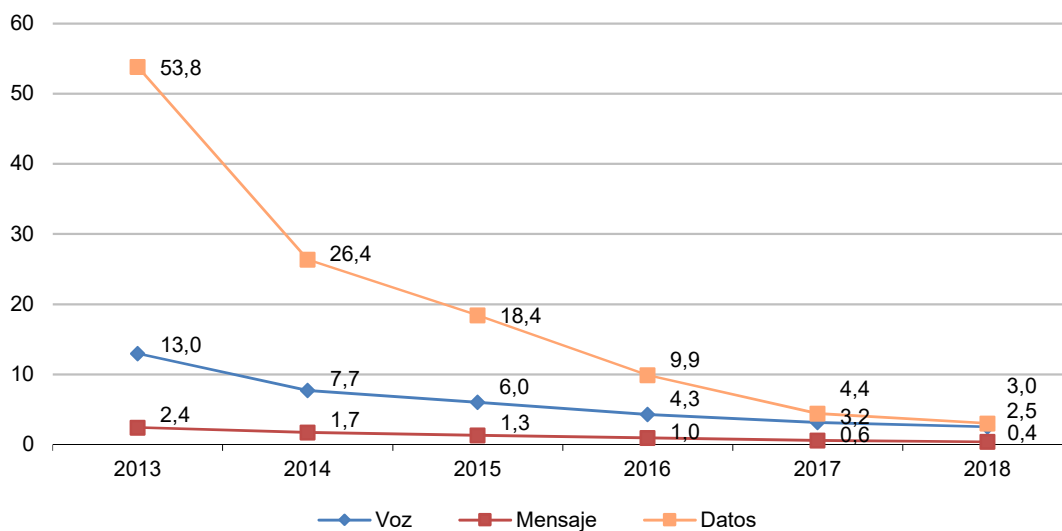
#### Maximum prices for wholesale international roaming services on a European level

	Jul 12 - Jun 13	Jul 13 - Jun 14	Jul 14 - Jun 17.	15 Jun 17 - Dec 17	Jan 18 - Dec 18	Jan 19 - Dec 19	Jan 20 - Dec 20	Jan 21 - Dec 21	Jan 22 - Jun 22
Voice call (€ cent/minute)	14	10	5	3.2	3.2	3.2	3.2	3.2	3.2
SMS messaging (€ cent/SMS)	3	2	2	1	1	1	1	1	1
Data (€/GB)	250	150	50	7.7	6	4.5	3.5	3	2.5

The following graph shows the effect that community regulation had on the total average revenue of roaming services. The average revenue per minute for calls fell by 20.1% compared to the previous year. With this decrease, the average revenue per minute in 2018 was 93.5% lower than that charged, on average, in 2008. The average revenue from the international roaming service for messaging saw a significant year-on-year decline - 32.1% -, ending at an average of 0.4 cents per message.

As regards the data service, its average revenue per MB fell by 31.7% in 2018, ending at €3 per GB of traffic consumed.

Average revenue from the international roaming service (euro cents/minute, euro cents/message, euro/GB)



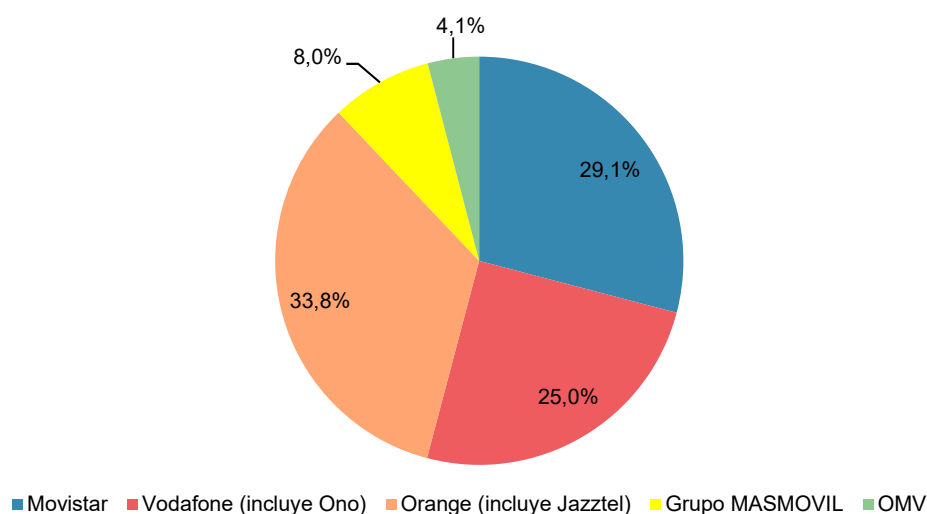
Source: CNMC

## - Market shares

In the wholesale market, the level of concentration of revenue is traditionally greater than in the retail market. This is due to some of the MVNOs not having proprietary infrastructures, and as a result their interconnection traffic is concentrated on the networks of the three larger operators who, in exchange, receive monetary compensation.

Consequently, Orange (33.8%), Movistar (29.1%) and Vodafone (25%) accounted for most of the market revenue. Orange is the operator with the highest revenue in this market, in part thanks to being the MNO with the highest number of contracts held with MVNOs for the provision of access services as the host operator. The MASMOVIL group accounted for 8.4% of total revenue generated in this market, and the full MVNOs, those that managed termination traffic of the calls received, obtained 4.1% of the total.

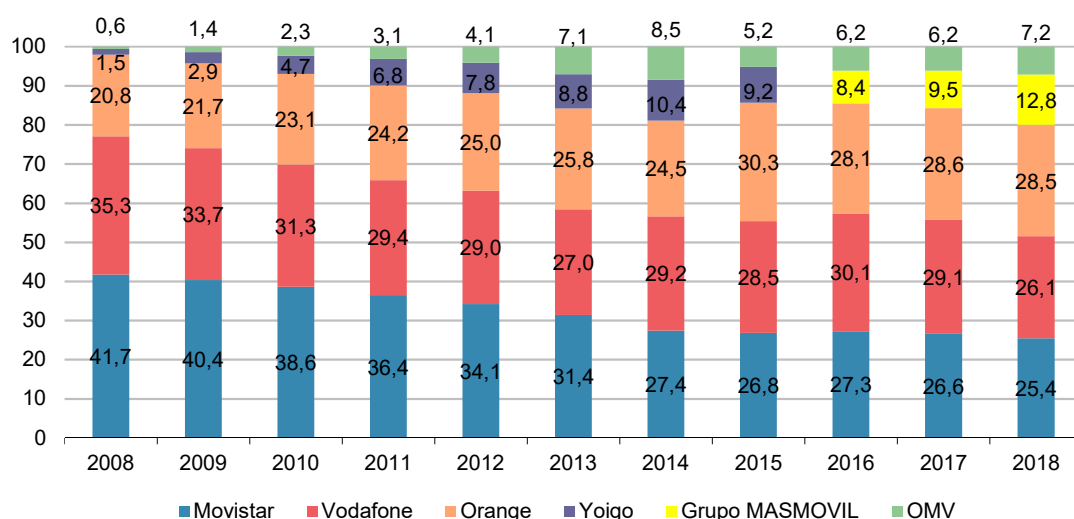
Market share in wholesale revenue (percentage)



Source: CNMC

Traffic from the national call termination service was also distributed among the various operators in a different way to that seen in terms of the number of mobile lines. Thus, the Orange group obtained 28.5% of the national termination traffic, followed by Vodafone with 26.1%. In this sense, it is worth noting that the Vodafone group included both the termination traffic managed by Vodafone itself and that recorded by Vodafone Enabler, owned by the British holding company. Meanwhile, Movistar, as the third largest operator in terms of national termination traffic, saw a slight reduction in its share over the same period. Lastly, the MASMOVIL group increased its national termination service share significantly.

Market share in national call termination traffic (percentage)



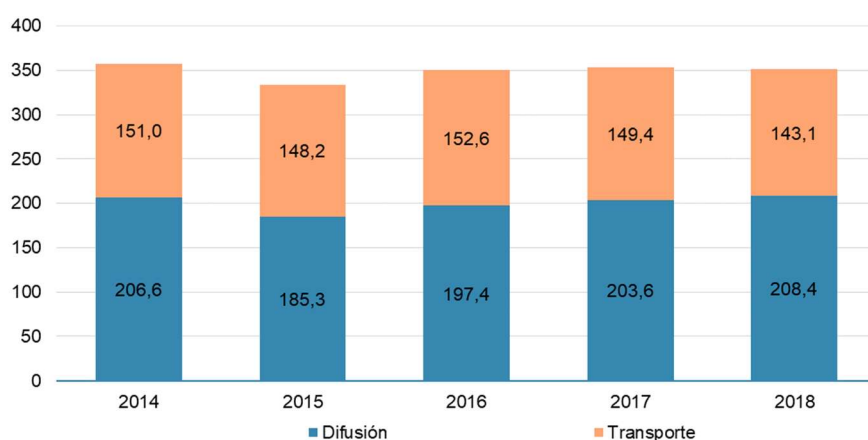
Source: CNMC

### 3.5 Audiovisual signal transport and broadcasting services

Audiovisual signal transport and broadcasting services are related to the telecommunications services necessary for audiovisual content signals to reach end users. This section includes the telecommunications services that allow the sending of audiovisual signals between two or more points on a network, using telecommunications signals as a means of distribution.

In the case of free-to-air television, DTT, the transportation and broadcasting of audiovisual signals make it possible for broadcasters (television channels) to make their contents available to the end audience (the viewers).

#### Revenue from broadcasting and transporting of the audiovisual signal services (€ million)



Source: CNMC

As it is a wholesale market its economic performance is strongly connected to what happens further down the market chain and, given that audiovisual communication licences are allocated for long periods of time, contracts between customers and operators are normally for a long duration. This encourages a relatively stable market in terms of the number of customers and turnover.

In 2018, total revenue was €351.4 million, experiencing a 0.4% decline compared to the previous year. Of the two activities included in this market, revenue from the broadcasting of audiovisual signals was the largest, with revenue of €208.4 million and year-on-year growth of 2.4%. Meanwhile, revenue from the transport of audiovisual signals fell by 4.2%, down to €143.1 million.

### Audiovisual signal transport

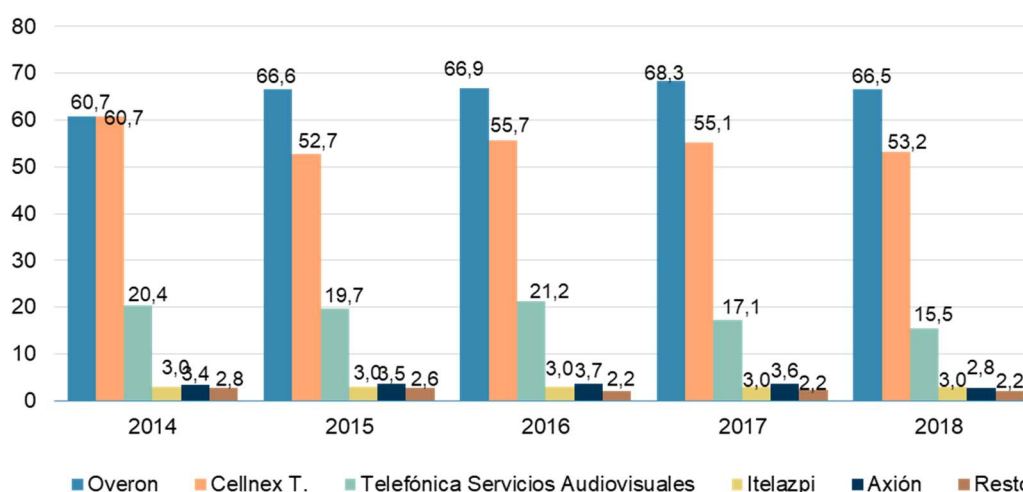
Transport services are those which consist in making the audiovisual signals of the production centres available to the headends and broadcasting centres. It is a point-to-point service that can be carried out using any type of telecommunications network, so any operator with a suitable telecommunications network can provide this service. Therefore, in the audiovisual signal transport market, there are no significant restrictions that prevent the entry of new operators.

### Transport revenue

In revenue, the provision of audiovisual signal transport services earned revenue of €143.1 million in 2018, falling by 4.2% compared to the turnover for 2017.

The two largest operators in the market, in terms of both revenue and number of customers, were Overon and Cellnex Telecom. The former obtained revenue of €66.5 million, 2.6% less than in 2017, and the latter obtained revenue of €53.2 million, a fall of 3.5%.

Revenue from audiovisual signal transport services by operator (€ million)



Source: CNMC

### Audiovisual signal broadcasting

Audiovisual signal broadcasting services enable the transmission of the signal from the broadcasting and re-broadcasting centres to the homes of the end users, who are the viewers in the case of television and the listeners in the case of radio broadcasting.

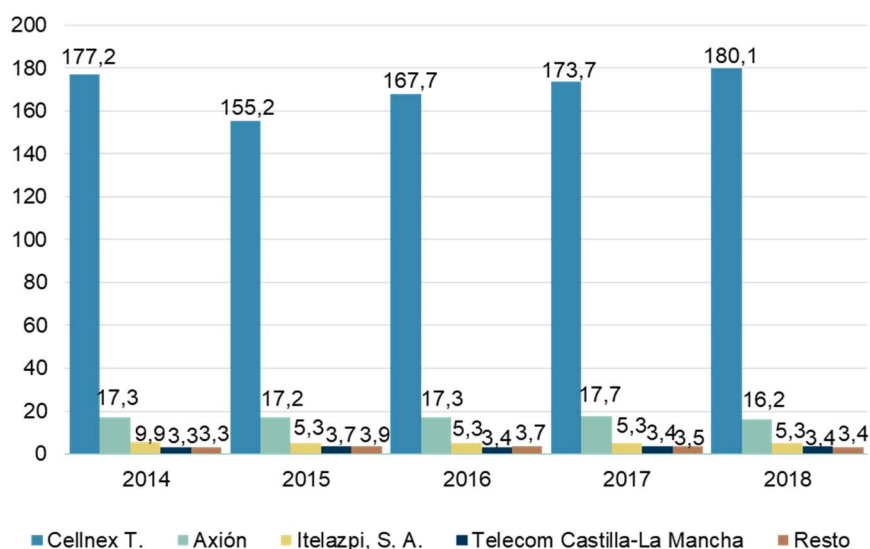
The broadcasting service can only be provided by a small number of operators specialising in this type of broadcasting since to carry out this activity they need a terrestrial network with the appropriate broadcasting facilities and infrastructures, which implies heavy investment. Due to these characteristics, the audiovisual signal broadcasting market is subject to ex ante regulation.

## Broadcast revenue

In figures, audiovisual signal broadcasting services recorded €208.4 million in revenue, experiencing growth of 2.4%.

The largest market operator was Cellnex Telecom<sup>87</sup>, which is the only operator with an infrastructure capable of offering coverage to the entire country. This operator recorded revenue of €180.1 million in 2018, 3.7% more than in 2017.

Revenue from audiovisual signal broadcasting services by operator (€ million)



Source: CNMC

Behind Cellnex are the other operators who operate on their respective regional and/or community levels. The largest of these is Axion, whose activity is focused mainly in the Autonomous Community of Andalusia, followed by Itelazpi in the Basque Country, Telecom Castilla La Mancha in Castile-La Mancha and Retegal in Galicia.

## 3.6 Audiovisual content

The audiovisual content market registered revenue obtained by the free-to-air television operators, pay television operators and themed pay channel producers, for the sale of their own productions, the sale of programming channels, the sale or transfer of content rights, and any other revenue from the wholesale commercialisation of audiovisual content.

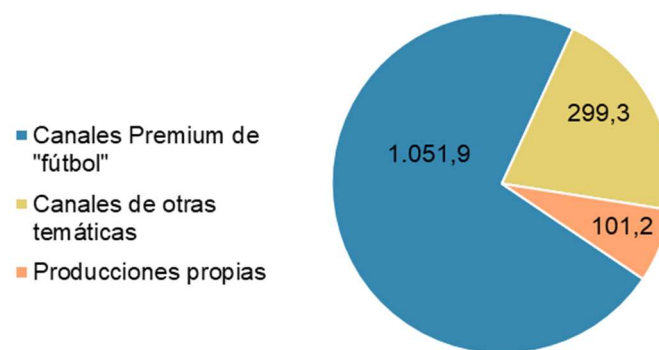
<sup>87</sup> The revenue for Cellnex Telecom, the former Abertis Telecom group, includes the revenue received by its subsidiaries Retevisión I, S.A.U. And Tradia Telecom, S.A.



In 2018, the buying and selling of audiovisual content between operators accounted for €3,464.4 million in revenue, of which €2,011.9 million must be deducted for intragroup transactions<sup>88</sup>.

Once this amount has been deducted, total revenue (corresponding to transactions between independent operators) stood at €1,452.4 million, which breaks down into €1,051.9 million from the wholesale marketing of football channels, €299.3 million from the marketing of pay television channels for other themes (series, films, other sports, etc.) and €101.2 million for the sale of their own productions.

Revenue from the sale of audiovisual content (€ million)



Source: CNMC

The broadcasting of the major football competitions is very attractive entertainment content. Operators usually use this content as the differentiating element when configuring their offers, due to the great interest it generates among audiences, which allows them to have a competitive advantage over their rivals.

<sup>88</sup> Payments made between companies belonging to the same group. These are mainly sales of content between DTS and Telefónica de España.