



EETT

HELLENIC TELECOMMUNICATIONS & POST COMMISSION

20
18

MARKET REVIEW
OF ELECTRONIC COMMUNICATIONS
& POSTAL SERVICES

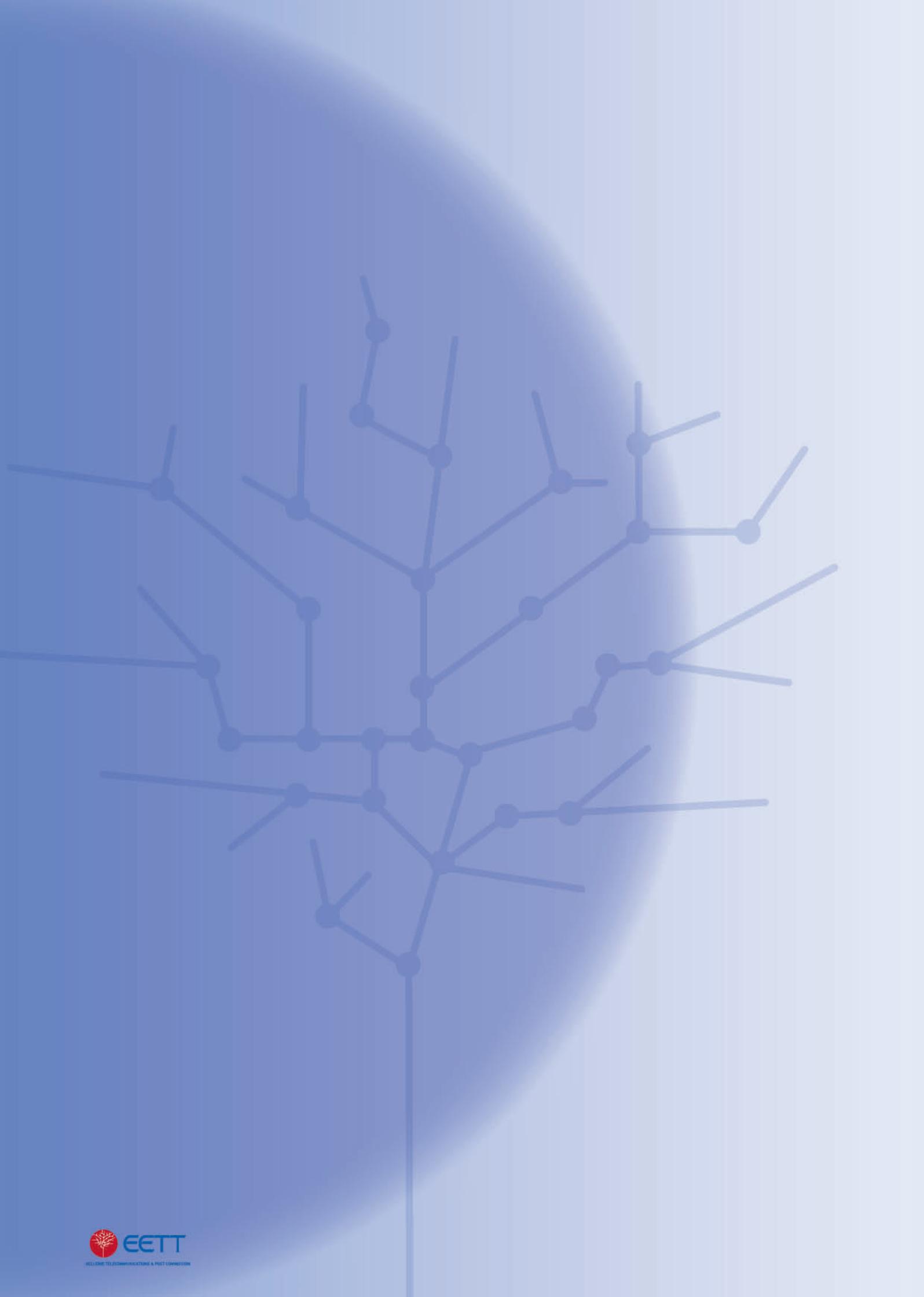


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Summary

(a) Electronic communications

In 2018, the key figures of the domestic telecommunications market ranged at lower levels compared to the previous year. Competition was particularly intense in bundled offers, driven by high-speed broadband access, mobile broadband and pay-TV services. The contribution of the industry's turnover to Greece's Gross Domestic Product (GDP) was 2.6% in 2018, slightly reduced compared to 2017, given that the GDP grew at an annual rate of 2.5% compared to an 1.8% decrease in the telecommunications sector.

Financial data

The industry's turnover decreased to 4.8 billion euros, with telecommunications services accounting for its largest segment (87.4%). Total investments of electronic communications providers declined by 23% compared to 2017. The investments made by the major providers, ranged approximately between 5% and 22% of their total revenues from electronic communications services. The focus of these investments was mainly the telecommunications infrastructure.

Fixed communications

In December 2018, the number of fixed telephony access lines amounted to 4,753,479, with the respective penetration in the population at 44.3%. The fixed telephony traffic registered a decrease by 8.6%, mainly due to the decline in the traffic of national fixed calls as well as of the international calls. OTE remains the leader provider with 55.8% share of the fixed telephony lines and a share in terms of traffic at a slightly higher level (46.3%) compared to the previous year. The fixed telephony lines of the rest of the providers decreased slightly by 0.7%.

Retail revenue from telephony and Internet services at a fixed location amounted to 1.41 billion euros, remaining at the same level as in 2017, with the relative share of OTE estimated at 61.5% for 2018. The revenue from Internet services continued to grow (7.5% increase compared to 2017), counterbalancing the ongoing decline of the retail fixed telephony revenue.

Mobile communications

In 2018, the number of mobile telephony connections amounted to 15.4 million registering

a decrease of 5% compared to 2017, while active connections declined by 5.9% amounting to approximately 12.2 million. As regards mobile providers' market shares in terms of total connections, the share of COSMOTE increased to 47.9%, whereas the shares of VODAFONE and WIND fell to 30.3% and 21.4% respectively. In terms of active connections, COSMOTE's share lies in the range of [45%-55%], followed by VODAFONE with a share in the range of [25%-35%].

The use of mobile communications networks was characterized by a slight increase in the domestic voice traffic, a significant decrease of 8.2% in the SMS volume and a remarkable increase of 51% in the volume of data services, which reached 148 billion MB. 57% of the volume of calls was made to mobile phones within the same mobile network (on-net). Finally, the retail revenues from mobile communications services (post-paid and pre-paid) increased by 1.6% amounting to 1.64 billion euros. The average annual revenue per post-paid and pre-paid user (connection) stood at 271 and 59 euros respectively.

Broadband

At the end of 2018, fixed broadband connections amounted to 3,964,402 registering an annual increase of 4.5%, with the fixed broadband penetration in the population (connections per 100 people) reaching 36.8%. In June 2018, Greece was ranked tenth among the EU member states in terms of this penetration, exceeding the corresponding European average (34.7%). Local Loop Unbundling (LLU) lines decreased marginally for the first time (-0.1%), reaching 2,113,491 at the end of the year versus 2,116,007 at the end of 2017. At the same time, VDSL lines amounted to 699,105 compared to 460,652 in December 2017 (annual increase 51.7%), accounting for 17.2% of all fixed broadband lines. Their penetration in the population is still low (6.3%).

In contrast to the penetration of fixed broadband, in June 2018 the penetration of mobile broadband (connections per 100 people) was 74.5%, with the corresponding figure in the EU reaching 96% and Greece being ranked among the last EU member states. However, the penetration in Greece increases faster than the average penetration in the EU, with the year-end penetration amounting to 79.5%.

Bundled offers

The penetration of bundled offers continued to increase in 2018, with their number exceeding 3.9 million at the end of the year and corresponding to 83% of the country's fixed telephony subscriptions. The most popular type of bundled offer remained that of fixed telephony and fixed broadband (approximately 2.38 million), followed by the triple play combination of fixed telephony, fixed broadband and mobile service(s) (1.06 million), the triple play of fixed telephony, fixed broadband and pay-TV (355 thousand) and finally, the 4-play (~81 thousand).

Price Observatory (Pricescope)

Based on the data submitted by the telecommunications providers to the Price Observatory (Pricescope), at the end of 2018 the majority of products concerned mobile communications (~55%). COSMOTE, WIND and CYTA focused mainly on add-on programs (63%, 57% and 72% respectively), while FORTHNET, VODAFONE and OTE laid emphasis on basic programs (88%, 58% and 59% respectively). The programs of COSMOTE, WIND and FORTHNET targeted mainly residential customers. VODAFONE's programs were almost evenly distributed between residential and business customers, while a large percentage of CYTA's programs was addressed to business customers. Most of the mobile post-paid telephony programs (~55%) concentrated at monthly fees up to 60 euros, with an average price of 35 euros (compared to 41 euros in 2017) and call-allowance time of around 460 minutes per month (compared to 550 minutes per month in 2017).

(b) Postal services

In 2018, the Greek postal market moved upwards in terms of revenues, while the volume of postal items fell for another year, due to the decline in letter mail.

Specifically, revenue grew by 2.8% compared to 2017, reaching 564.77 million euros, derived from the handling of 350.54 million items, 1.6% less than previous year.

In 2018, the Universal Service Provider's (USP) revenue share dropped to 33% from 36% in 2017, while the share of courier companies increased to 64% from 61% in the previous year. The share of companies with Individual License remained stable at 3%. The share of parcels-small packages grew in 2018 in terms of volume as well as revenue, reaching 13% and 48% respectively.

Domestic postal item delivery (90% of total volume) was the largest share of Greek postal market revenue (66%). It's worth noting that the majority of postal items was delivered from Attica (78%) and Macedonia (8%) to domestic and international destinations. Regarding international activities, the largest volume of postal items delivered in Greece from international destinations was from the European Union (EU) (48%) and Asia (39%), while the deliveries of postal items to international destinations were mainly sent to the EU (71%) and the USA-Canada (11%).

More specifically, in 2018, in terms of the Universal Service sector (US), besides the USP, ten companies with Individual License operated, which held 15% of volume and 9% of revenue of the US sector. Letters are undoubtedly the dominant postal item of the US sector, since they represent 89.9% of handled postal items, accounting for 85.3% of the sector's revenue.

In 2018, 63 new companies entered the courier services sector, thus increasing the total number of companies under General Authorization to 524. Letters constitute 43% of postal items handled by courier companies and parcels-small packages constitute 57%. Letters generated significantly less revenue (30%) than parcels-small packages (70%).

1. Electronic communications

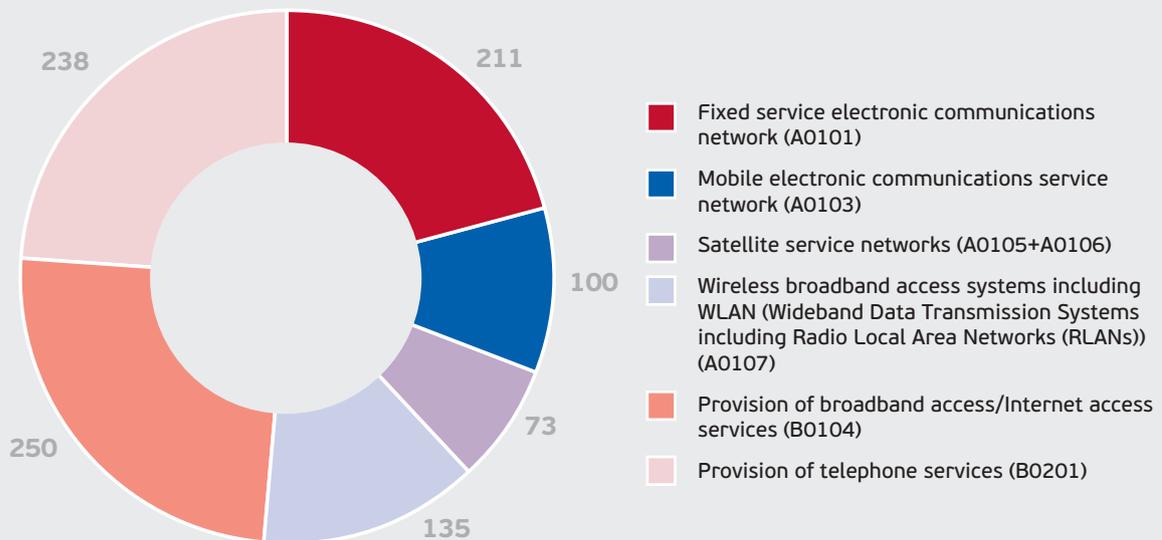
1.1. The Greek electronic communications market

By the end of 2018, the number of licensed providers (active or not) in the electronic communications market rose to 577 versus 541 at the end of 2017. Chart 1.1 shows the number of providers that were licensed for each service in 2018¹. 48.5% of the licensed services was related with the provision of broadband access/Internet access services and the provision of telephone services. The number of the mobile communications

providers and of the main providers of fixed telephony and fixed broadband services (i.e. of OTE and of the main alternative providers) remained at six², and more specifically, four in mobile and five in fixed communications (Table 1.1).

The sector's turnover was reduced to 4.8 billion euros, while its contribution to Greece's Gross Domestic Product (GDP) was 2.6% in 2018, displaying a decline compared to 2017, as GDP grew at an annual rate of 2.5% compared to the decrease by 1.8% in the telecommunications sector (Chart 1.2). It is noted that for the period 2008-2018, the weighted average GDP reduction is -2.4%, while for the telecommunications revenues it is -5.3%,

Chart 1.1: Licensed providers per service, 2018



Source: EETT (based on providers' statements in EETT's registry)

Table 1.1: Mobile providers and main providers of fixed telephony and fixed broadband services

Providers	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Mobile	3	3	3	3	3	3	4	4	4	4	4
Fixed	14	11	11	11	9	8	8	6	5	5	5

Source: EETT

1. It is noted that a provider can be licensed for more than one services.

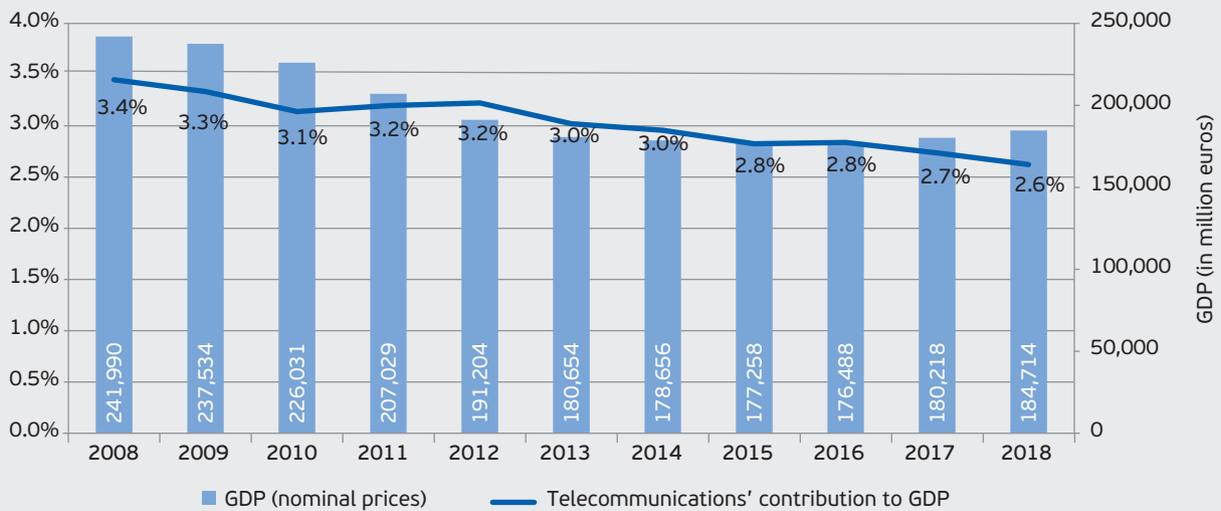
2. Since 2009, WIND (after acquiring TELLAS) operates in the fields of both fixed and mobile communications and consequently is listed under both categories. As of 2014, the same applies for CYTA which operated also as a Mobile Virtual Network Operator (MVNO) and for VODAFONE which acquired HOL (HELLAS ON LINE) on 01-04-2016. It is noted that the acquisition of CYTA by VODAFONE was completed in June 2018, with the former operating as a separate entity until its complete absorption by the latter.

which demonstrates the impact of the economic crisis on the sector.

The number of employees in the electronic communications was 16.5 thousand, decreased by 3.2% compared to 2017 (approximately 17.1 thousand) (Chart 1.3).

Lastly, the general cost trend for electronic communications services is reflected in the evolution of the Consumer Price Index (CPI) over time, as presented in Charts 1.4 and 1.5. Both the Communications Sub-index and the CPI continued their upward trend by 3% and 1% respectively.

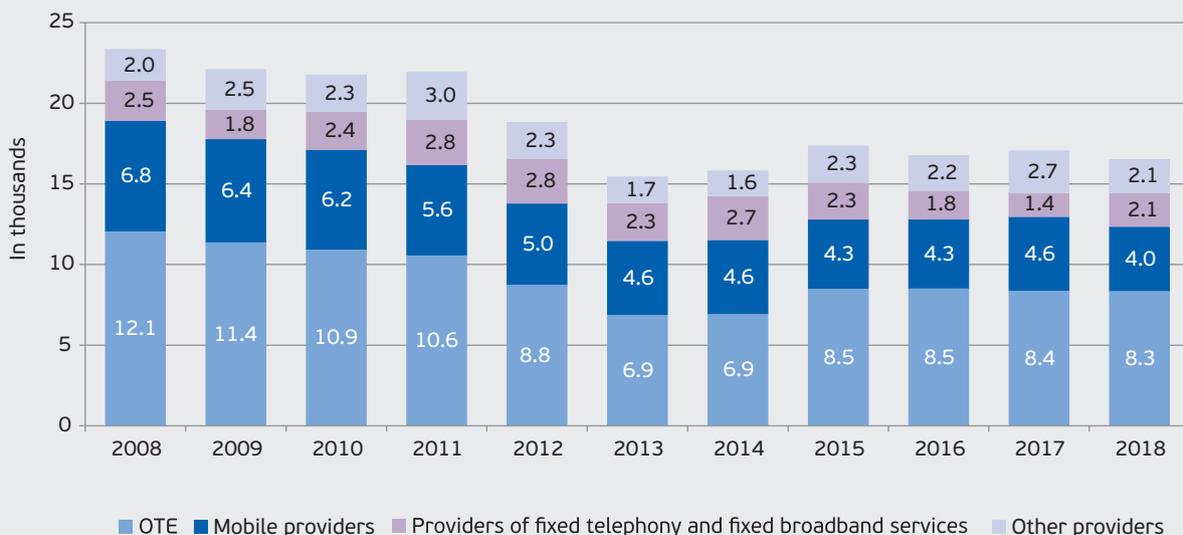
Chart 1.2: Telecommunications' contribution to GDP



Source: EETT (based on questionnaires) and ELSTAT

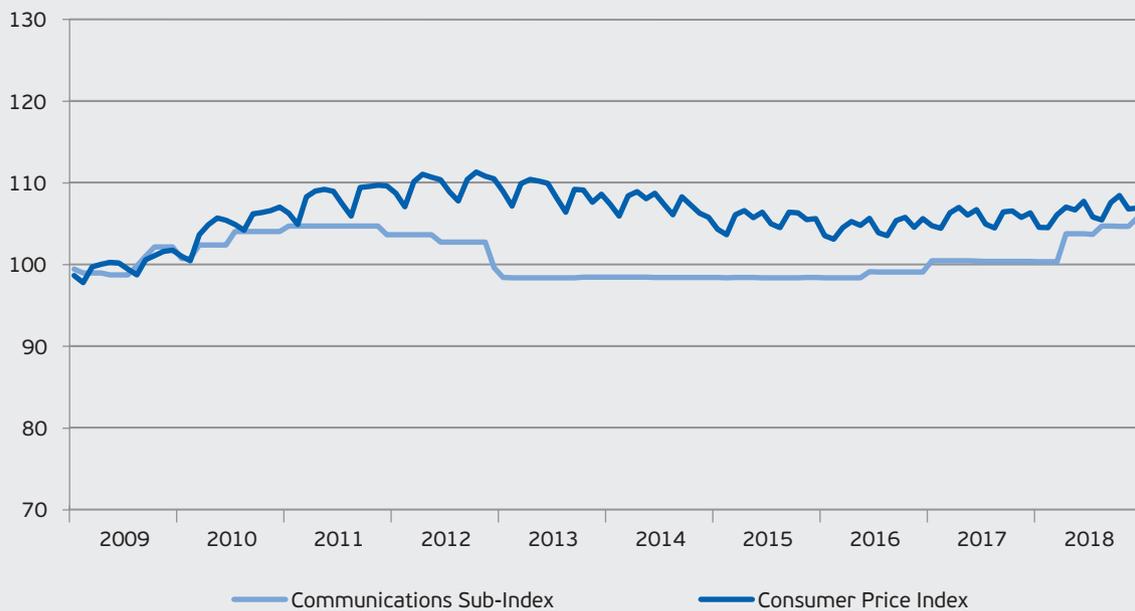
Note: The GDP data and its components for the period 1995-2018 have been revised with 2010 as the base year, in accordance with the Regulation EU 549/2013 of the European Union (ESA 2010).

Chart 1.3: Number of employees of electronic communications providers



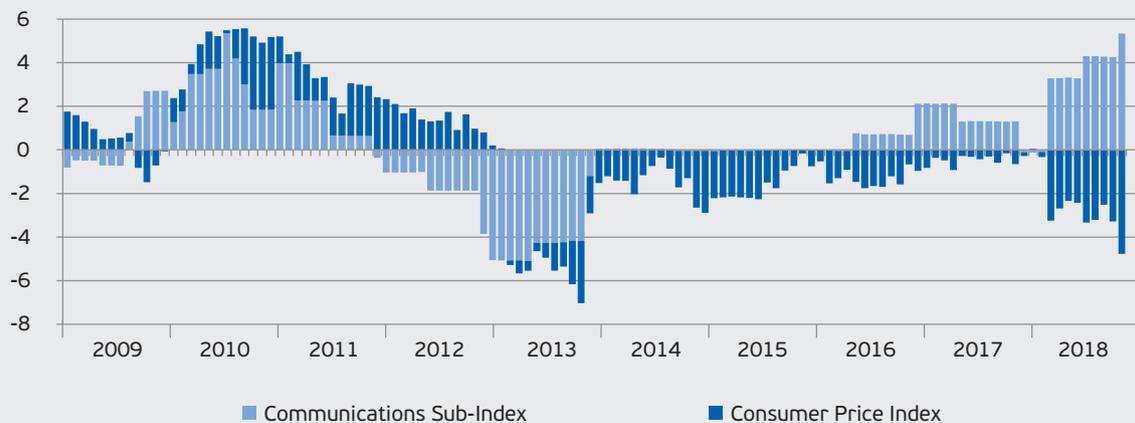
Source: EETT (based on data provided by the active licensed providers)

Chart 1.4: Evolution of the monthly Consumer Price Index (General Index-Communications Sub-Index)



Source: EETT (based on ELSTAT data)

Chart 1.5: Variation of the monthly Consumer Price Index with respect to the corresponding index of the previous year



Source: EETT (based on ELSTAT data)

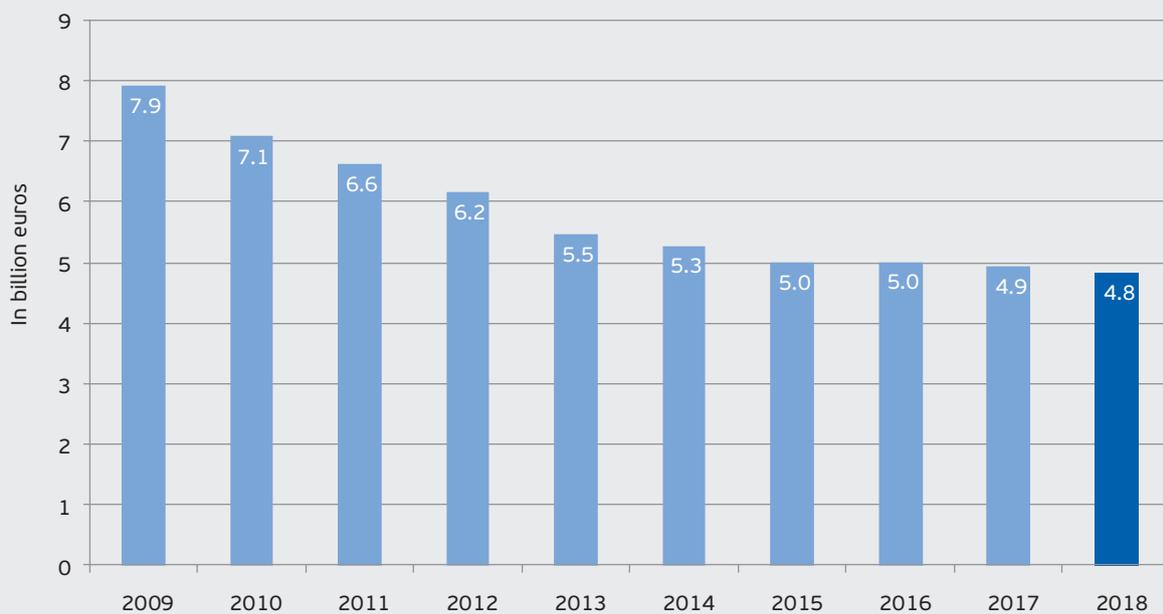
1.2. Electronic communications market key figures

1.2.1 Financial data

This section presents the key financials of the electronic communications market, taking into account the data (turnover, investments, etc.) collected by EETT, from the licensed providers, on a semi-annual basis. In this context, the revenues listed concern the revenues from fixed and mobile communications, telecommunications equipment and pay-TV of active licensed providers with an annual turnover above 150 thousand euros.

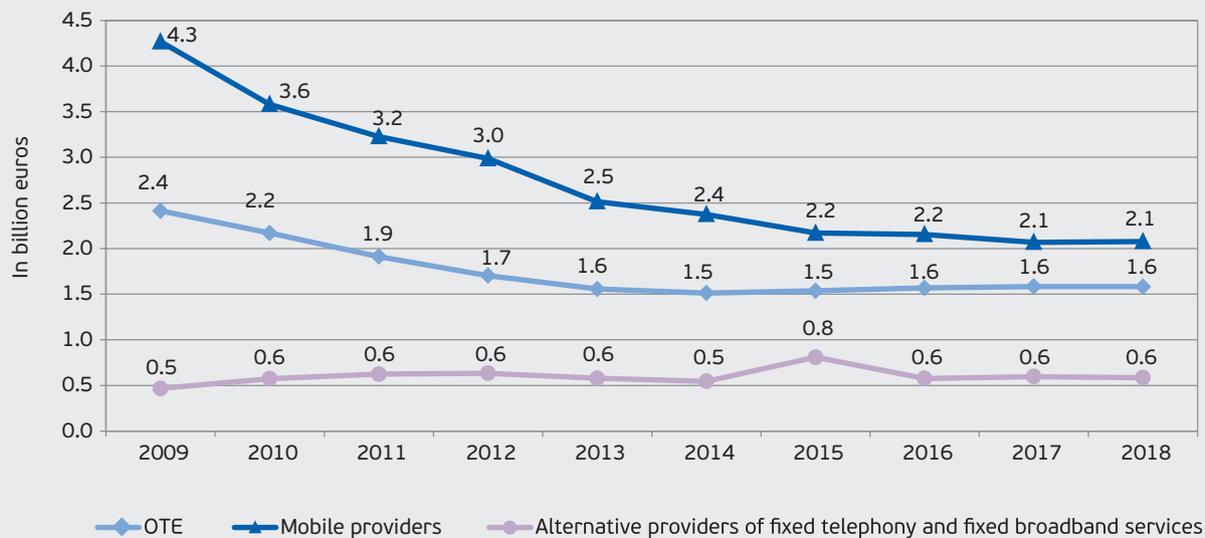
- The telecommunications' sector turnover in 2018 registered a decrease of 1.8% compared to 2017, amounting to 4.8 billion euros (Chart 1.6). It is noted that the 2017 turnover has been revised at 4.9 billion euros (compared to 5 billion euros), due to a case of incorrect data reporting by one provider. The turnover for OTE and the mobile providers remained approximately at the same level as in 2017, while the alternative providers of fixed telephony and fixed broadband services registered a decline of 1.9% (Chart 1.7).
- The telecommunications services revenue constitutes the predominant part of the turnover (87.4%) (Chart 1.8).
- The revenue from fixed communications services accounted for 53.2% of the telecommunications services revenue (Chart 1.9). This includes both the revenue from the retail telecommunications services (telephony and Internet including access to the telephone network, leased lines, etc.) and the revenue from the wholesale telecommunications services [(e.g. interconnection, wholesale access-Local Loop Unbundling (LLU)]. Accordingly, the revenue from mobile communications services includes the retail revenue from mobile voice and data services, as well as wholesale revenue from interconnection, roaming, etc.
- The retail revenue from telephony and Internet services accounted for approximately 61.3% of the total revenue from fixed networks, followed by the fixed interconnection services revenue with 15.9% (Chart 1.10). Regarding mobile networks and services, the retail revenue from voice and data services had an overwhelming share, with 65.8% and 23.1% respectively (Chart 1.11).
- Total investments of electronic communications providers ranged at 16% of their turnover, registering a 4.3% decline compared to 2017, due to a 23% drop in the amount of investments (Chart 1.12).
- In 2018, the electronic communications providers invested mostly in telecommunications infrastructure, as well as in research and development (e.g. software, new services, etc.) (Chart 1.13).
- The weighted average decrease in the turnover for the period 2010-2018 (-4%) was slightly lower than that for the period 2010-2017 (-4.4%). At the same time, investments recorded a weighted average decrease of -3.5%, higher than the corresponding one for the 2010-2017 period (-1%) (Chart 1.14). For the same period, the weighted average decrease of OTE's revenue was approximately 4%, while its investments increased by 6.3% on average.
- The investments made by the largest providers ranged approximately between 5% and 22% of their total turnover from electronic communications services (Chart 1.15).

Chart 1.6: Electronic communications providers' turnover



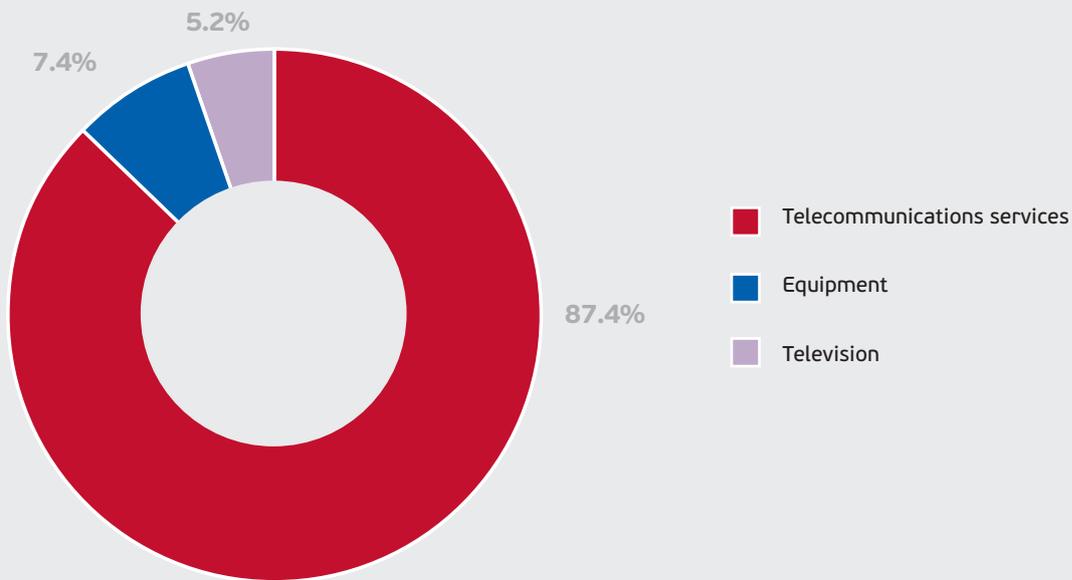
Source: EETT (based on data provided by the active licensed providers)

Chart 1.7: OTE's, mobile providers' and alternative providers' turnover



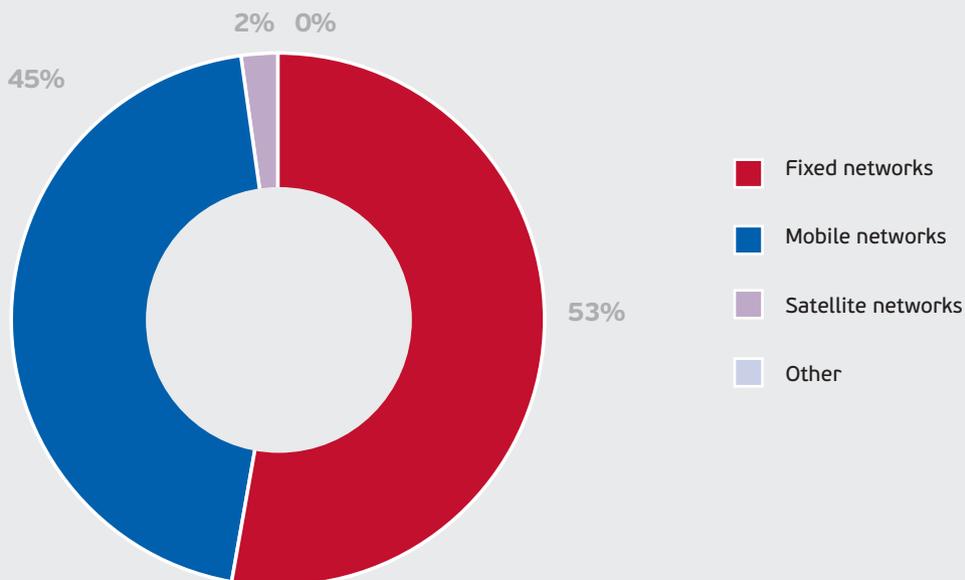
Source: EETT (based on data provided by the active licensed providers)

Chart 1.8: Breakdown of turnover, 2018



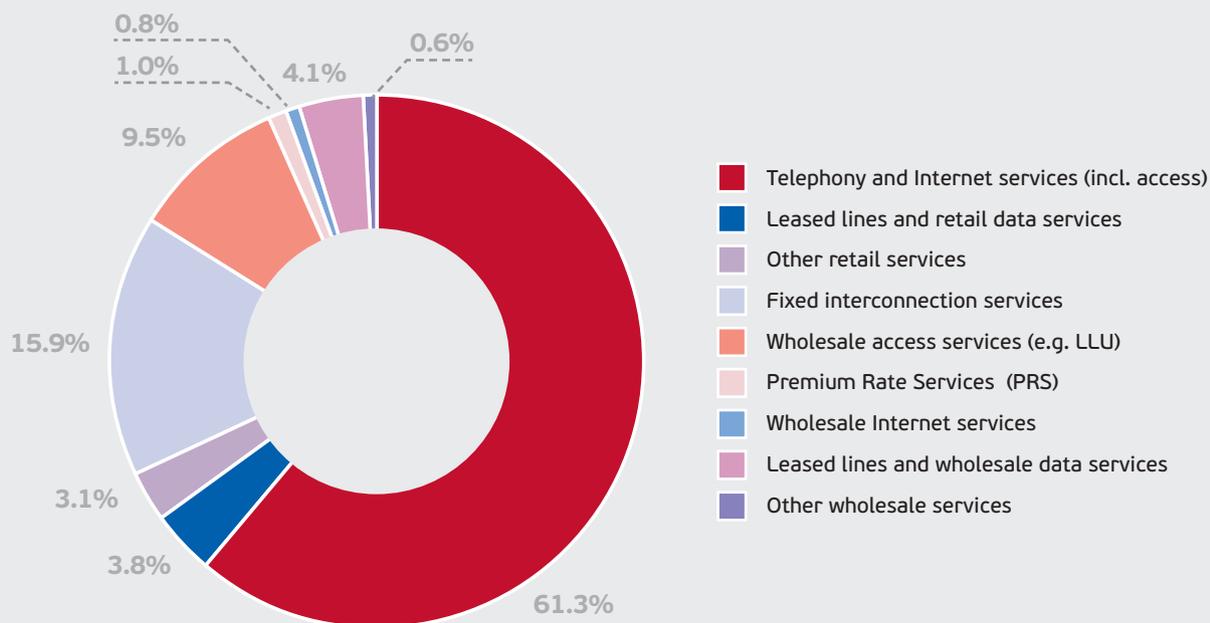
Source: EETT (based on data provided by the active licensed providers)

Chart 1.9: Breakdown of revenues from telecommunications services, 2018



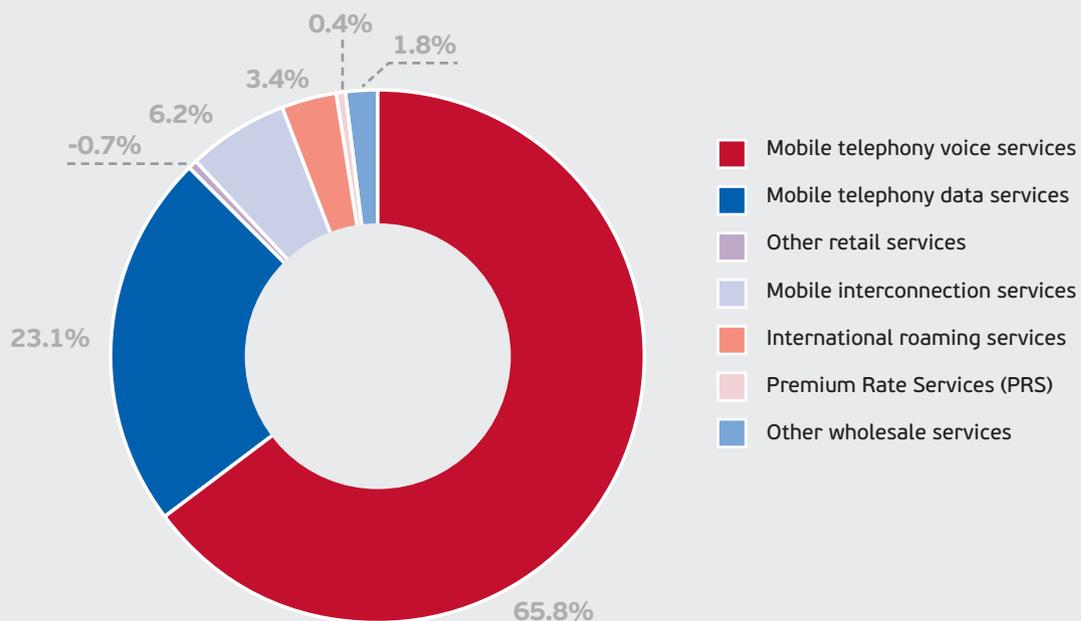
Source: EETT (based on data provided by the active licensed providers)

Chart 1.10: Breakdown of revenues from fixed networks, 2018



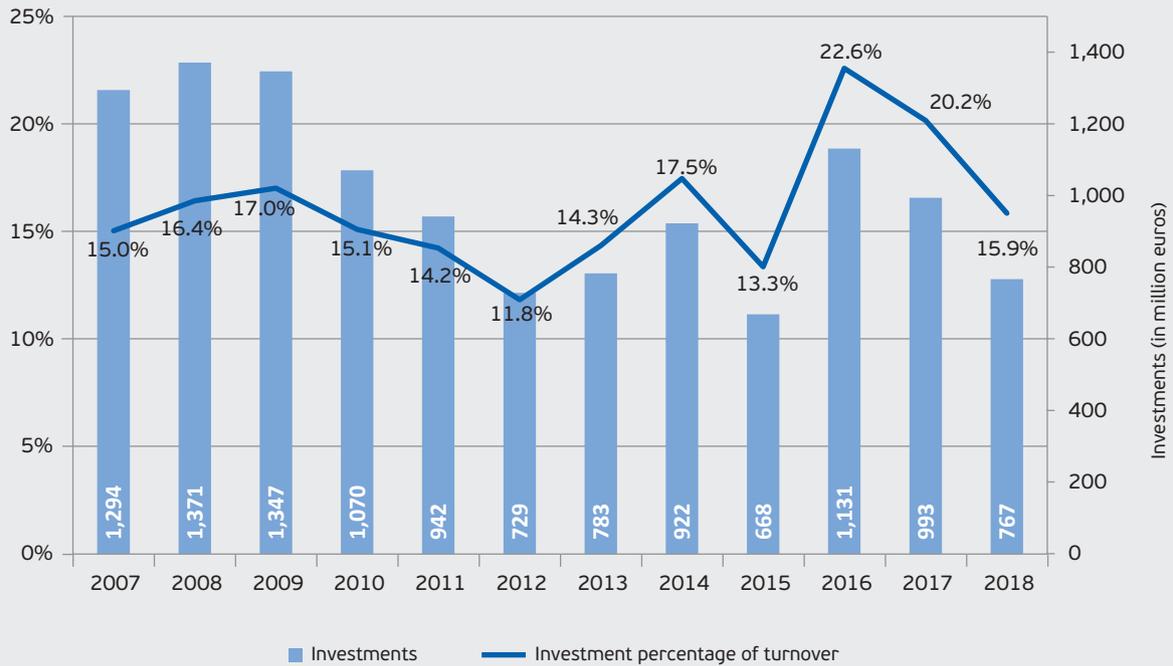
Source: EETT (based on data provided by the active licensed providers)

Chart 1.11: Breakdown of revenues from mobile networks, 2018



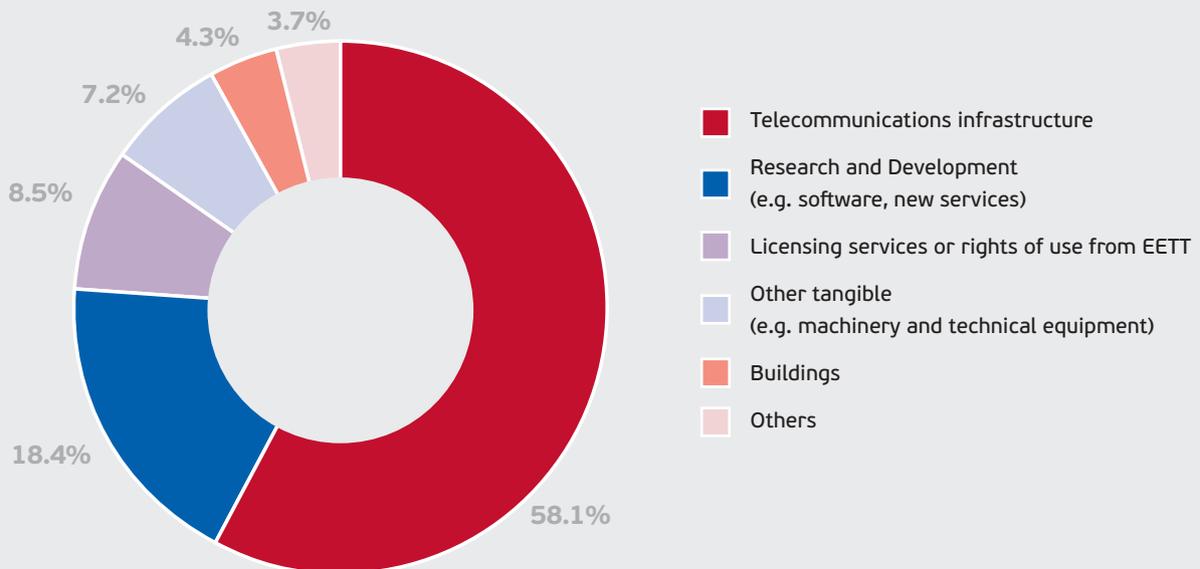
Source: EETT (based on data provided by the active licensed providers)

Chart 1.12: Electronic communications providers' investments



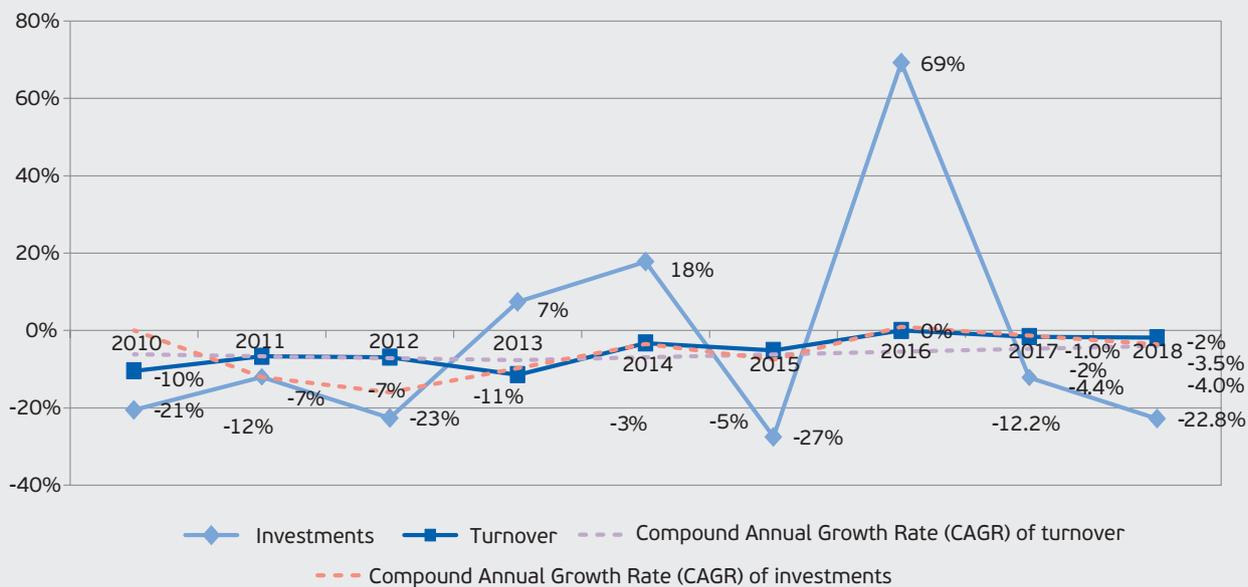
Source: EETT (based on data provided by the active licensed providers)

Chart 1.13: Breakdown of electronic communications providers' investments, 2018



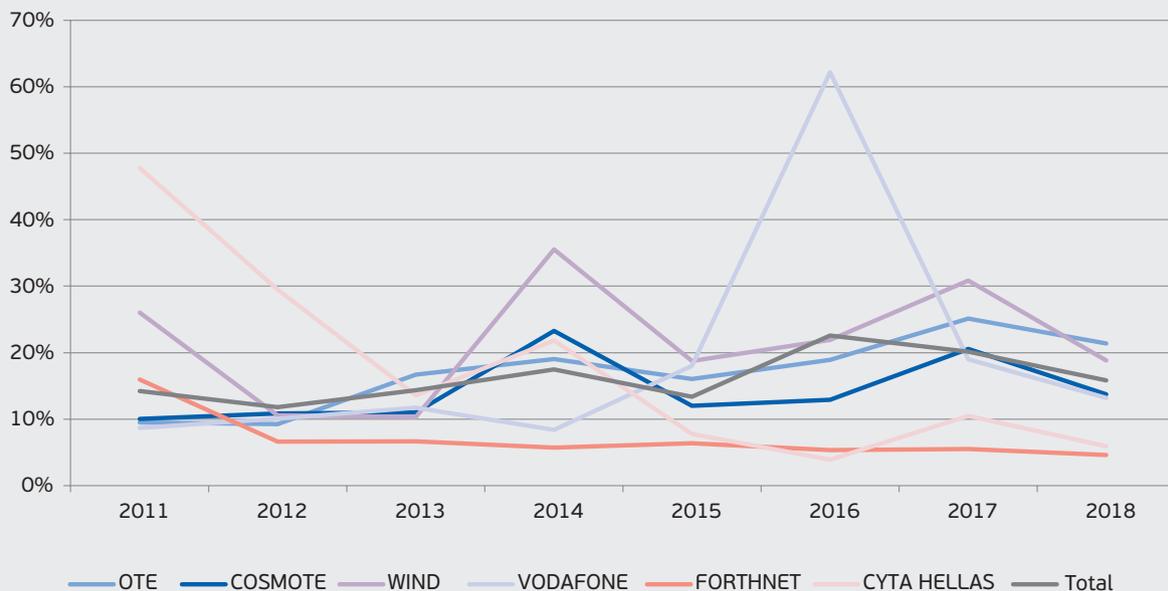
Source: EETT (based on data provided by the active licensed providers)

Chart 1.14: Rate of change of investment-turnover



Source: EETT (based on data provided by the active licensed providers)

Chart 1.15: Investments/turnover ratio



Source: EETT (based on data provided by the active licensed providers)

1.2.2. Communications services provided at a fixed location

Fixed telephony access lines

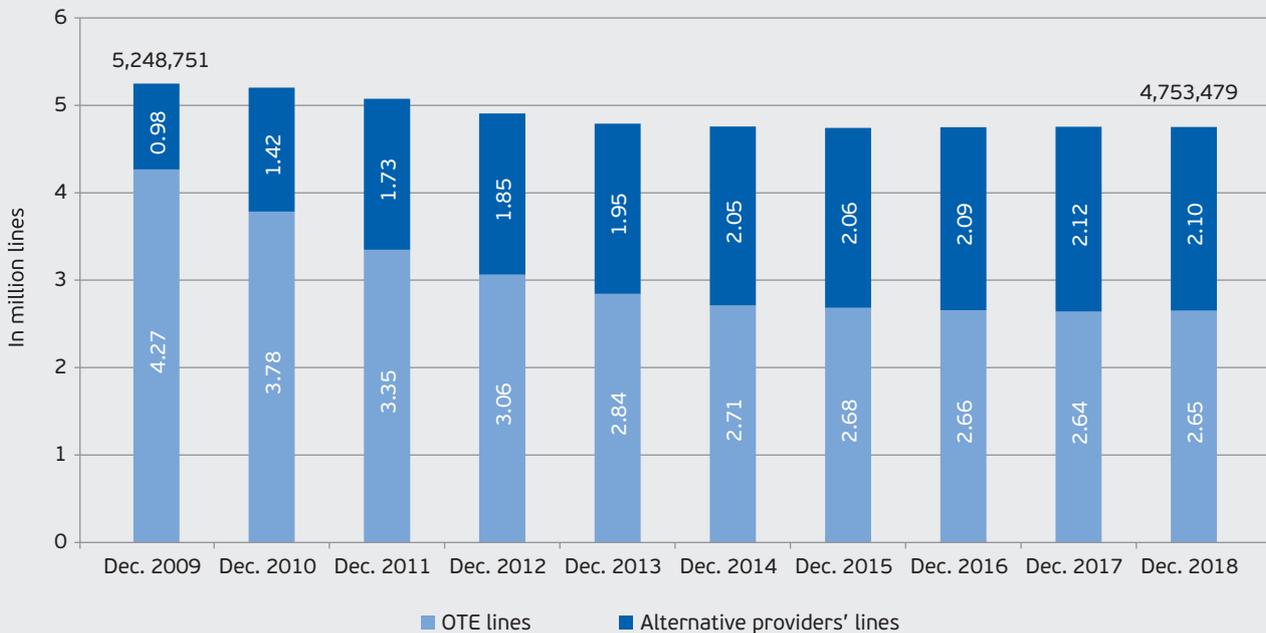
In December 2018, the telephone access lines to a fixed public network of electronic communications amounted to 4,753,479 (44.3% penetration in the population), versus 4,756,694 at the end of 2017, which corresponds to a marginal decrease of 0.07% (Chart 1.16).

OTE's telephone lines increased by 0.4% (11,863 lines) compared to 2017 (decline 0.7%), rever-

sing the downward trend of the previous years. Its share at the end of 2018 was 55.8% versus 55.5% at the end of 2017 (Chart 1.17). A percentage equal to 55% of OTE's lines concerned Managed VoIP lines, a figure which is increasing steadily over the last three years (from 23% in 2016), due to the ongoing shift to IP network technologies from the traditional PSTN network.

The telephone lines of the rest of the providers experienced a slight decrease of 0.7% (15,078 lines in 2018 versus the increase of 24,998 lines in 2017), accounting for the 44.2% share of the lines versus 44.5% at the end of 2017.

Chart 1.16: Evolution of fixed telephony access lines



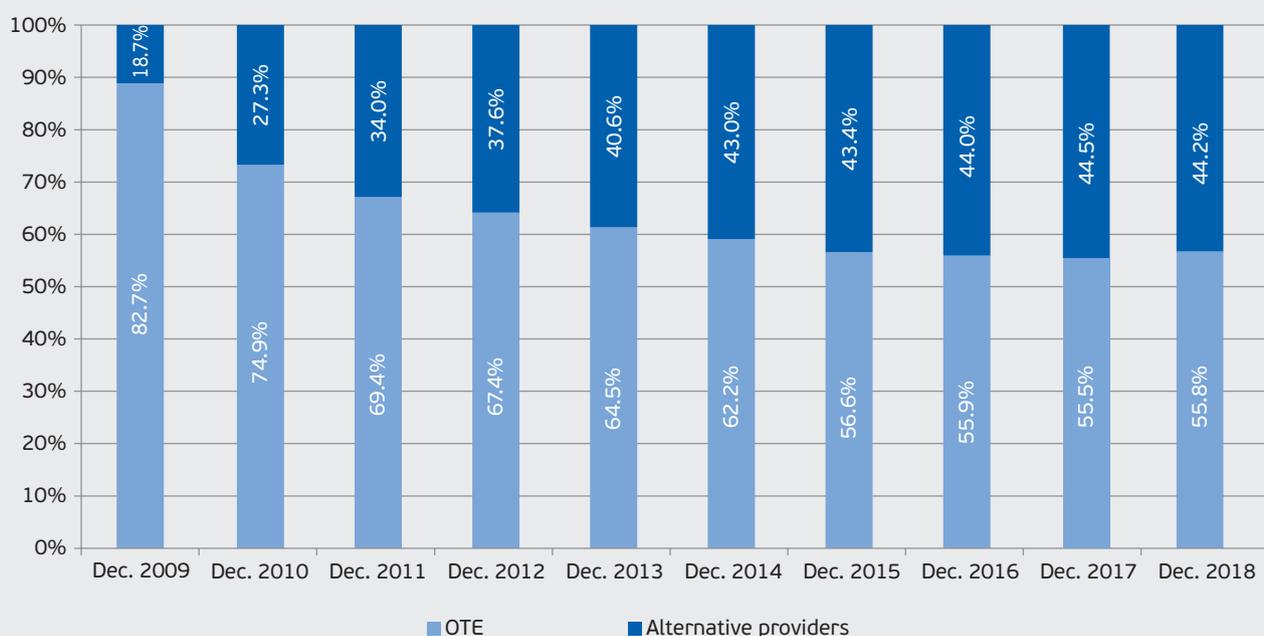
Source: EETT (based on data provided by the active licensed providers)

Table 1.2: Evolution of fixed telephony access lines

	OTE lines					Alternative providers' lines					Total lines
	PSTN	ISDN BRA	Managed VoIP	ISDN PRA	Total	PSTN and ISDN BRA excluding Wholesale line rental	PSTN and ISDN BRA via Wholesale line rental	Managed VoIP	ISDN PRA	Total	
Dec. 2007	4,509,564	579,533	-	6,185	5,095,282	205,707	-	26,875	480	233,062	5,328,344
Dec. 2008	4,110,102	548,388	-	5,971	4,664,461	547,242	-	41,992	681	589,915	5,254,376
Dec. 2009	3,744,759	517,337	-	5,677	4,267,773	848,354	42,405	89,524	695	980,978	5,248,751
Dec. 2010	3,306,469	473,183	-	5,259	3,784,911	1,191,665	71,883	154,833	747	1,419,128	5,204,039
Dec. 2011	2,917,578	426,830	-	4,808	3,349,216	1,395,486	82,091	246,697	1,820	1,726,094	5,075,310
Dec. 2012	2,670,296	387,692	-	4,320	3,062,308	1,415,564	63,964	364,288	2,791	1,846,607	4,908,915
Dec. 2013	2,484,926	354,655	-	3,791	2,843,372	1,516,775	47,082	380,420	3,025	1,947,302	4,790,674
Dec. 2014	2,377,849	330,034	-	3,499	2,711,382	1,612,296	35,325	396,306	2,962	2,046,889	4,758,271
Dec. 2015	2,298,569	303,791	78,789	3,242	2,684,391	1,651,635	14,344	390,189	2,799	2,058,967	4,743,358
Dec. 2016	1,782,963	262,449	609,443	3,069	2,657,924	1,706,449	9,386	374,609	2,120	2,092,564	4,750,488
Dec. 2017	1,244,008	230,309	1,161,912	2,903	2,639,132	1,754,020	7,746	353,490	2,306	2,117,562	4,756,694
Dec. 2018	1,048,244	146,459	1,453,662	2,630	2,650,995	1,702,803	12,298	382,051	2,353	2,102,484	4,753,479

Source: EETT

Chart 1.17: Market shares based on fixed telephony access lines



Source: EETT (based on data provided by the active licensed providers)

Retail outgoing traffic

Total traffic in 2018 amounted to 14.5 billion minutes versus 15.8 billion in 2017, recording an important decrease of 8.6%. This significant drop is mainly due to the reduction of the traffic of national fixed calls (1.2 billion minutes less than in 2017, i.e. a decrease of 9.4%), as well as of the international calls (25.1% decrease compared to 2017). The traffic of the basic call types constitutes steadily 98% of all calls traffic over the last years (Charts 1.18, 1.19 and 1.20).

Regarding the percentage breakdown of the basic call types' traffic, 82% is related to national fixed calls, while 16% refers to calls to mobiles and the remaining 2% to international calls. Information on the evolution of traffic per call type is presented in Table 1.3.

OTE retains its share in terms of traffic, which increased by 0.5% compared to 2017. More specifically, OTE's share is estimated at 46.3% of the to-

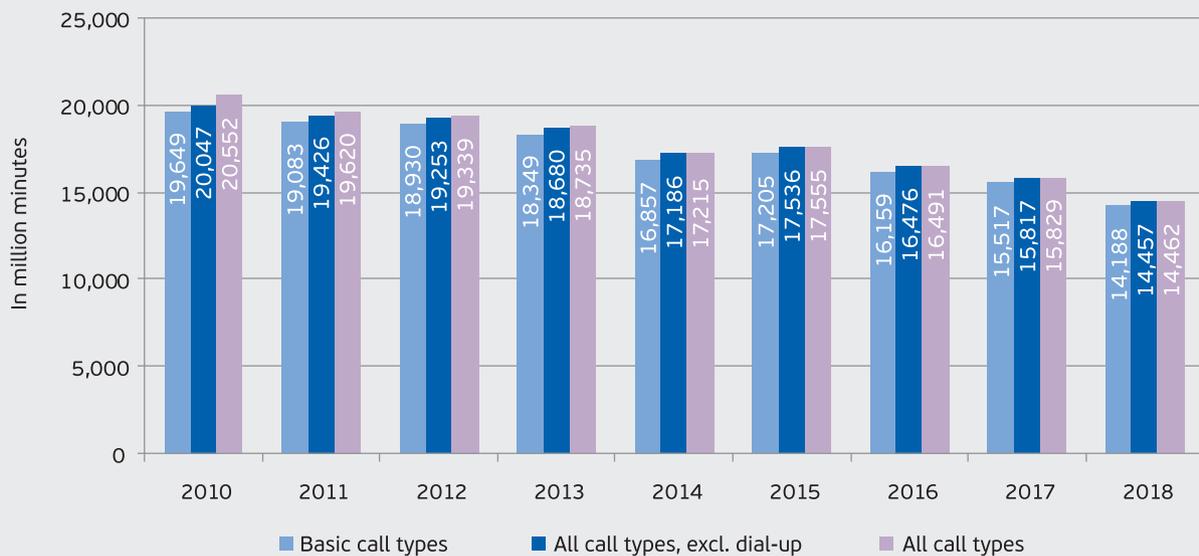
tal traffic and at 46% of the basic call types' traffic (Chart 1.21). Its shares per basic call type are presented in Chart 1.22.

During 2018, the fixed telephony market continued to be characterized by high concentration, since 99.46% market share is cumulatively possessed by OTE and the following four alternative providers (presented in alphabetical order): CYTA, FORTHNET, VODAFONE and WIND (Chart 1.23).

Chart 1.24 presents the distribution over time of total traffic (excluding dial-up calls) between OTE and the alternative providers. It is noted that the decrease by 8.6% in fixed telephony traffic in 2018 compared to 2017, is attributed to the decline in alternative providers' traffic by 9.5% and in OTE's traffic by 7.5%.

The average outgoing traffic (of the basic call types) per connection in 2018, is estimated at 249 minutes per month, compared to 272 minutes per month in 2017.

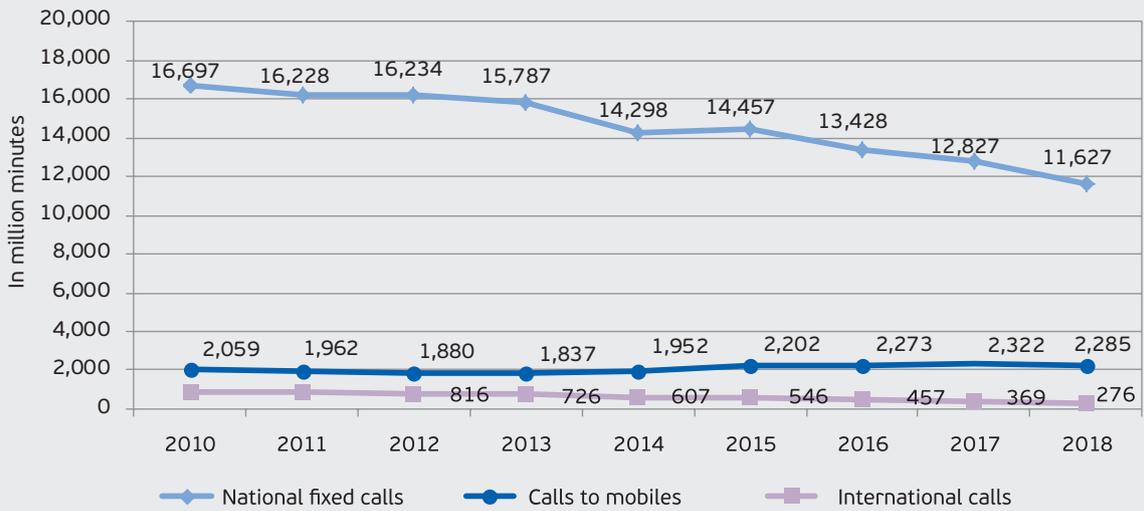
Chart 1.18: Evolution of fixed outgoing traffic



Source: EETT (based on data provided by the licensed providers)

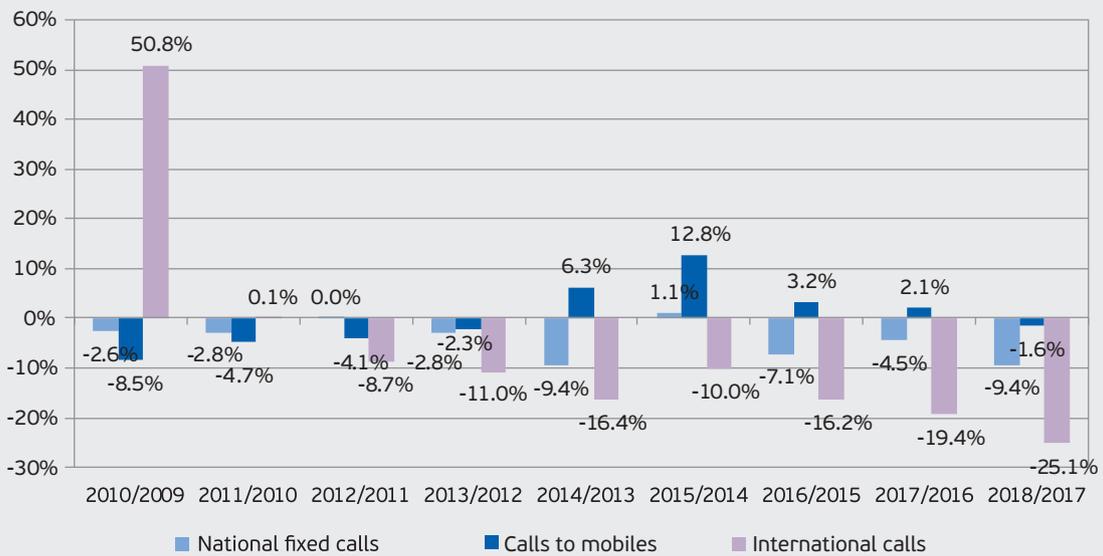
Note: The basic call types include national fixed calls (i.e. local and long-distance), calls to mobiles and international calls.

Chart 1.19: Fixed outgoing traffic per basic call type



Source: EETT (based on data provided by the licensed providers)

Chart 1.20: Annual change of fixed outgoing traffic



Source: EETT (based on data provided by the licensed providers)

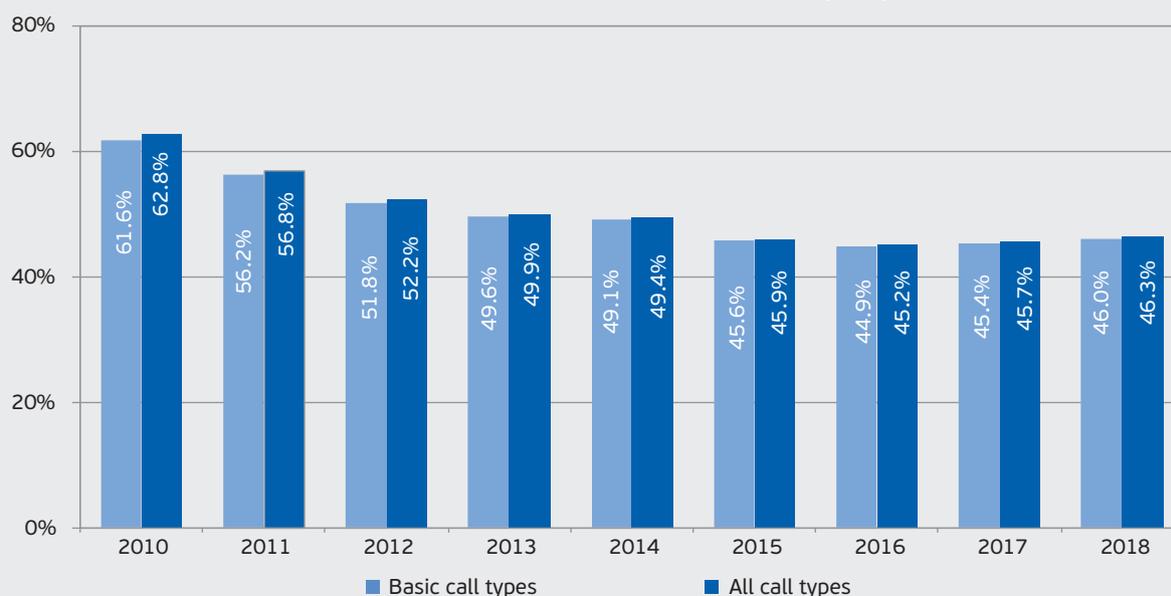
Table 1.3: Fixed outgoing traffic per call type (in million minutes)

	Call types	2010	2011	2012	2013	2014	2015	2016	2017	2018
Basic call types	National fixed calls	16,697	16,228	16,234	15,787	14,298	14,457	13,428	12,827	11,627
	Calls to mobiles	2,059	1,962	1,880	1,837	1,952	2,202	2,273	2,322	2,285
	International calls	893	894	816	726	607	546	457	369	276
Other call types	Dial-up calls	505	194	86	55	29	19	15	12	5
	Calls to personal numbers (series 70)	0.05	0.13	0.13	0.14	0.14	n/a	n/a	n/a	n/a
	Calls to FreePhone numbers (series 800)	24	23	23	26	31	58	54	51	40
	Calls to shared cost services (Shared cost-801)	77	52	35	33	31				
	Calls to short code services (3-digits, 4-digits, 5-digits) See Note 1	236	225	220	219	229	238	230	221	206
	Calls to value added services See Note 2	61	43	45	53	37	35	34	28	23
Basic call types		19,649	19,083	18,930	18,349	16,857	17,205	16,159	15,517	14,188
All call types excl. dial up		20,047	19,426	19,253	18,680	17,186	17,536	16,476	15,817	14,457
All call types		20,552	19,620	19,339	18,735	17,215	17,555	16,491	15,829	14,462

Source: EETT

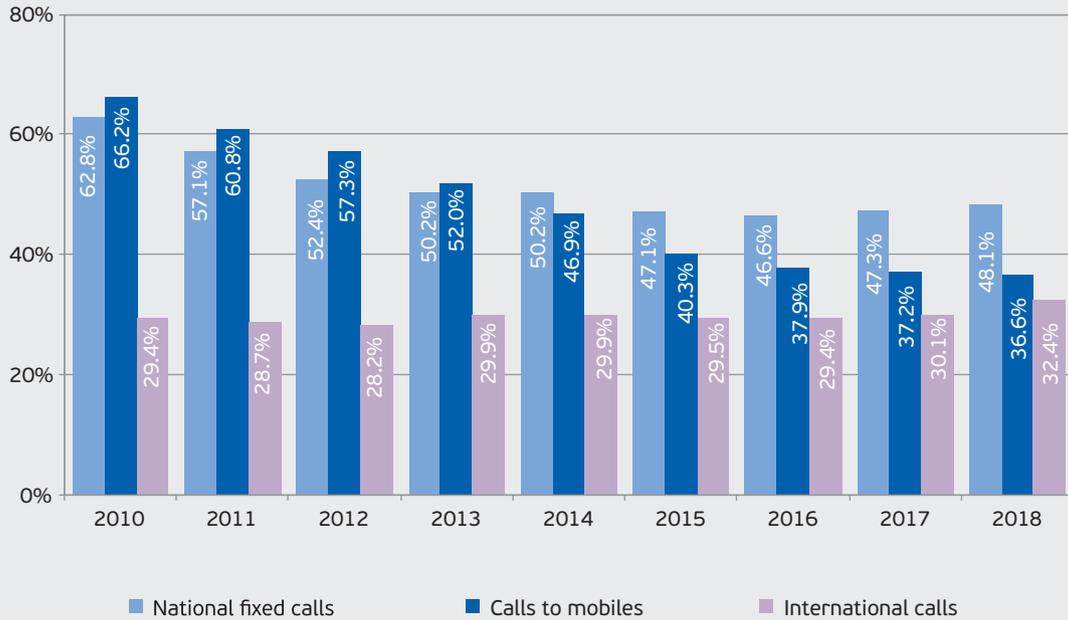
Note 1: Calls to short codes for value added services are excluded.

Note 2: It concerns calls to all the value added services, including short codes for value added services.

Chart 1.21: OTE's market shares (based on outgoing traffic)

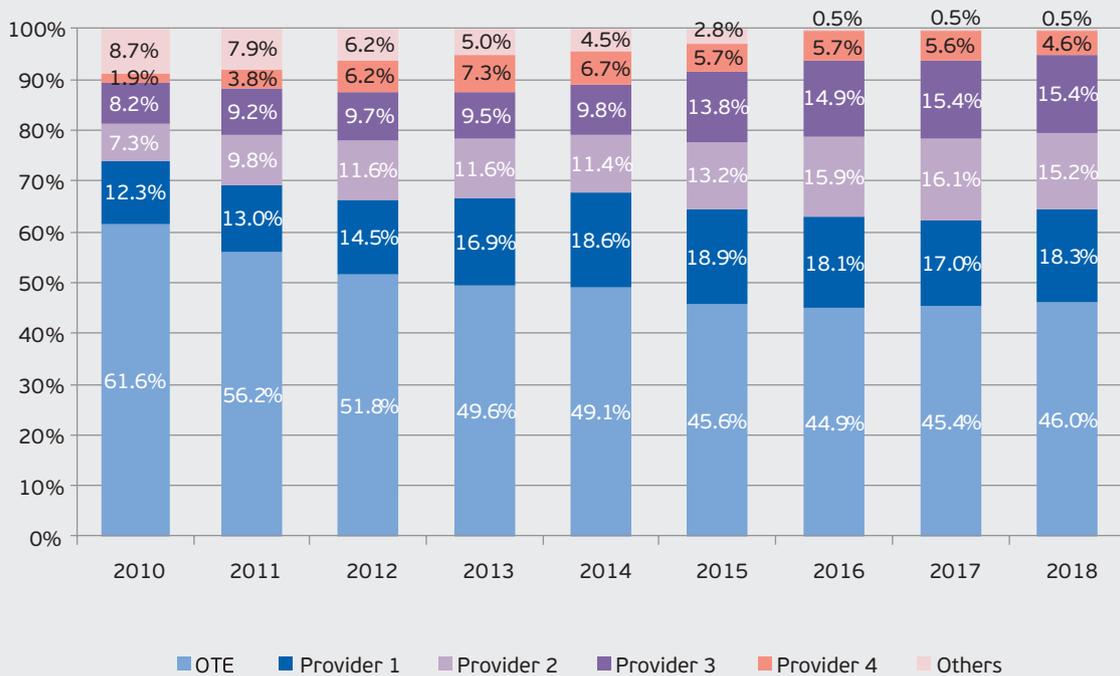
Source: EETT (based on data provided by the licensed providers)

Chart 1.22: OTE's market shares per basic call type (based on outgoing traffic)

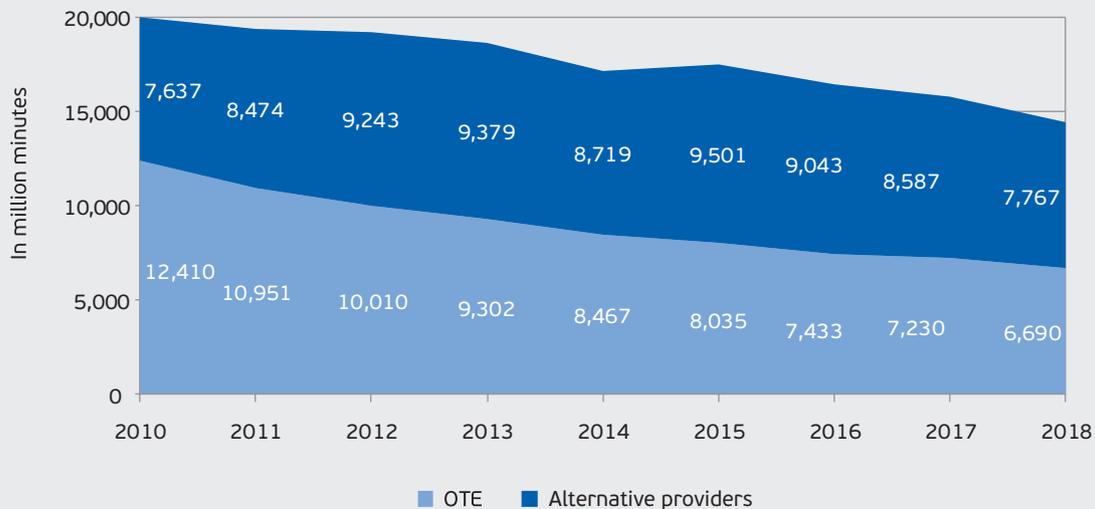


Source: EETT (based on data provided by the licensed providers)

Chart 1.23: Market shares of the basic call types (based on outgoing traffic)



Source: EETT (based on data provided by the licensed providers)

Chart 1.24: OTE's and alternative providers' outgoing traffic (excl. dial-up)

Source: EETT (based on data provided by the licensed providers)

Retail revenues from the provision of telephony and Internet services at a fixed location

In 2018, total retail revenues from the provision of telephony and Internet services at a fixed location remained at the same level as in 2017, amounting to 1.41 billion euros (Chart 1.25). Despite the fact that the retail telephony revenues declined by 26.5 million euros, i.e. a 2.5% decrease compared to the previous year, the revenues from Internet services rose by 7.5% compared to 2017 and amounted to 384.7 million euros (an increase of 26.9 million euros). It is clarified that the presented revenues are prior to any returns to third parties and that the telephony revenues include revenues from access³, as well as revenues from all call types⁴.

The average monthly revenue per connection from the provision of telephony services was 17.98 euros, versus 18.43 euros in 2017. The average revenue per minute of outgoing traffic,

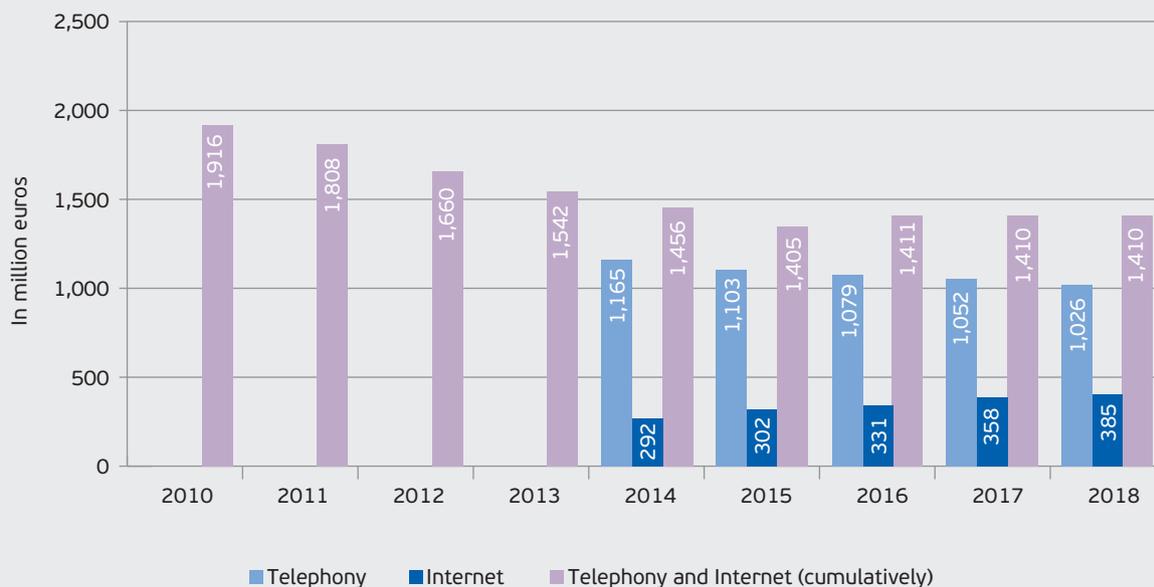
taking into account all call types, is estimated at 0.07 euros, almost equal to that of 2017.

OTE's market share based on the retail telephony and Internet revenues, increased by 0.6%, accounting for approximately 61.5% of the total market (Chart 1.26). Table 1.4 presents the market shares of the providers of telephony and Internet services at a fixed location for 2018 compared to the ones of the previous year.

3. This includes revenues from initial connection/installation fee, etc., the monthly rental for the access line to telephony services and revenues from additional facilities.

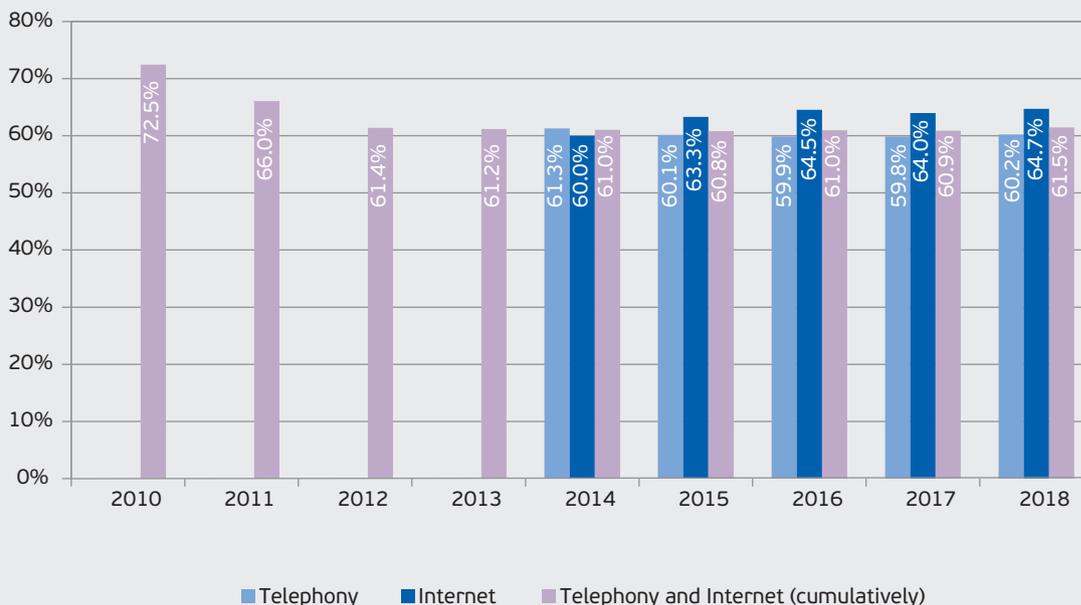
4. It is noted that the presented data and more specifically, the breakdown of revenues between telephony and Internet revenues is based on estimations made by most of the providers.

Chart 1.25: Retail revenues from the provision of telephony and Internet services at a fixed location



Source: EETT (based on data provided by the licensed providers)

Chart 1.26: OTE's market shares (based on retail revenues from telephony and Internet services at a fixed location)



Source: EETT (based on data provided by the licensed providers)

Table 1.4: Market shares of providers of telephony and Internet services at a fixed location

	2017	2018
OTE	~61%	61.5%
VODAFONE	10%-15%	10%-15%
WIND	10%-15%	10%-15%
FORTHNET	5%-10%	5%-10%
CYTA	5%-10%	0%-5%
Others	0%-5%	0%-5%

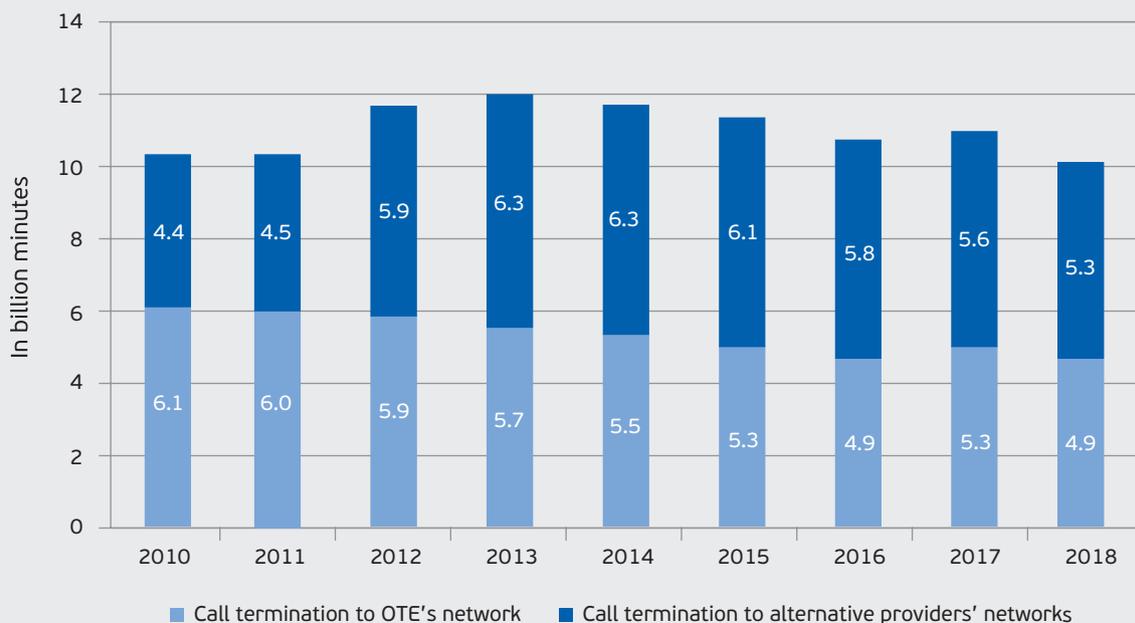
Source: EETT (based on data provided by the licensed providers)

Fixed telephony interconnection

In 2018, the call termination traffic to fixed networks (Chart 1.27) amounted to 10.19 billion minutes, reporting a decline of 6.2% compared to 2017 (10.87 billion minutes). The termination

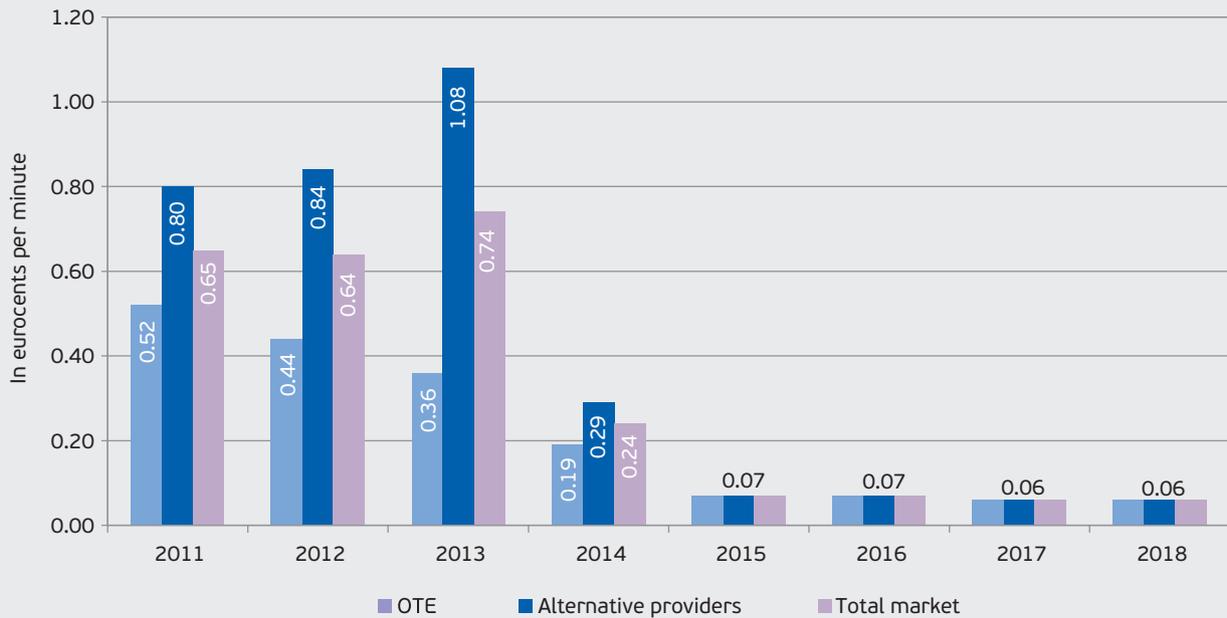
traffic to OTE’s network fell by 8% in 2018, while the traffic to the alternative providers’ networks decreased by 5%. Over the last four years, the call termination rates for all fixed network providers are symmetrical (Chart 1.28).

Chart 1.27: Call termination traffic to fixed networks (OTE-alternative providers)



Source: EETT (based on data provided by the licensed providers)

Chart 1.28: Evolution of call termination rates to fixed networks



Source: EETT

Number portability in fixed telephony

During 2018, 472,052 number portability applications were submitted compared to 647,178 in 2017, recording a significant decrease by 27.1%.

Correspondingly, in 2018, 380,128 numbers were ported, registering a decrease by 37% compared to 2017 (Chart 1.29). Thus, transfers were completed for about 81% of the initial portability applications.

Chart 1.29: Number portability for fixed telephony



Source: EETT

1.2.3. Mobile communications

Connections

Mobile telephony connections⁵ at the end of 2018 decreased both in terms of total connections (i.e. the registered ones) and active connections⁶ (-5.9%) compared to 2017. The total number of connections at the end of 2018 stood at 15.4 versus 16.2 million at the end of 2017, decreased by 5% (Table 1.5 and Chart 1.30).

More specifically, the post-paid connections exceeded 4.3 million, registering an increase by 1.8% compared to 2017, while the registered pre-paid connections amounted to 11 million, reporting a decrease by 7% compared to 2017 (Table 1.6 and Chart 1.31).

Residential users' connections amounted to 14 million, registering a decrease by 6% compared to 2017, while business users' connections increased by 2% at about 1.29 million (Table 1.7 and Chart 1.32).

Mobile providers' market shares in terms of total connections recorded some changes at the end of 2018. The share of COSMOTE increased to 47.9% versus 46.3% at the end of 2017. In contrast, VODAFONE's and WIND's shares declined to 30.3% and 21.4% respectively, from 30.9% and 22.4% in 2017 (Chart 1.33 and Table 1.8). In terms of active connections⁷, COSMOTE's share is in the range of [45%-55%], followed by VODAFONE with its share in the range of [25%-35%] (Table 1.9).

The penetration of active mobile telephony connections in the Greek population at the end of 2018 stood at 113%, recording a reduction by 6% compared to 2017 (penetration 120%). Respectively, in terms of total connections, the penetration was 143% versus 150% in 2017 (Table 1.10).

Table 1.5: Total and active mobile telephony connections (excl. datacards)

Connections	Dec. 2008	Dec. 2009	Dec. 2010	Dec. 2011	Dec. 2012	Dec. 2013
Registered	18,918,092	20,298,102	14,815,705	14,557,672	15,151,742	15,722,476
Active	13,799,340	13,295,093	12,292,716	12,127,985	12,897,306	12,518,645

Connections	Dec. 2014	Dec. 2015	Dec. 2016	Dec. 2017	Dec. 2018
Registered	15,473,683	15,353,553	15,934,294	16,167,273	15,354,388
Active	12,144,598	12,566,650	12,538,927	12,937,106	12,170,757

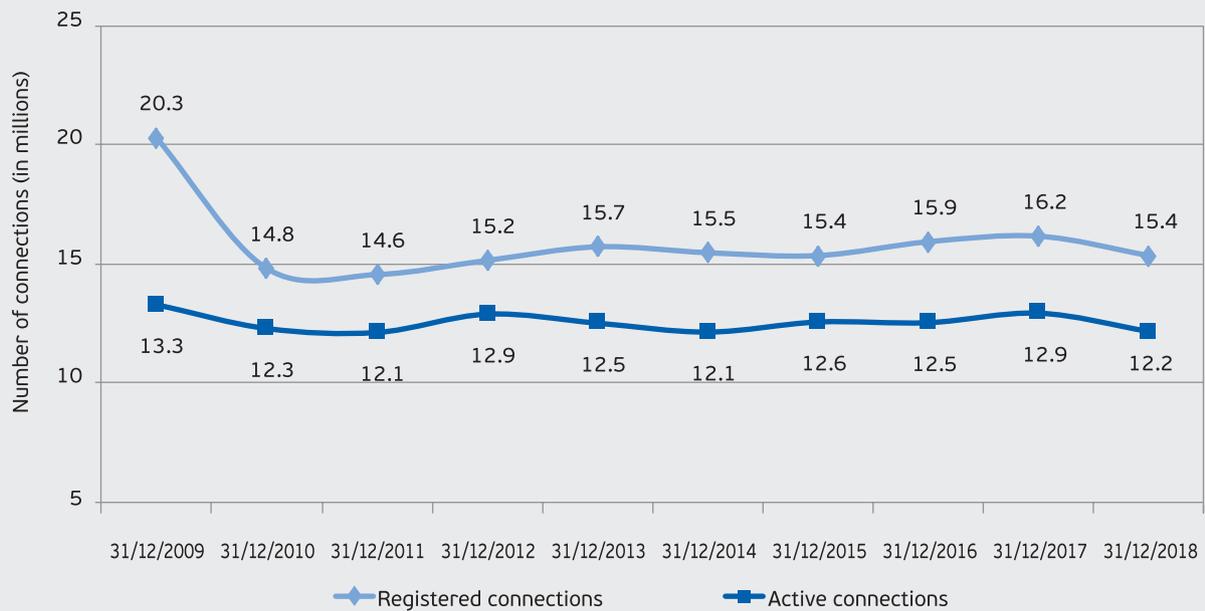
Source: EETT (based on data provided by the licensed providers)

5. The term used is "connection" or "subscription" instead of "subscriber". It is not the number of subscribers as individuals or legal entities that is recorded, but the total connections/subscriptions, since one subscriber may have more than one connections/subscriptions.

6. "Active connections" or "active subscriptions" are defined as connections/subscriptions that have generated retail or wholesale revenue within the last quarter.

7. The number of active connections and the resulting market shares are confidential data and for this reason the market shares are presented as ranges.

Chart 1.30: Connections/subscriptions of mobile telephony

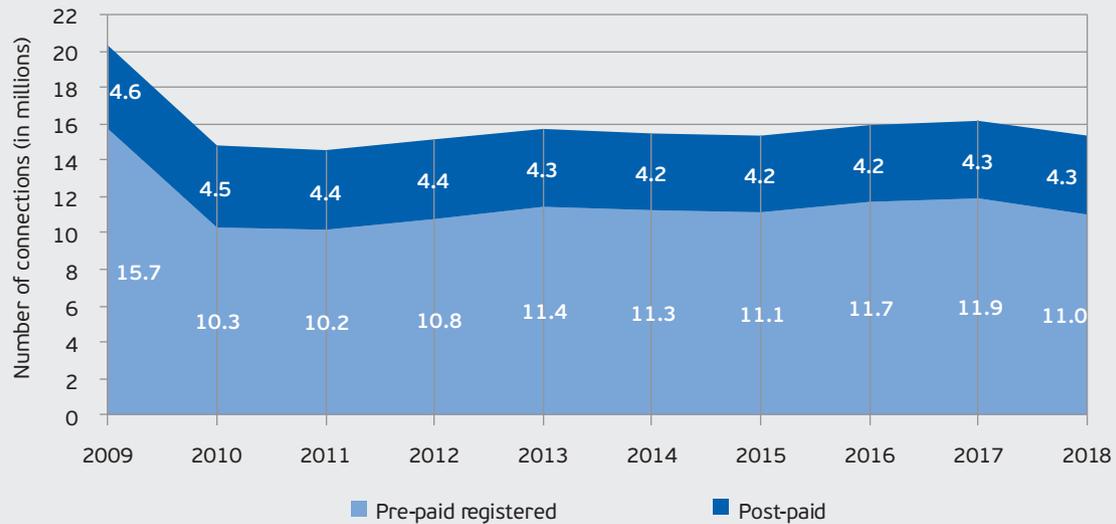


Source: EETT (based on data provided by the licensed providers)

Table 1.6: Total post-paid and pre-paid connections

	Post-paid	Pre-paid (registered)
Dec. 2009	4,583,091	15,715,011
Dec. 2010	4,509,815	10,305,890
Dec. 2011	4,375,606	10,182,066
Dec. 2012	4,381,879	10,769,863
Dec. 2013	4,278,843	11,443,633
Dec. 2014	4,216,579	11,257,104
Dec. 2015	4,211,675	11,141,878
Dec. 2016	4,219,022	11,715,272
Dec. 2017	4,261,140	11,906,133
Dec. 2018	4,336,465	11,017,923

Source: EETT (based on data provided by the licensed providers)

Chart 1.31: Evolution of total mobile telephony connections (pre-paid and post-paid)

Source: EETT (based on data provided by the licensed providers)

Table 1.7: Total connections of residential and business users (post-paid and pre-paid)

	Residential	Business
Dec. 2009	18,906,617	1,391,485
Dec. 2010	13,436,394	1,379,311
Dec. 2011	13,233,823	1,323,849
Dec. 2012	13,876,910	1,274,537
Dec. 2013	14,497,186	1,225,290
Dec. 2014	14,254,880	1,218,803
Dec. 2015	14,118,156	1,235,397
Dec. 2016	14,682,583	1,251,711
Dec. 2017	14,902,753	1,264,520
Dec. 2018	14,063,618	1,290,770

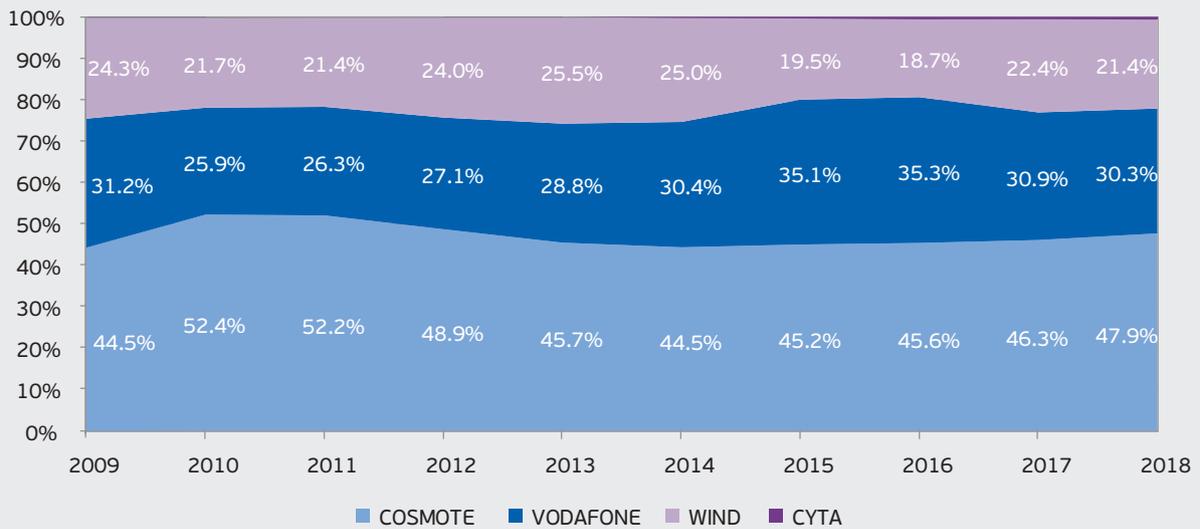
Source: EETT (based on data provided by the licensed providers)

Chart 1.32: Evolution of total mobile telephony connections (residential-business)



Source: EETT (based on data provided by the licensed providers)

Chart 1.33: Mobile providers' market shares based on registered connections



Source: EETT (based on data provided by the licensed providers)

Table 1.8: Mobile providers' market shares based on registered connections

	Dec. 2009	Dec. 2010	Dec. 2011	Dec. 2012	Dec. 2013	Dec. 2014	Dec. 2015	Dec. 2016	Dec. 2017	Dec. 2018
COSMOTE	44.5%	52.4%	52.2%	48.9%	45.7%	44.5%	45.2%	45.6%	46.3%	47.9%
CYTA	0%	0%	0%	0%	0%	0.1%	0.2%	0.3%	0.4%	0.4%
VODAFONE	31.2%	25.9%	26.3%	27.1%	28.8%	30.4%	35.1%	35.3%	30.9%	30.3%
WIND	24.3%	21.7%	21.4%	24.0%	25.5%	25.0%	19.5%	18.7%	22.4%	21.4%

Source: EETT (based on data provided by the licensed providers)

Table 1.9: Mobile providers' market shares based on active connections

	Dec. 2009	Dec. 2010	Dec. 2011	Dec. 2012	Dec. 2013	Dec. 2014	Dec. 2015	Dec. 2016	Dec. 2017	Dec. 2018
COSMOTE	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%
CYTA	-	-	-	-	-	0%-5%	0%-5%	0%-5%	0%-5%	0%-5%
VODAFONE	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%
WIND	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%

Source: EETT (based on data provided by the licensed providers)

Table 1.10: Penetration of connections in the population

Penetration	Dec. 2009	Dec. 2010	Dec. 2011	Dec. 2012	Dec. 2013	Dec. 2014	Dec. 2015	Dec. 2016	Dec. 2017	Dec. 2018
Registered	183%	133%	131%	137%	143%	142%	141%	148%	150%	143%
Active	120%	111%	109%	116%	114%	111%	116%	116%	120%	113%

Source: EETT (based on data provided by the licensed providers)

Use of mobile communications networks

In 2018, the use of mobile communications networks was comparable to that of 2017. More specifically, 2018 was characterized by a slight increase in the domestic voice traffic, a significant decrease in the use of short text messages (SMS) and a remarkable increase in the use of data services.

Voice calls

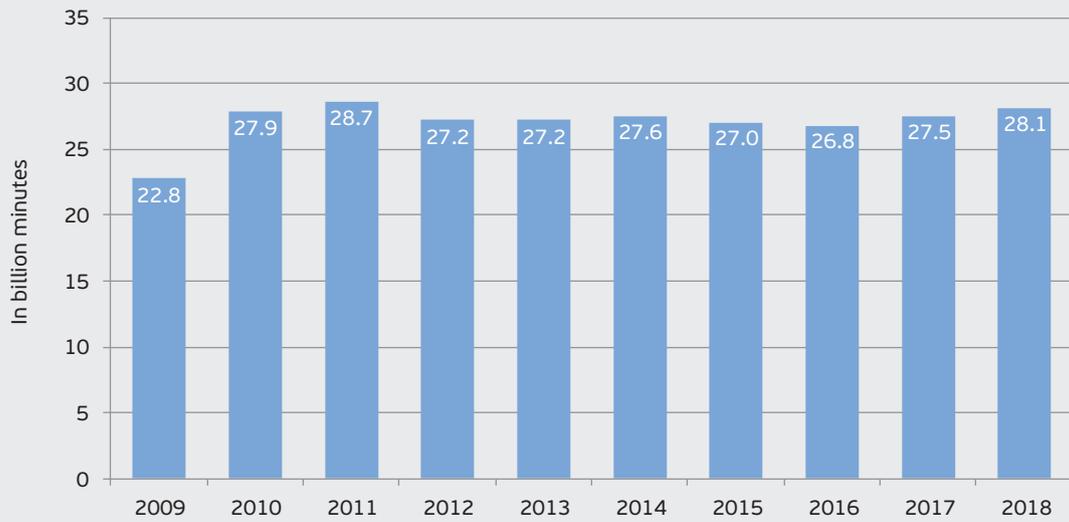
- The volume of voice calls in 2018 amounted to 28.1 billion minutes, recording an increase by 2.2% compared to 2017 (27.5 billion minutes) (Chart 1.34).
- The largest volume of voice calls concerned on-net calls, registering however a decrease from 15.8 to 15.6 billion minutes (Chart 1.35). The volume of the on-net calls accounted also for 57% of the basic call types' volume (i.e. of the on-net, off-net, mobile to fixed and international calls) versus 59% in 2017 (Chart 1.36).
- The volume of the off-net calls increased by 8.8% compared to 2017 (from 7.9 to 8.6 billion minutes), while the volume of the mobile to fixed calls increased by 3.8% (from 2.4 to 2.5 billion minutes).
- International calls' volume from mobile phones decreased by 14.2%.

Chart 1.37 presents the volume of voice calls per user category. The largest volume (48.3% of all voice calls' volume) continued to be made by pre-paid users, followed by post-paid residential users (36.3%) and post-paid business users (15.4%). Based on the actual traffic, the average monthly call duration for a post-paid residential user was approximately 240 minutes to mobile numbers (versus 244 in 2017) and 26 minutes to fixed numbers. For a business user the duration was 229 minutes to mobile numbers (versus 233 in 2017) and 39 minutes to fixed numbers (versus 41 in 2017), while lastly, for a pre-paid user the average monthly call duration was 126 minutes to mobile numbers (versus 109 in 2017) and 10 minutes to fixed numbers.

Short Text Messages (SMS)

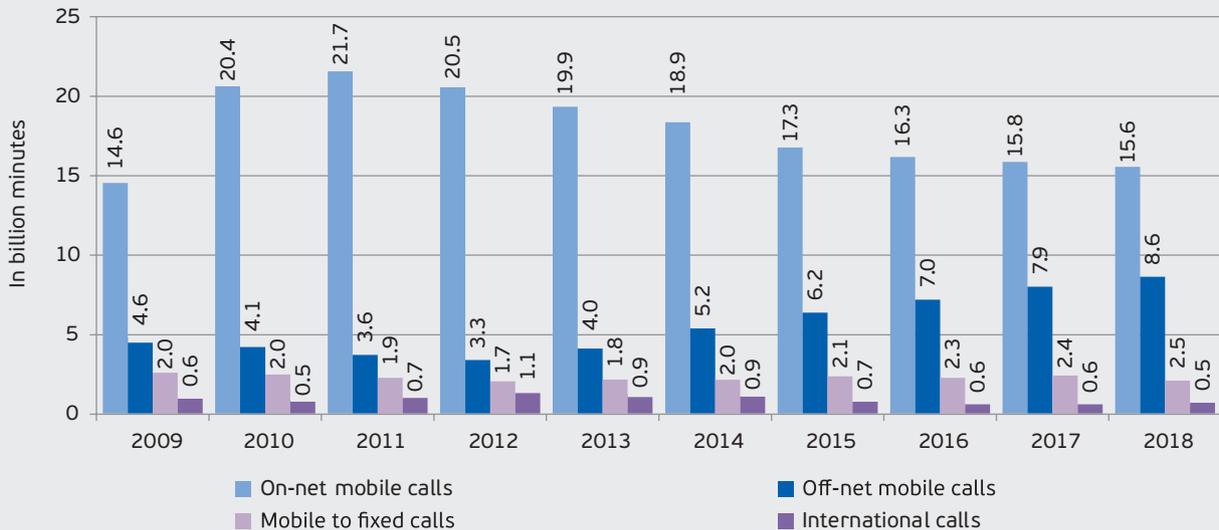
- The total number of Short Text Messages (SMS) continued its downward trend for yet another year, registering a decrease by 8.2% (2.2 versus 2.4 billion messages in 2017) (Chart 1.38).
- Most of the SMS in 2018 were exchanged among users of the same network (on-net) (53.2% compared to 56.8% in 2017), while the percentage of SMS to other networks (off-net) continued to increase.
- The SMS sent by post-paid residential users registered the highest decrease by 10.7%, amounting

Chart 1.34: Volume of voice calls originating from mobile



Source: EETT (based on data provided by the licensed providers)

Chart 1.35: Volume of voice calls per basic call type



Source: EETT (based on data provided by the licensed providers)

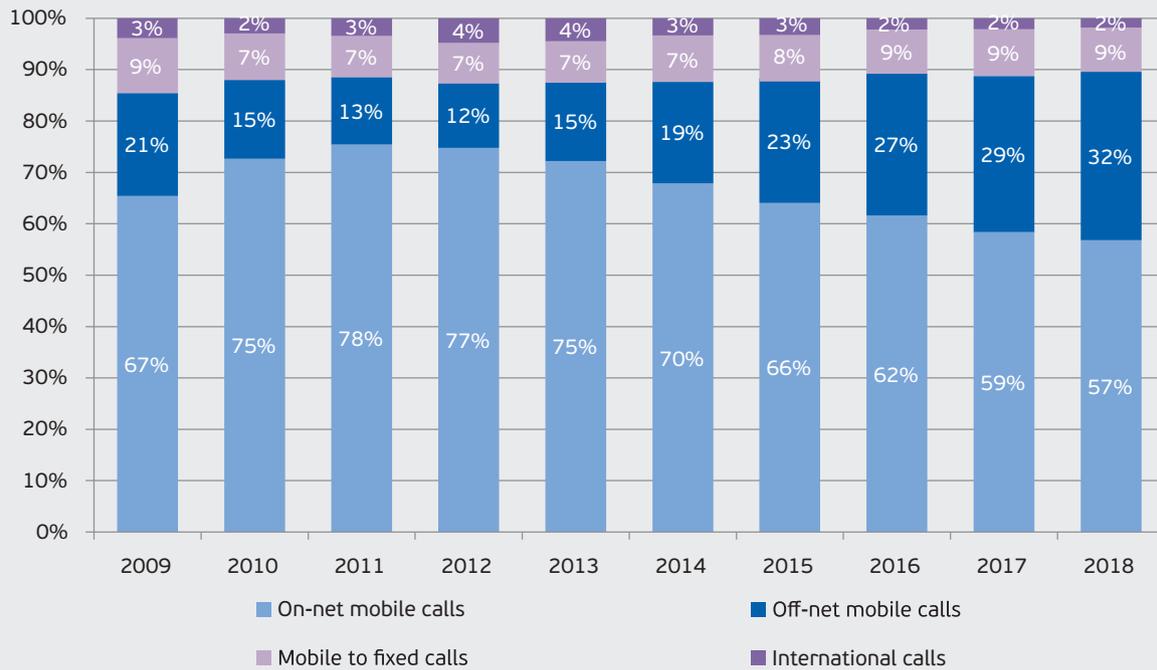
to 1 billion messages in 2018 compared to 1.1 billion in 2017 (Chart 1.39).

- A post-paid residential user sent on average 27 SMS per month (versus 31 in 2017), followed by a business user with 20 SMS (versus 23 in 2017) and finally, a pre-paid user with 9 SMS.

Multimedia Message Services (MMS)

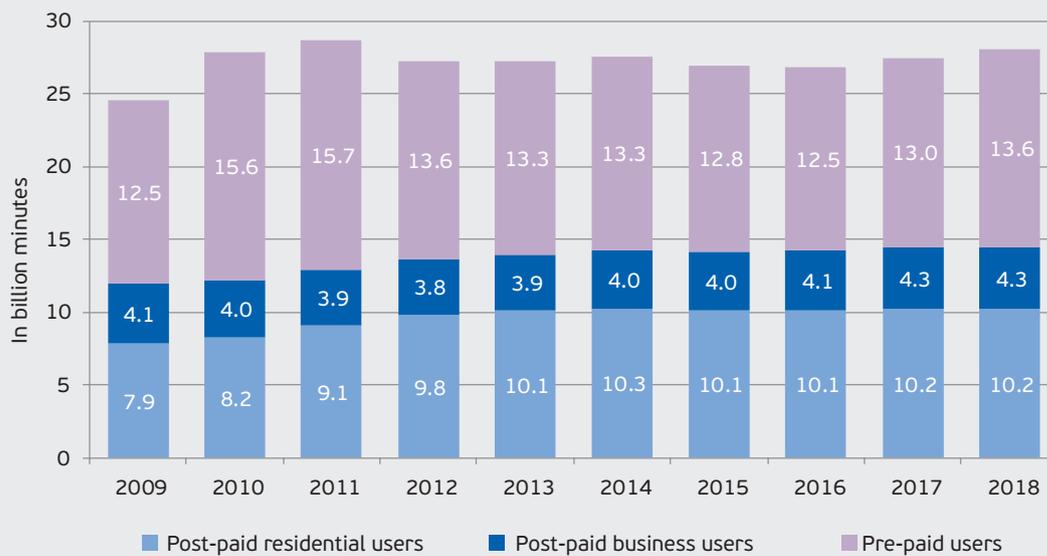
- The number of MMS increased slightly by 1%, reaching 11.3 million in 2018 from 11.2 million in 2017 (Chart 1.40).

Chart 1.36: Breakdown (%) of the basic call types' volume



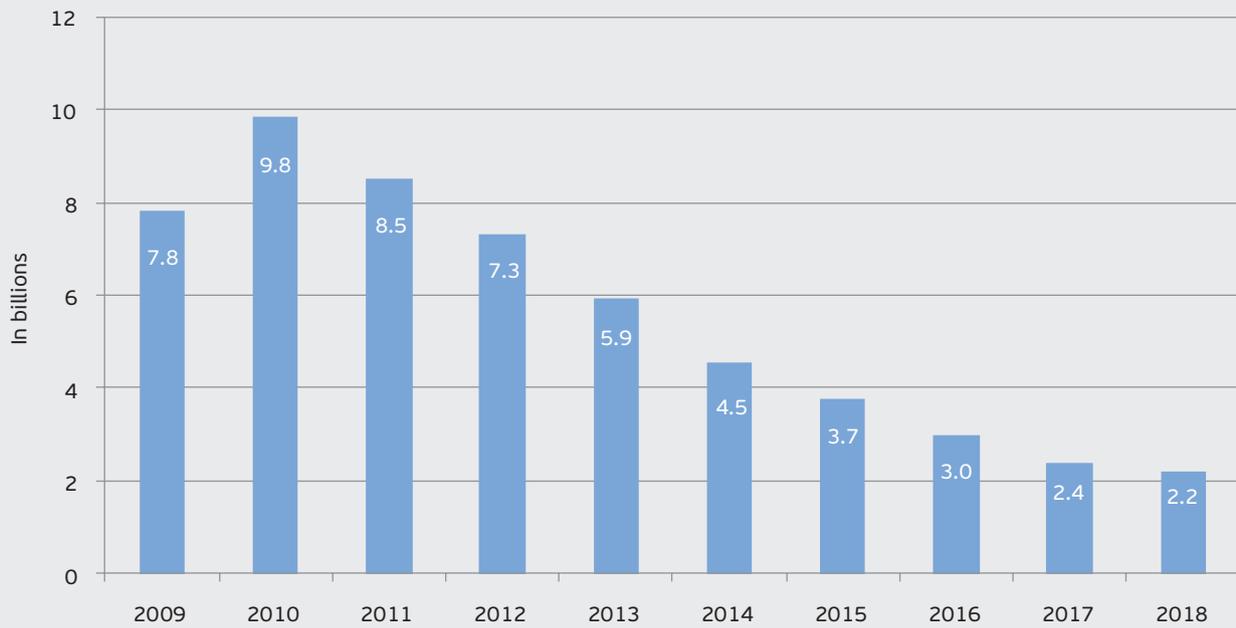
Source: EETT (based on data provided by the licensed providers)

Chart 1.37: Volume of voice calls per user category



Source: EETT (based on data provided by the licensed providers)

Chart 1.38: Total number of SMS



Source: EETT (based on data provided by the licensed providers)

Chart 1.39: Number of SMS per user category



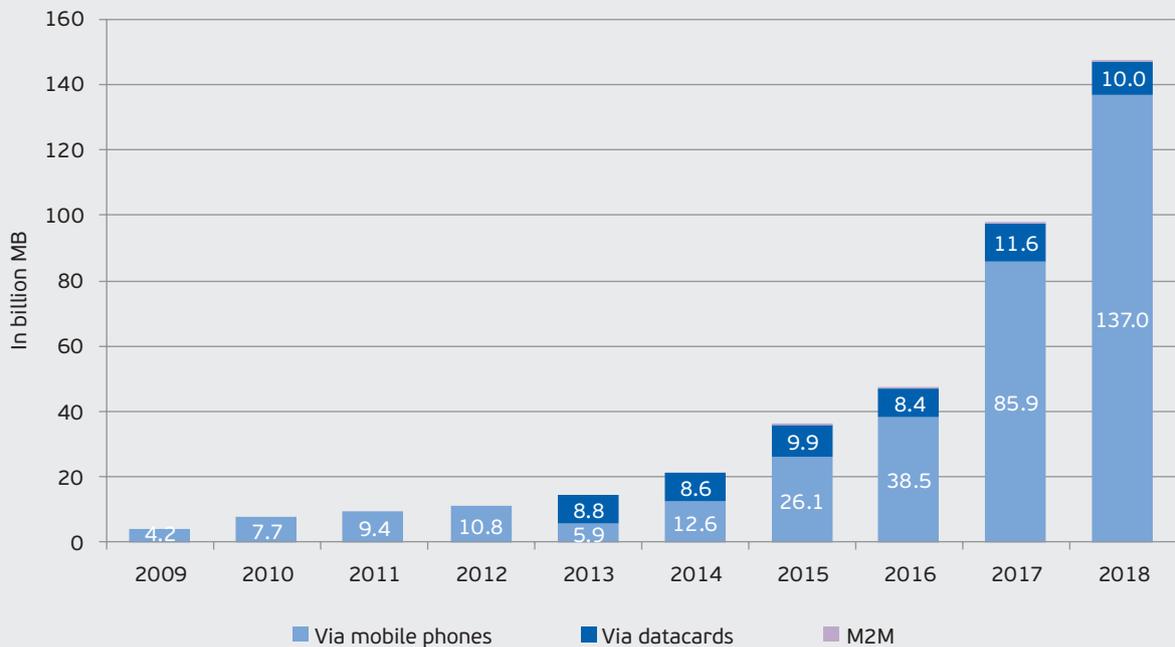
Source: EETT (based on data provided by the licensed providers)

Chart 1.40: Total number of MMS



Source: EETT (based on data provided by the licensed providers)

Chart 1.41: Total volume of data services via mobile phones, datacards and M2M⁸



Source: EETT (based on data provided by the licensed providers)

8. It is noted that up till 2012, reporting data use via mobile phones or datacards separately was not feasible.

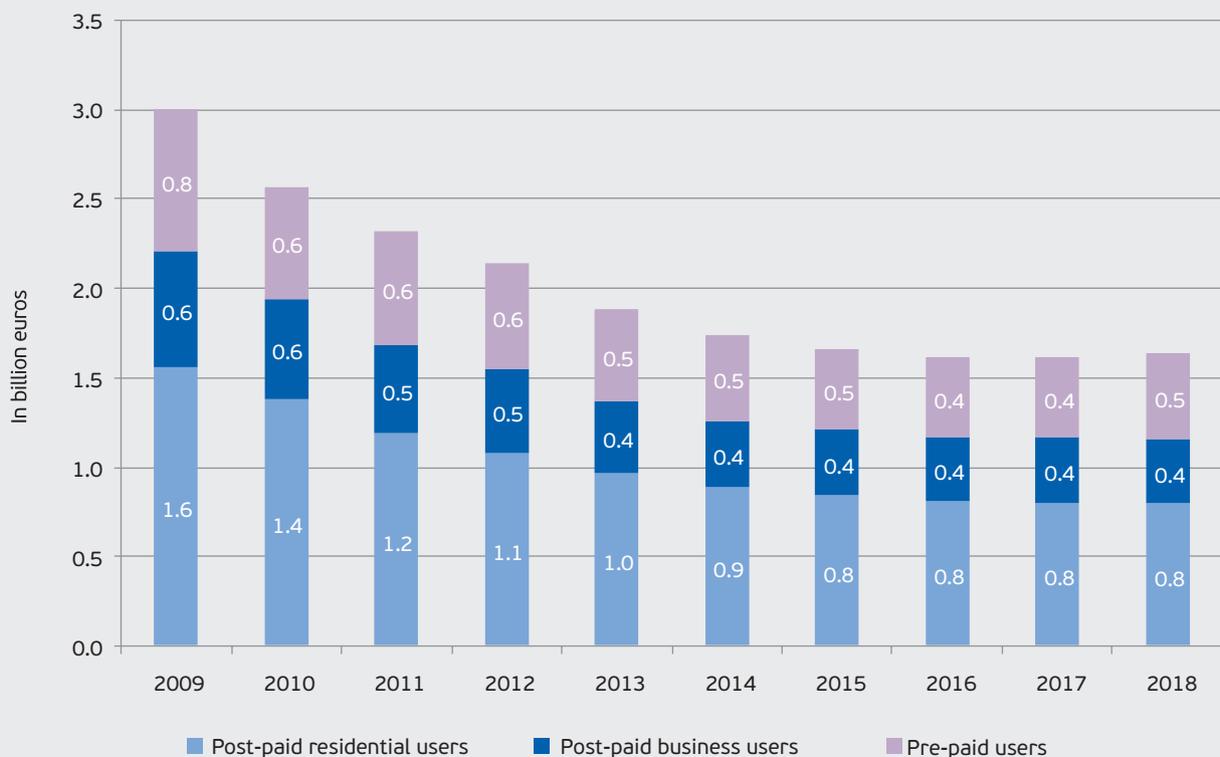
Data Services

- In 2018, the volume of data services over mobile communications networks increased impressively by 51%, reaching 148 billion MB (Chart 1.41).
- During 2018, the majority of data traffic was transferred via mobile phone devices (93%), while the remaining (7%) via other portable devices using datacards and M2M.
- All user categories increased significantly their use of data services during 2018. A post-paid residential user used on average 1,245 MB per month (versus 899 MB in 2017), followed by a pre-paid user with 946 MB (versus 538 MB in 2017) and finally, a business user with 852 MB (versus 630 MB in 2017).

Retail revenues from mobile services

In 2018, the retail revenues from voice and data services⁹ (post-paid and pre-paid) increased by 1.6% amounting to 1.64 billion euros (Chart 1.42). Tables 1.11-1.13 present the market shares based on the mobile providers' retail revenues, both aggregatedly and per subscriber category (post-paid and pre-paid)¹⁰. The revenues from post-paid residential users declined by 0.6%, as did the revenues from business users (-1.8%), while in contrast, the pre-paid revenues increased by 8.3%. The majority of voice and data retail revenues (69%) came from voice calls (Chart 1.43). The average annual revenue per post-paid and pre-paid user (connection) was 271 euros (2.3% drop) and 59 euros (11.5% increase) respectively (Chart 1.44).

Chart 1.42: Retail revenues from users of voice and data services of mobile communications networks



Source: EETT (based on data provided by the licensed providers)

9. Revenues from the sale of handsets, wholesale or other services are not included.

10. Retail revenues and the resulting market shares are confidential data and for this reason the market shares are presented as ranges.

Table 1.11: Mobile providers' shares based on retail revenues

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
COSMOTE	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%
CYTA	-	-	-	-	-	0%-5%	0%-5%	0%-5%	0%-5%	0%-5%
VODAFONE	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%
WIND	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%

Source: EETT (based on data provided by the licensed providers)

Table 1.12: Mobile providers' shares based on post-paid retail revenues

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
COSMOTE	35%-45%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%	45%-55%
CYTA	-	-	-	-	-	0%-5%	0%-5%	0%-5%	0%-5%	0%-5%
VODAFONE	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%	25%-35%
WIND	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%

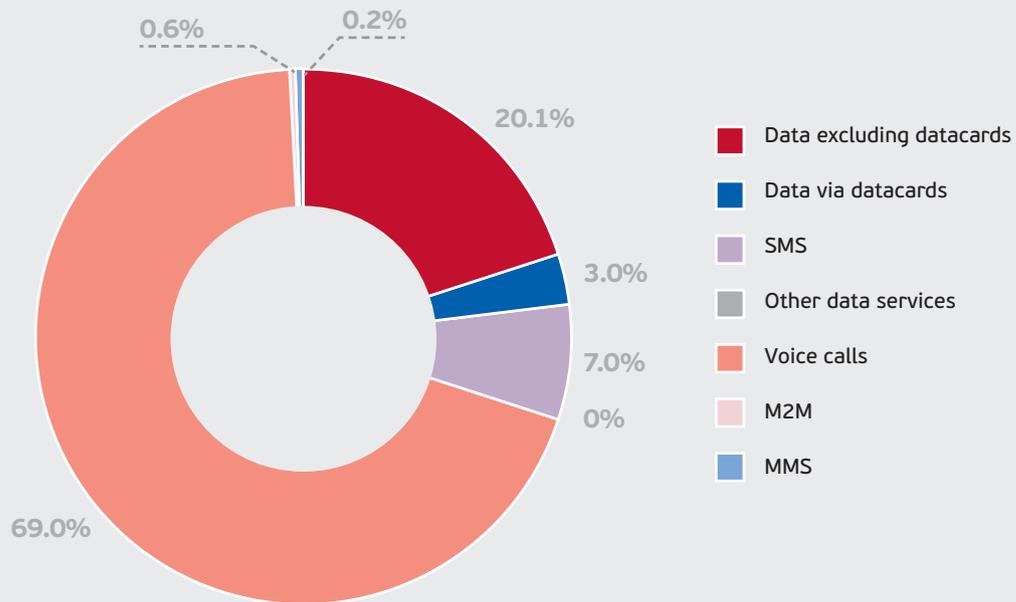
Source: EETT (based on data provided by the licensed providers)

Table 1.13: Mobile providers' shares based on pre-paid retail revenues

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
COSMOTE	45%-55%	55%-65%	55%-65%	55%-65%	55%-65%	55%-65%	55%-65%	55%-65%	45%-55%	45%-55%
CYTA	-	-	-	-	-	0%-5%	0%-5%	0%-5%	0%-5%	0%-5%
VODAFONE	25%-35%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	25%-35%	25%-35%	25%-35%	25%-35%
WIND	25%-35%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%	15%-25%

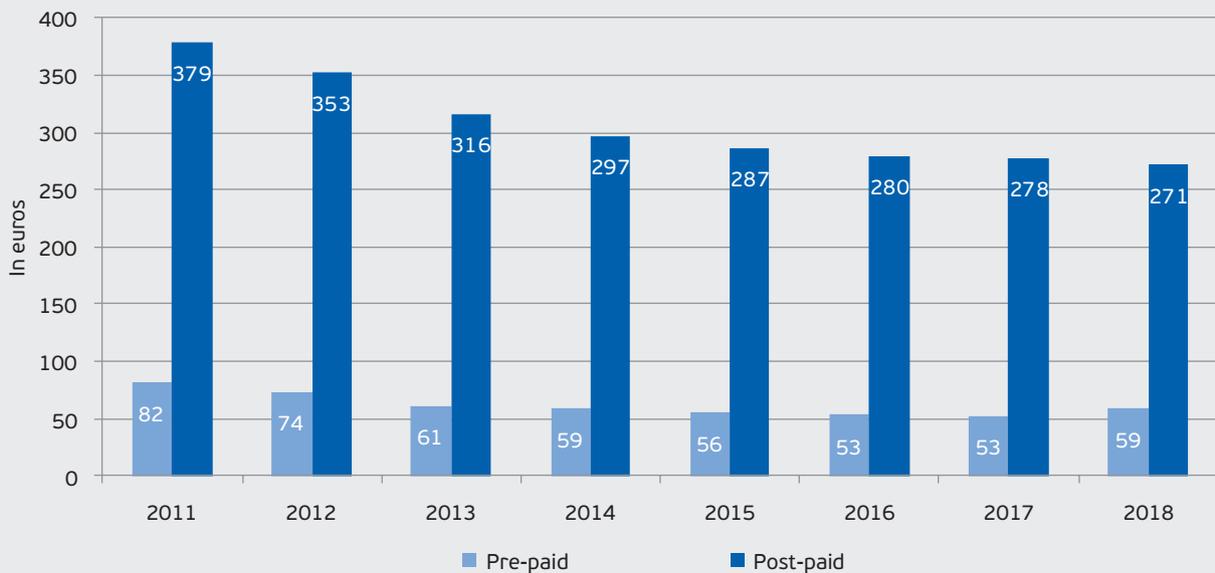
Source: EETT (based on data provided by the licensed providers)

Chart 1.43: Retail revenues from voice and data services of mobile communications networks, 2018



Source: EETT (based on data provided by the licensed providers)

Chart 1.44: Average annual revenue per mobile telephony connection



Source: EETT (based on data provided by the licensed providers)

Mobile interconnection

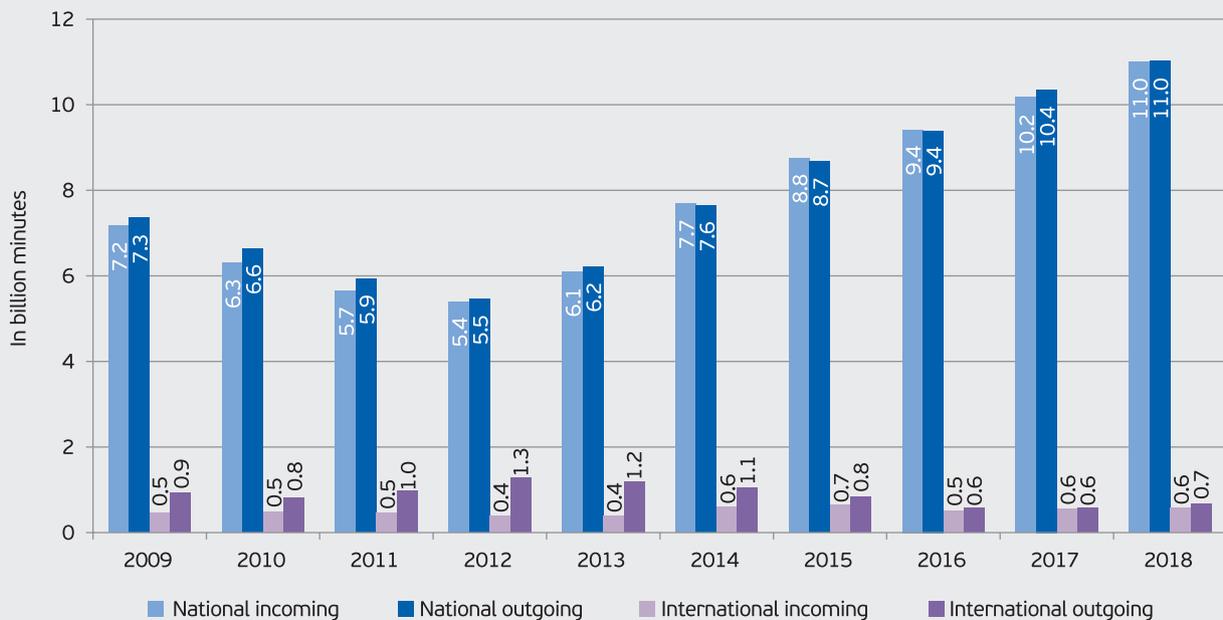
The interconnection traffic of mobile providers in 2018 registered an increase, as illustrated in Chart 1.45 which presents the national and international interconnection traffic (incoming and outgoing) for the three mobile network operators (MNOs) and the single Mobile Virtual Network Operator (MVNO). Overall, the increase was 7.5% compared to 2017, which corresponds to a total annual increase of approximately 1.6 billion minutes. More specifically, the international outgoing traffic increased by 19% and the national incoming traffic by 8.2%.

Chart 1.46 demonstrates the on-net traffic for the three MNOs and the single MVNO, which for 2018 amounted to approximately 14.9 billion minutes, recording a decrease of 2.6% compared to 2017 (about 398 million minutes), thus accounting for 39% of the total interconnection traffic (which also includes the incoming and the outgoing traffic).

At the same time, the national traffic terminating to mobile networks remained stable over the last five years. For 2018 in particular, the national calls to mobile phones increased by 1.1%, amounting to 25,766 million minutes versus 25,495 million minutes in 2017 (Chart 1.47).

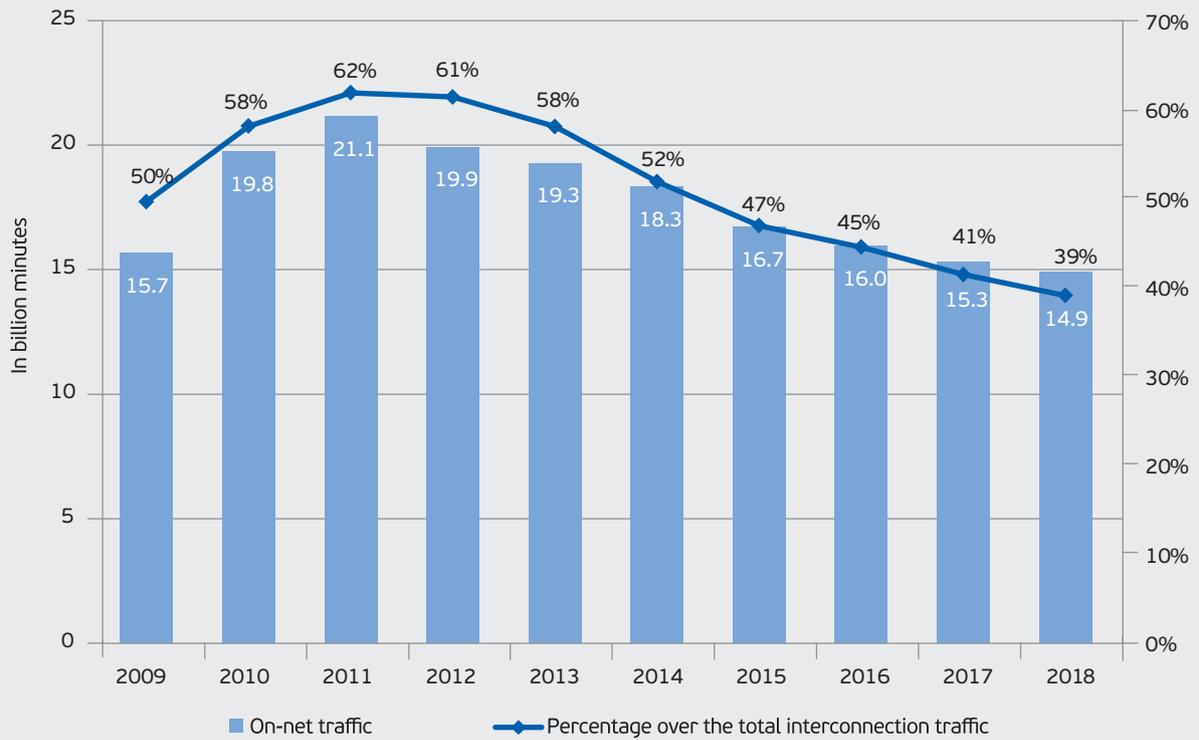
In 2018, the revenues from the national incoming traffic to mobile networks exceeded 105.9 million euros, having increased marginally (0.02%) compared to the previous year, due to the decrease in the national incoming traffic from fixed providers by 7%, which offset the 10% increase in the incoming traffic from other mobile providers (Chart 1.48). At the same time, the upward trend of the incoming traffic from other mobile providers and of the respective revenue seems to be consolidated, as well as the decrease in the volume of the on-net traffic. Finally, as of the 1st January 2019, the call termination rates to mobile networks stood at 0.946 euro-cent per minute (Chart 1.49).

Chart 1.45: Mobile providers' interconnection traffic



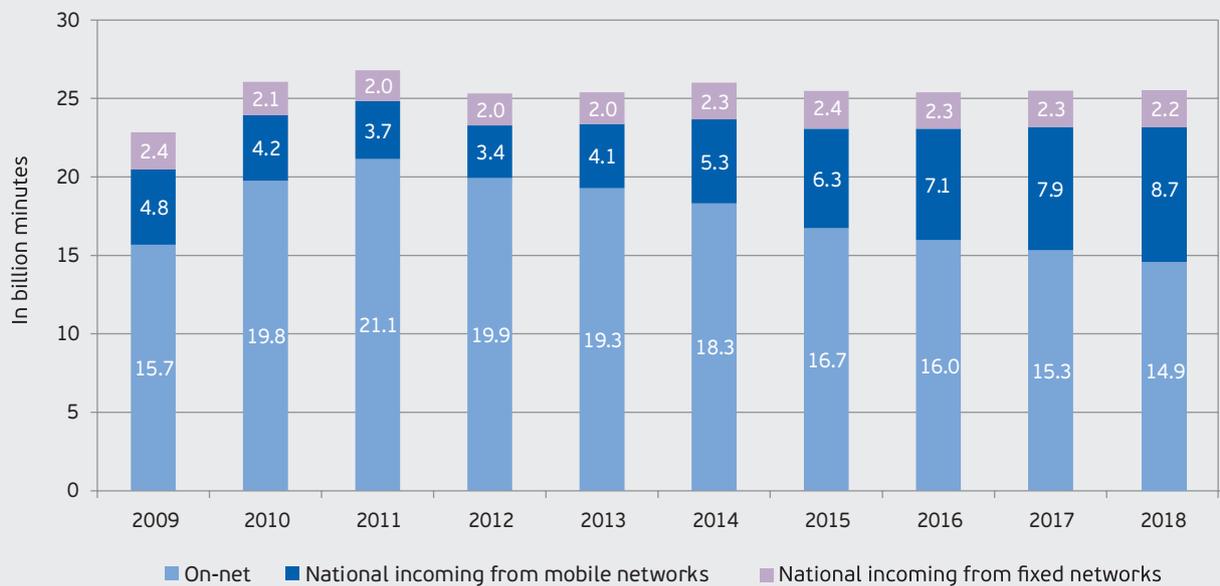
Source: EETT (based on data provided by the mobile providers)

Chart 1.46: Mobile providers' on-net traffic



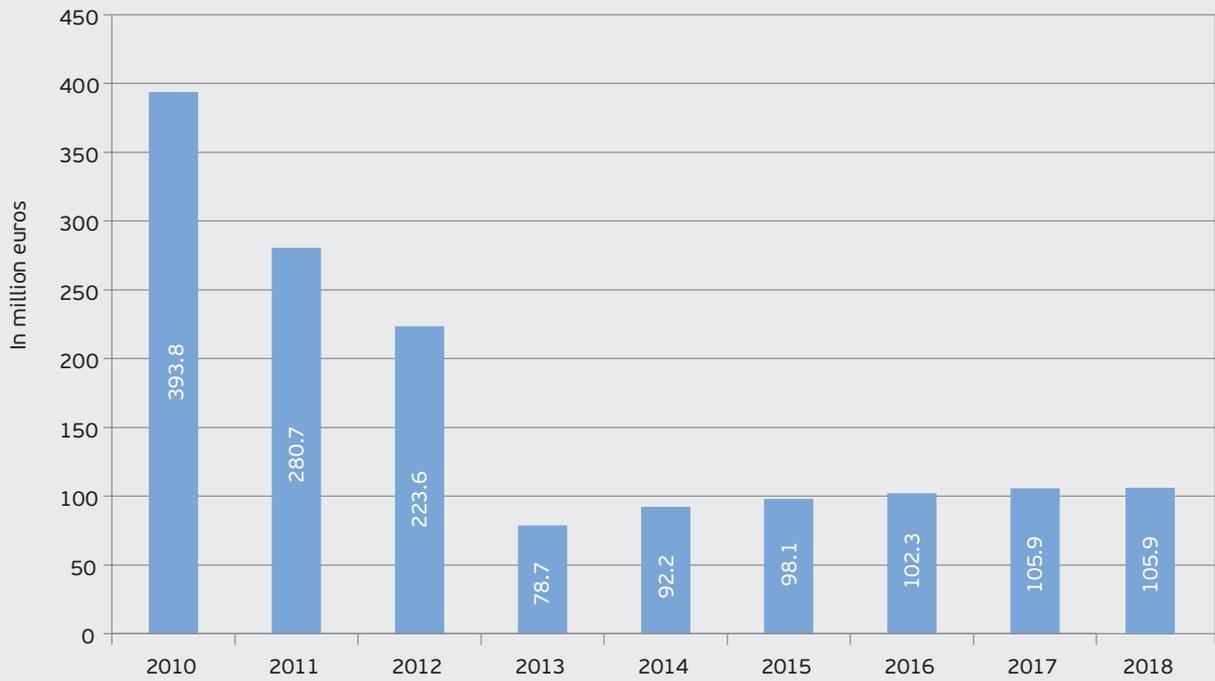
Source: EETT (based on data provided by the mobile providers)

Chart 1.47: Voice calls terminating to mobiles in Greece



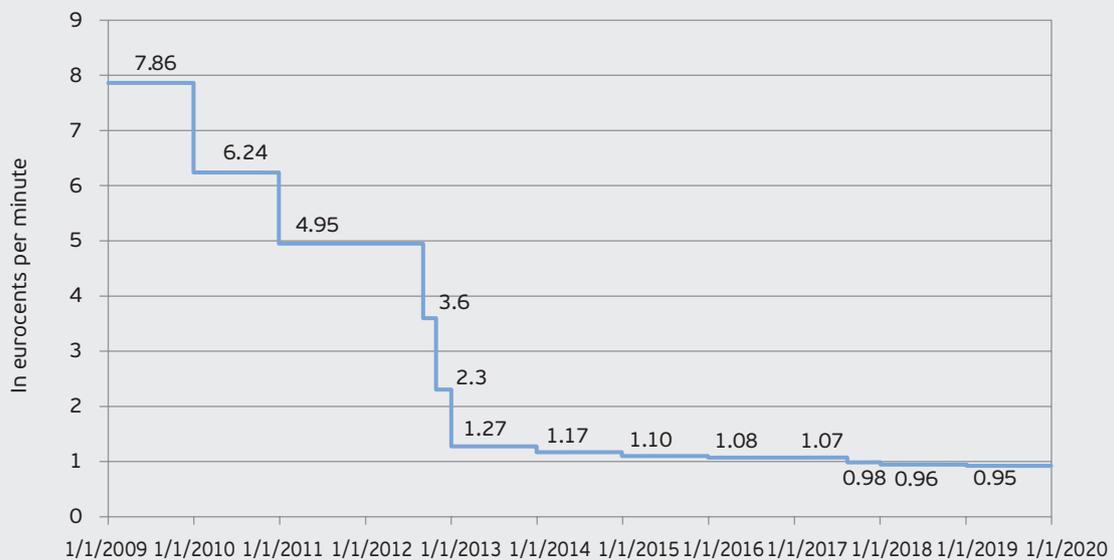
Source: EETT (based on data provided by the mobile providers)

Chart 1.48: Revenues from fixed and mobile voice calls termination to mobiles in Greece

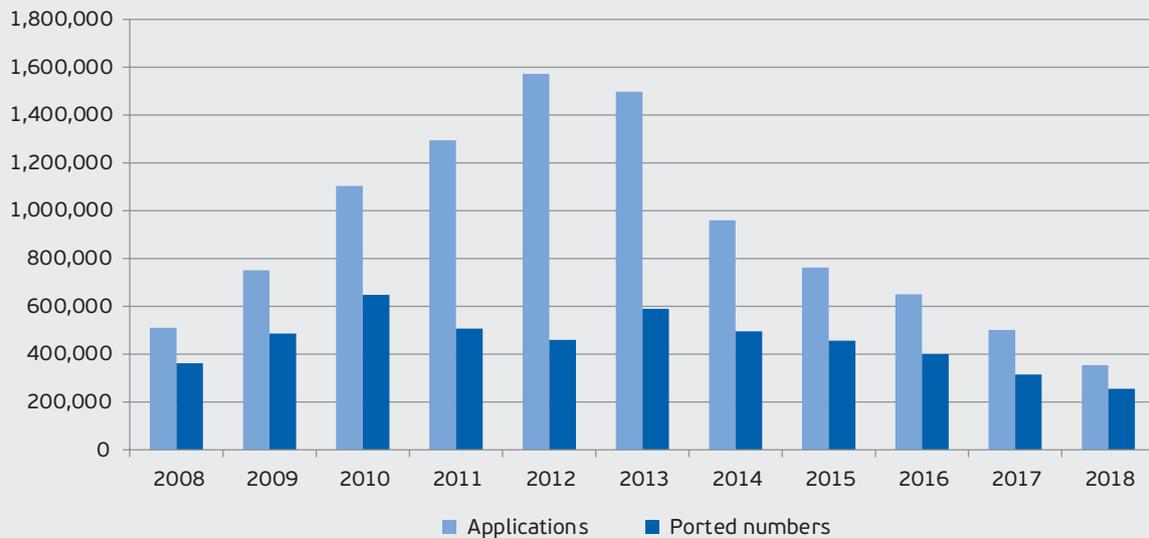


Source: EETT (based on data provided by the mobile providers)

Chart 1.49: Evolution of call termination rates to mobile networks



Source: EETT

Chart 1.50: Number portability in mobile telephony

Source: EETT

Number portability in mobile telephony

The applications submitted during 2018 for porting mobile telephony numbers amounted to 353,960 versus 500,668 in 2017, registering a 29.3% decrease compared to the previous year. During the same period, 255,694 numbers were ported, reduced by 18.8% compared to 2017 (Chart 1.50). In conclusion, transfers were completed for approximately 72% of the initial portability requests.

1.2.4. Comparison between fixed and mobile telephony

Fixed telephony connections (lines) declined marginally (0.1%) to 4.8 million in 2018, whilst active mobile telephony connections/subscriptions declined by 5.9% reaching 12.2 million (Chart 1.51).

Chart 1.52 shows the evolution of the fixed telephony and Internet retail revenues compared to the retail voice and data (SMS, MMS, Data) revenues of mobile communications networks¹¹, for the period 2011-2018. The mobile retail revenues rose once again by 1.6% compared to 2017, reaching 1.64 billion euros, while the fixed ser-

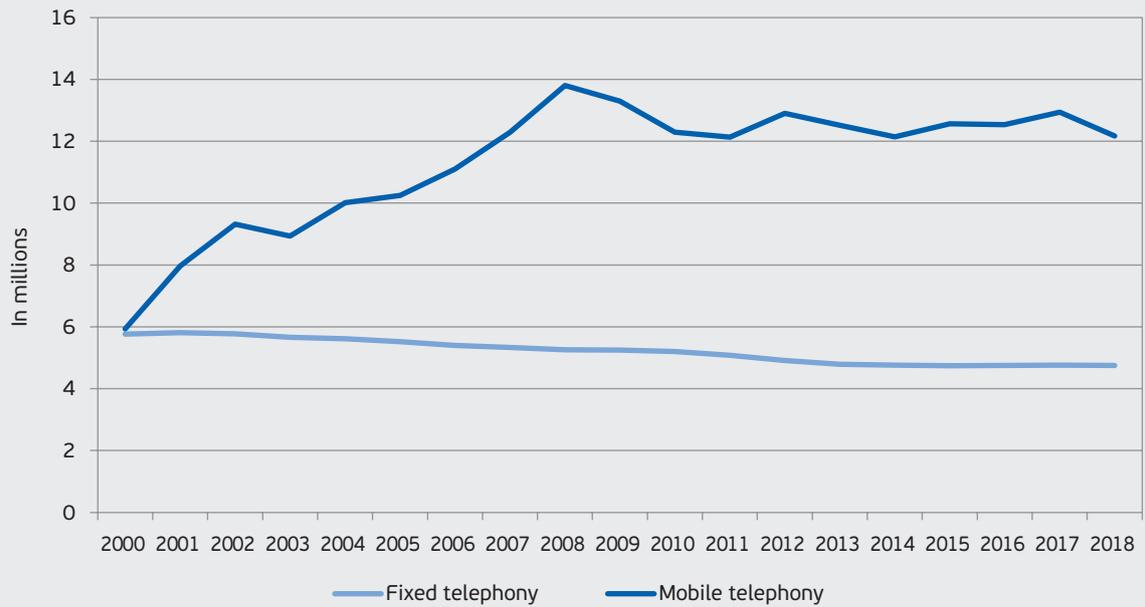
vices' retail revenues remained at the same level as in 2017, amounting to 1.4 billion euros.

Chart 1.53 presents the evolution of the volume of calls from fixed and mobile phones taking into account the basic call types, i.e. the national fixed calls, the calls to mobiles and the international calls¹². The volume of these calls from fixed phones registered in 2018 a new decline by 8.6%, amounting to 14.2 billion minutes versus 15.5 billion in 2017, mainly due to the sharp decline by 1.2 billion minutes of the national fixed calls. In contrast to fixed telephony, the volume of the basic call types made from mobiles increased by 1.5% compared to 2017 and accounts for 66% of the respective total (i.e. fixed and mobile) outgoing traffic, versus 63% in 2017 (Chart 1.54).

11. Revenues from handsets and other services are excluded.

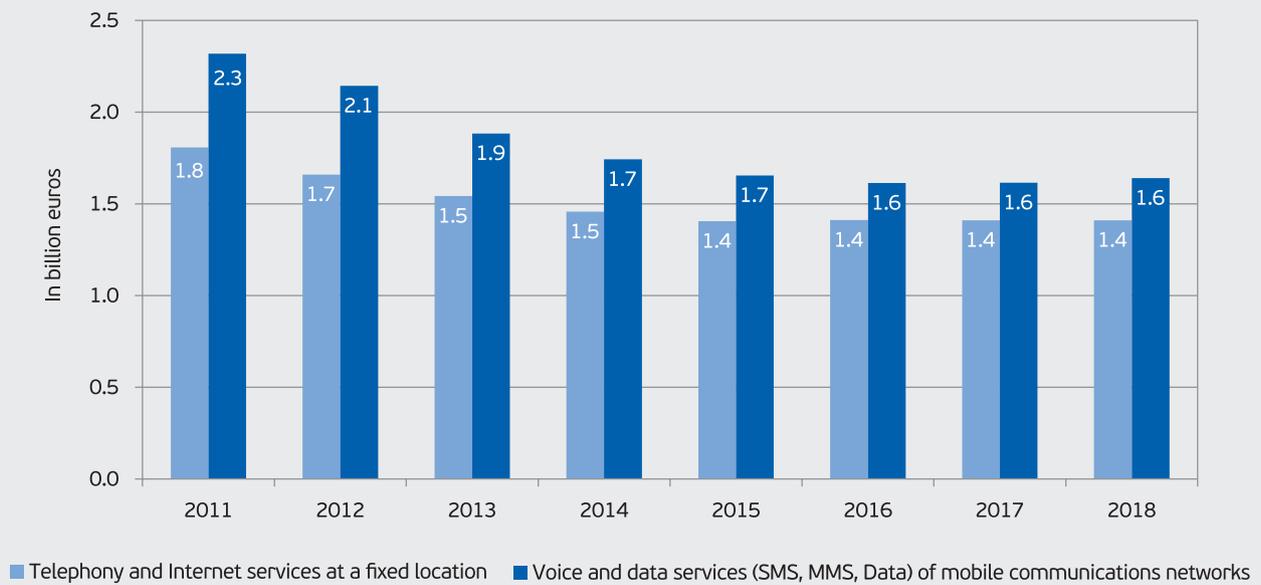
12. As far as calls from mobiles are concerned, these are the on-net, off-net, mobile to fixed and mobile to international destinations calls.

Chart 1.51: Evolution of fixed and mobile telephony connections



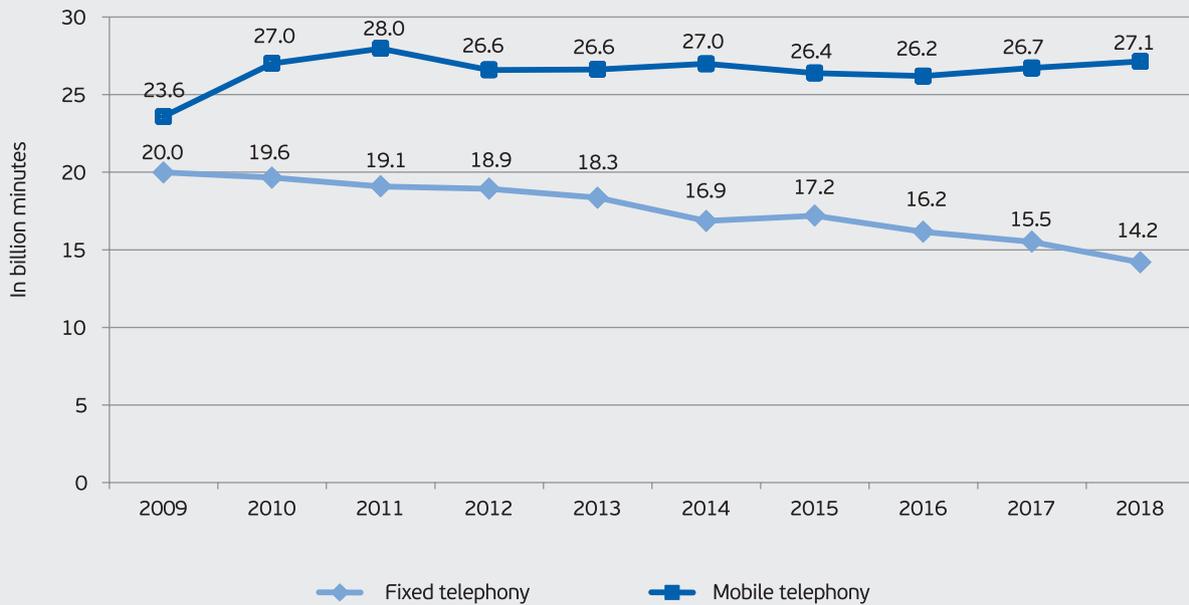
Source: EETT (based on data provided by the licensed providers)

Chart 1.52: Evolution of retail revenues



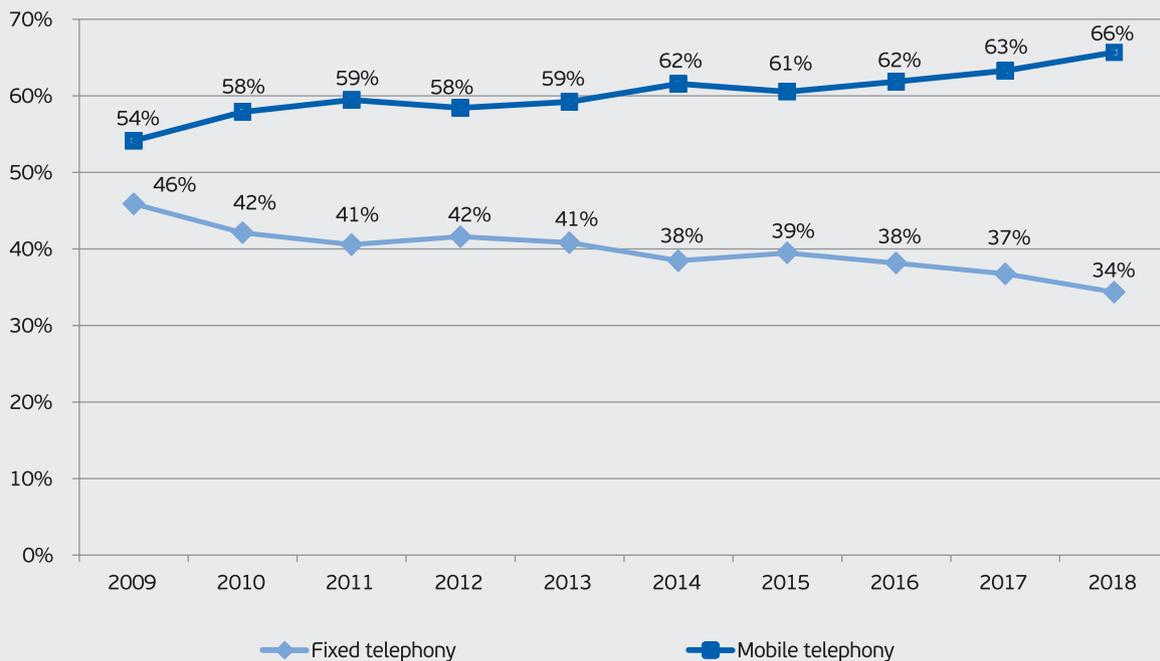
Source: EETT (based on data provided by the licensed providers)

Chart 1.53: Volume of the basic call types from fixed and mobile phones



Source: EETT (based on data provided by the licensed providers)

Chart 1.54: Fixed and mobile telephony shares (based on the outgoing volume of the basic call types)



Source: EETT (based on data provided by the licensed providers)

1.2.5. Broadband

Fixed broadband

At the end of 2018, fixed broadband connections amounted to 3,964,402 versus 3,795,410 at the end of 2017, registering an annual increase of 4.5%, which is lower than that of the previous year (4.9%) (Chart 1.55).

The Local Loop Unbundling (LLU) lines registered, for the first time, a marginal decline (-0.1%) reaching 2,113,491 at the end of the year versus 2,116,007 at the end of 2017 (Chart 1.56)¹³. This decline is attributed to the reduction of full LLU lines to 2,084,854 (compared to 2,107,510 at the end of 2017), as well as of shared LLU lines (1,717 versus 3,296 at the end of 2017). On the contrary, the full access sub-loop lines¹⁴ reached 26,920 (versus 5,201 at the end of 2017), with 53% thereof (14,287) allocated for the development of broadband products in rural areas and the remaining 47% (12,633) supplied to operators for developing Next Generation Access Networks (NGA).

Most of the operators' broadband lines, excluding OTE, are LLU lines. The VDSL lines at the end of 2018 amounted to 699,105, compared to 460,652 in December 2017 (annual increase of 51.7%), accounting for 17.2% of the total broadband lines (Chart 1.57). Their penetration in the population remains low (6.3% versus 4.3% at the end of 2017).

The individual shares of broadband lines per technology were as follows:

- The xDSL lines via LLU amounted to 2,074,235 compared to 2,025,783 at the end of 2017, with their share over the total broadband lines declining to 49.23% versus 51.38% at the end of 2017. Of them, 122,496 lines were offered as virtual VPU products, and 29,020 as VLU wholesale broadband access products (Charts 1.58 and 1.59).
- The share of OTE's xDSL retail lines increased to 47.2% of the total broadband lines (1,871,036 lines) compared to 46.01% at the end of 2017 (1,746,102 lines). From the total number of OTE's xDSL lines, 518,278 were Virtual Local

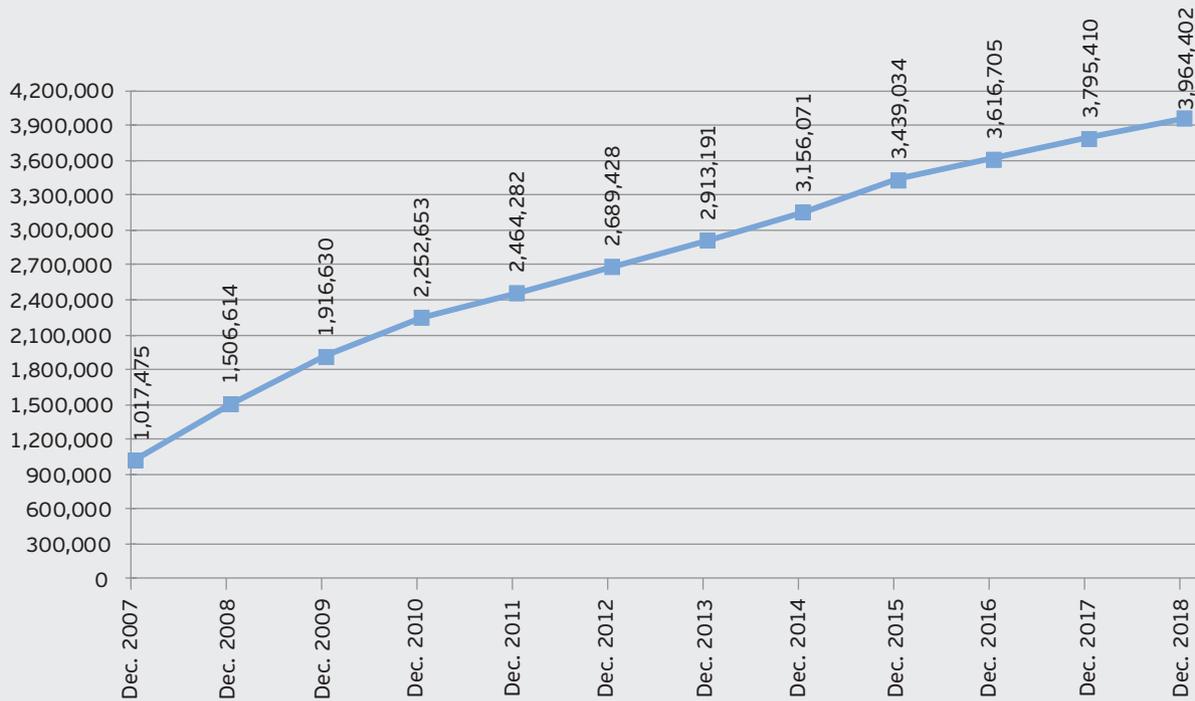
Unbundling (VLU) lines, which overwhelmingly (>99%) are based on OTE's own infrastructure.

- The wholesale ARYS and V-ARYS lines, provided by OTE to alternative operators for rendering broadband access services, increased to 129,870 lines (3.28% of the total broadband lines) versus 86,124 in December 2017, due to the increase of the Virtual Partially Unbundled (VPU) products (122,496 by December 2018).
- The lines of other technologies remained at very low levels with a percentage estimated at 0.3%.
- The vast majority of the total broadband lines (over 95%) corresponds to nominal download access speeds of 10 Mbps and above. At the same time, the increase in the percentage of high-speed broadband lines with nominal download access speeds of at least 30 Mbps, which now constitutes 18.3% of the total broadband lines (12.3% at the end of 2017), was also significant. 3.4% of these lines corresponds to access speeds of 100 Mbps and above (Charts 1.60 and 1.61).
- The Internet traffic of the fixed broadband access users during 2018, reached on average 0.80 TB per subscriber (versus 0.70 TB per subscriber in 2017).
- As far as the providers' shares are concerned based on the number of their broadband lines, COSMOTE is ahead (45%-55%) followed by VODAFONE (15%-25%) (Table 1.14).

13. The access lines via LLU are a superset of broadband lines via LLU, since they also include telephony only lines.

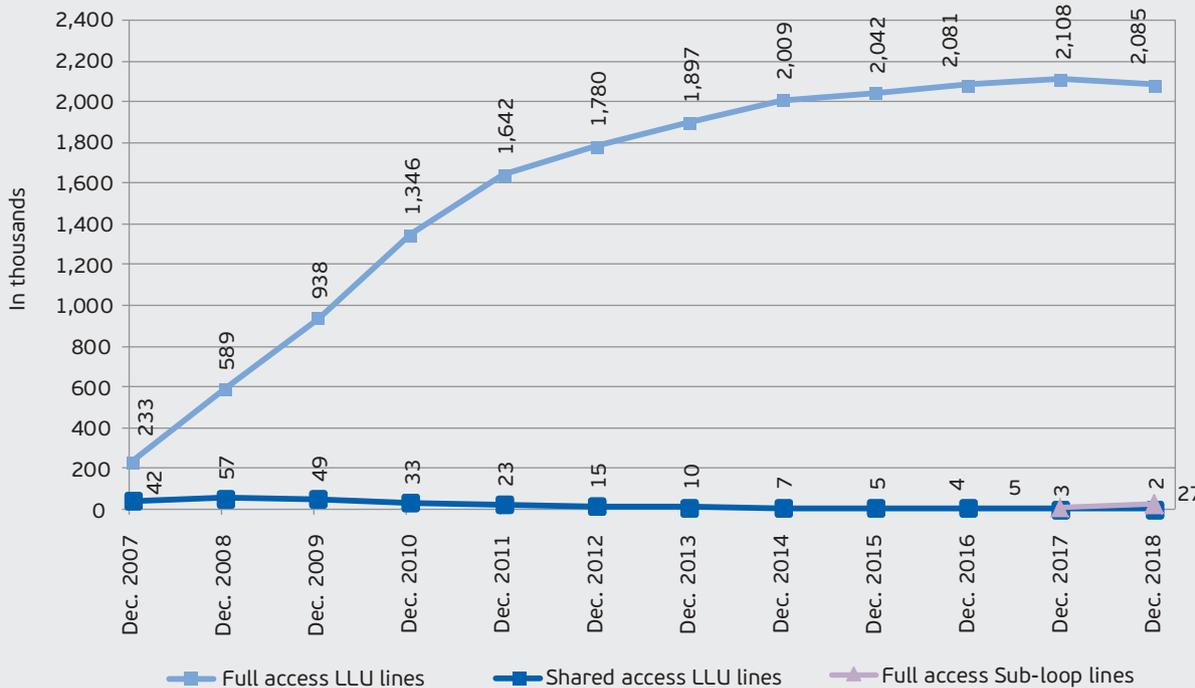
14. Local Sub-loop: the section of local loop that connects the termination point of OTE's network at the subscriber's premises to the Local Distribution Frame (LDF or Optical Network Unit-ONU).

Chart 1.55: Evolution of broadband lines



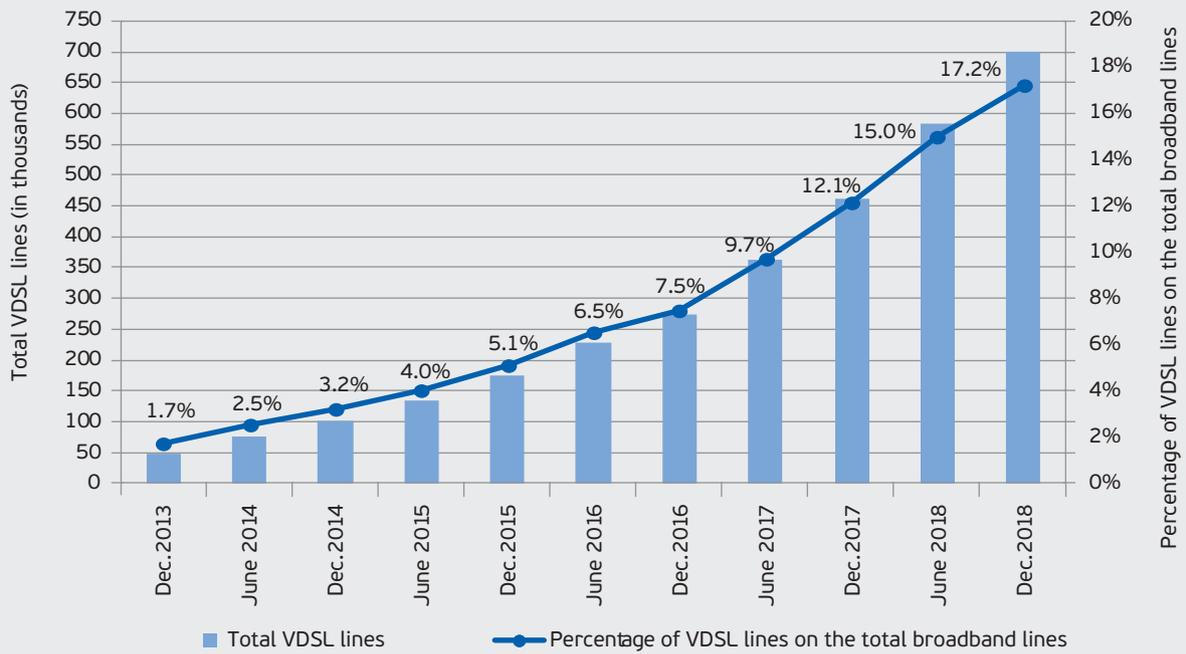
Source: EETT (based on data provided by the licensed providers)

Chart 1.56: Evolution of LLU lines



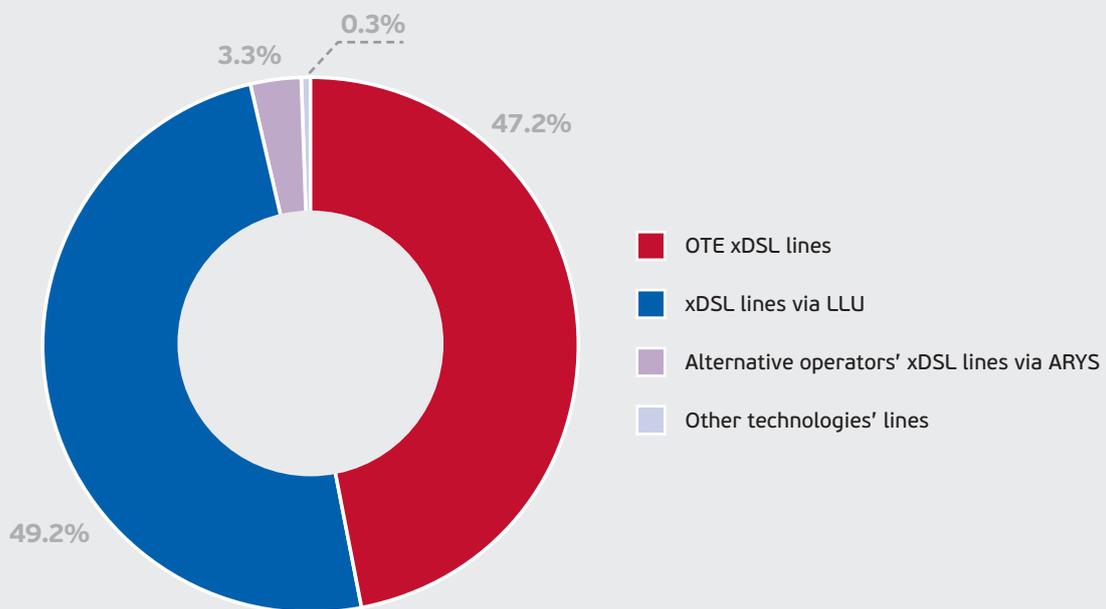
Source: EETT (based on data provided by the licensed providers)

Chart 1.57: Evolution of VDSL lines



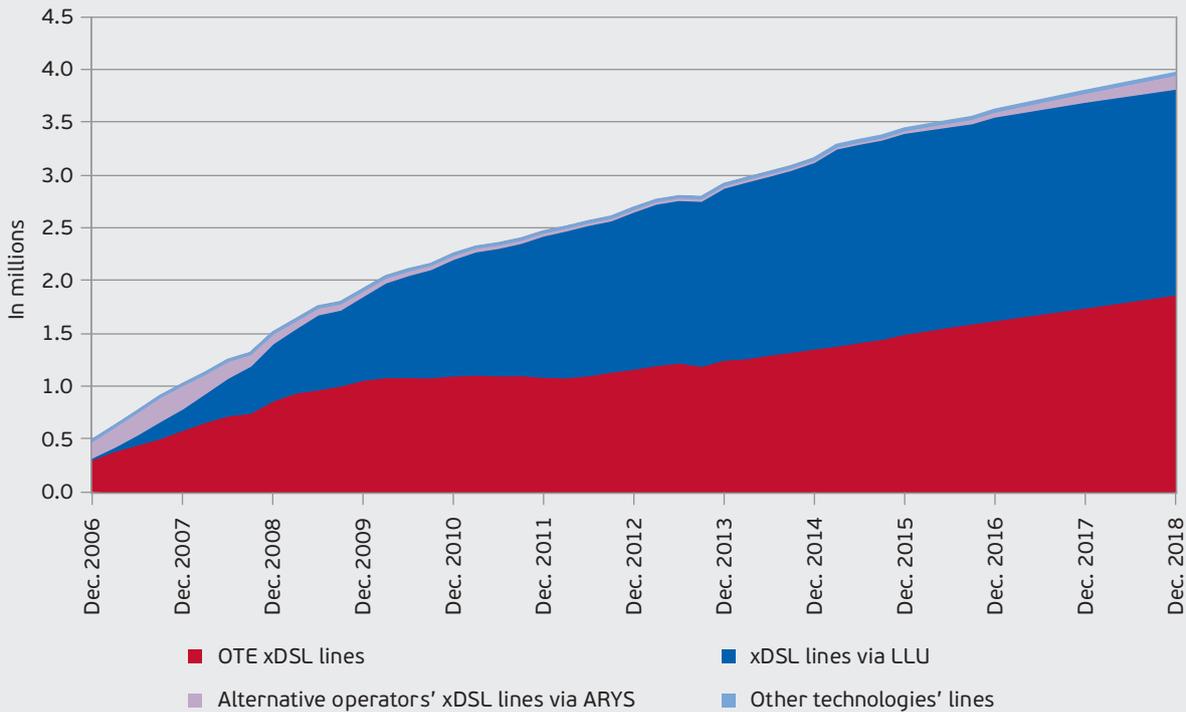
Source: EETT (based on data provided by the licensed providers)

Chart 1.58: Breakdown of broadband lines per technology, December 2018



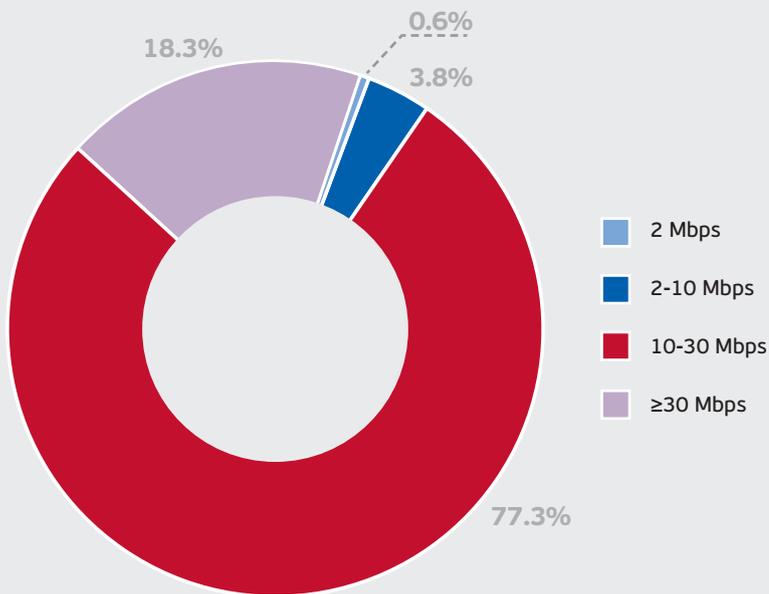
Source: EETT (based on data provided by the licensed providers)

Chart 1.59: Evolution of broadband lines per technology

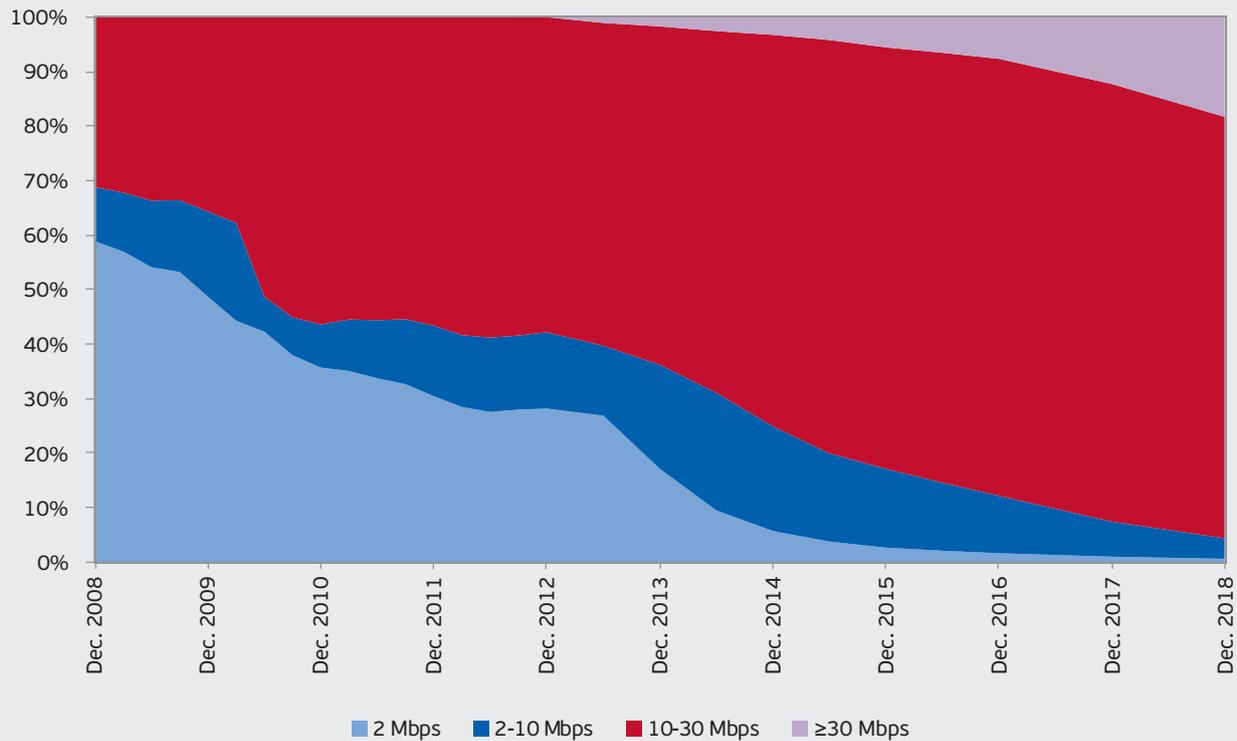


Source: EETT (based on data provided by the licensed providers)

Chart 1.60: Breakdown of broadband lines per nominal download access speed, December 2018



Source: EETT (based on data provided by the licensed providers)

Chart 1.61: Evolution of broadband lines' nominal download access speeds

Source: EETT (based on data provided by the licensed providers)

Table 1.14: Shares of fixed broadband access providers (based on the number of lines)

	Dec. 2018
COSMOTE	45%-55%
VODAFONE	15%-25%
WIND	15%-25%
FORTHNET	10%-15%
CYTA	5%-10%

Source: EETT (based on data provided by the licensed providers)

Mobile broadband

The total active mobile connections that were used for data services reached 8,563,326 at the end of 2018 versus 7,074,933 at the end of 2017 (Chart 1.62), marking an annual increase of 22%. For the majority of these connections (7,504,307 compared to 5,784,042 at the end of 2017) either an add-on data package was selected (on top of mobile voice services) or data services were used via

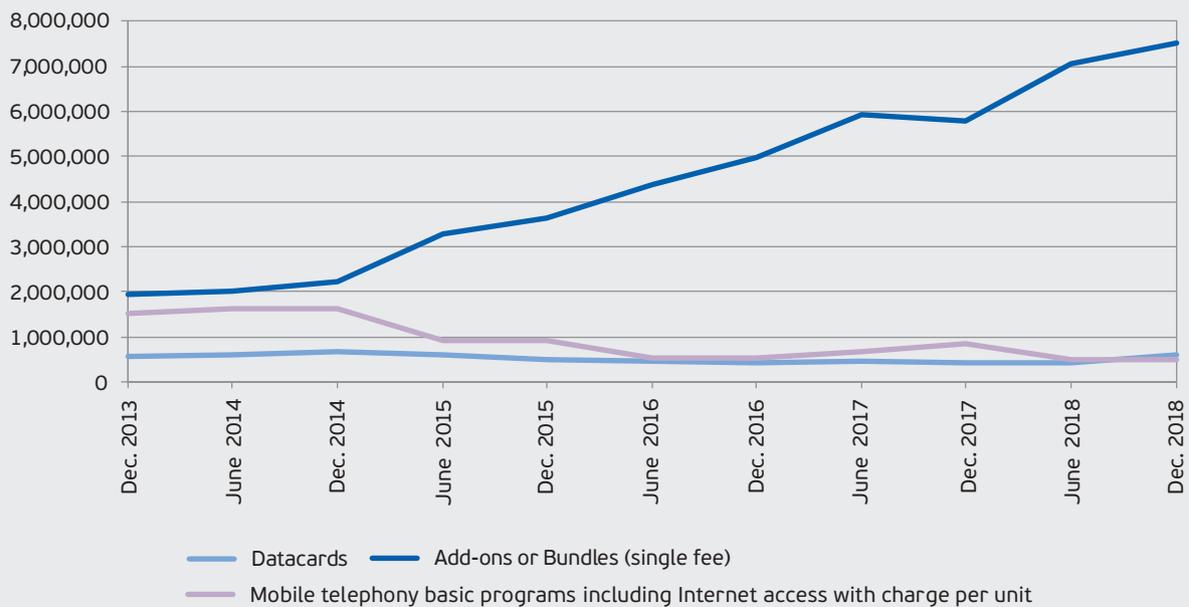
mobile bundled (i.e. voice and data access) plans offered for a single fee. For 619,536 connections (compared to 850,130 in 2017), their subscribers opted for data services via mobile telephony programs that include, among others, Internet access with charge per unit. Lastly, 439,483 Internet connections concerned datacards.

Comparing the volume of Internet traffic via 3G and 4G networks, it becomes evident that the

majority of this volume was carried through 4G networks, with the relevant percentage registering a continuous increase (69.9% in 2018, compared to 56.7% in 2017) (Chart 1.63). The average traffic per user in 2018 is estimated at 11.3 GB for the 3G subscribers (against 10.98 GB in 2017) and 29.58 GB for the 4G subscribers (compared to 19.57 GB in 2017). As far as the operators' shares are concerned in terms of 3G and 4G networks Internet traffic volume, COSMOTE leads the way with VODAFONE following (Table 1.15).

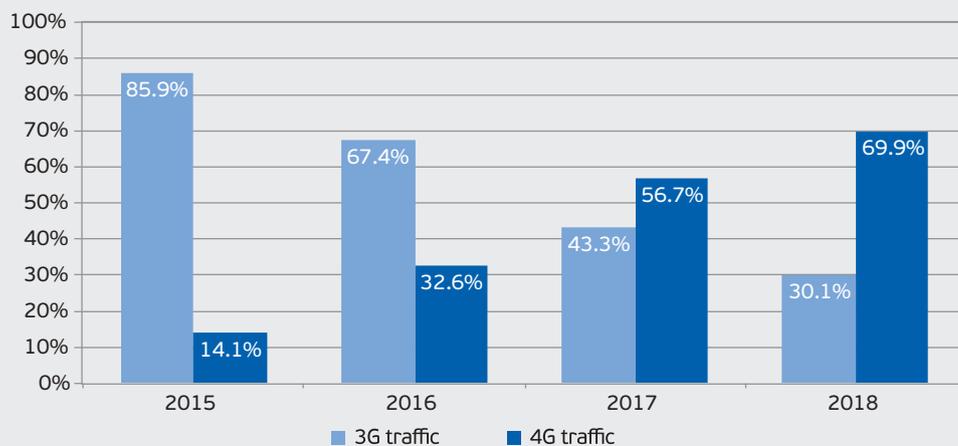
Chart 1.64 presents the change over time of 3G and 4G networks population coverage in the country, taking into account the network with the highest coverage per technology. During 2018, the 4G networks population coverage continued to increase (98.8% at the end of 2018, compared to 98% at the end of 2017). The respective population coverage of 3G networks remained at the same high level (almost 100%).

Chart 1.62: Evolution of mobile connections with Internet usage



Source: EETT (based on data provided by the licensed providers)

Chart 1.63: Volume comparison of Internet traffic (%) between 3G and 4G networks

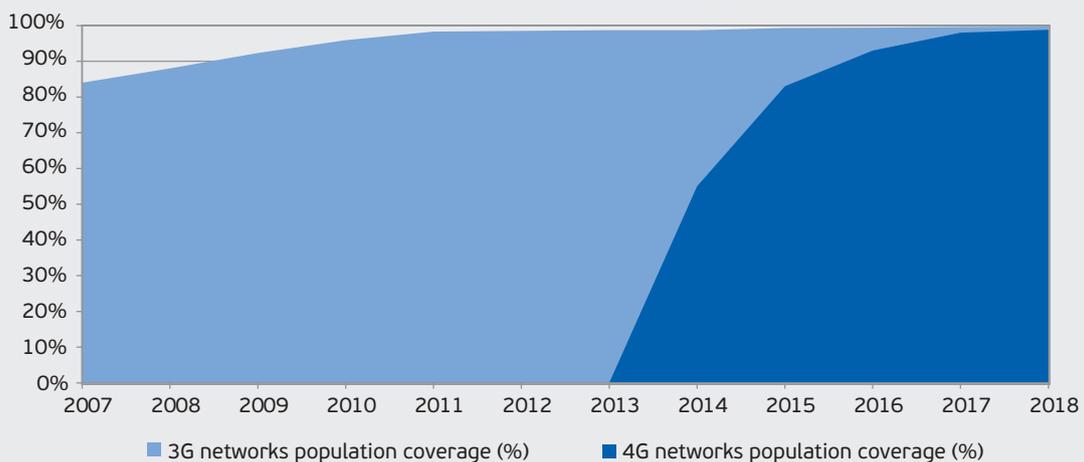


Source: EETT (based on data provided by the licensed providers)

Table 1.15: Shares of mobile broadband access providers based on 3G and 4G networks Internet traffic volume

	2018	
	3G	4G
COSMOTE	55%-65%	55%-65%
VODAFONE	25%-35%	25%-35%
WIND	5%-15%	10%-20%

Source: EETT (based on data provided by the licensed providers)

Chart 1.64: Change over time of 3G and 4G networks population coverage (%)

Source: EETT (based on data provided by the licensed providers)

1.2.6. Pay-TV

The pay-TV subscriptions (managed IPTV and satellite TV) provided in Greece by the electronic communications providers which are also con-

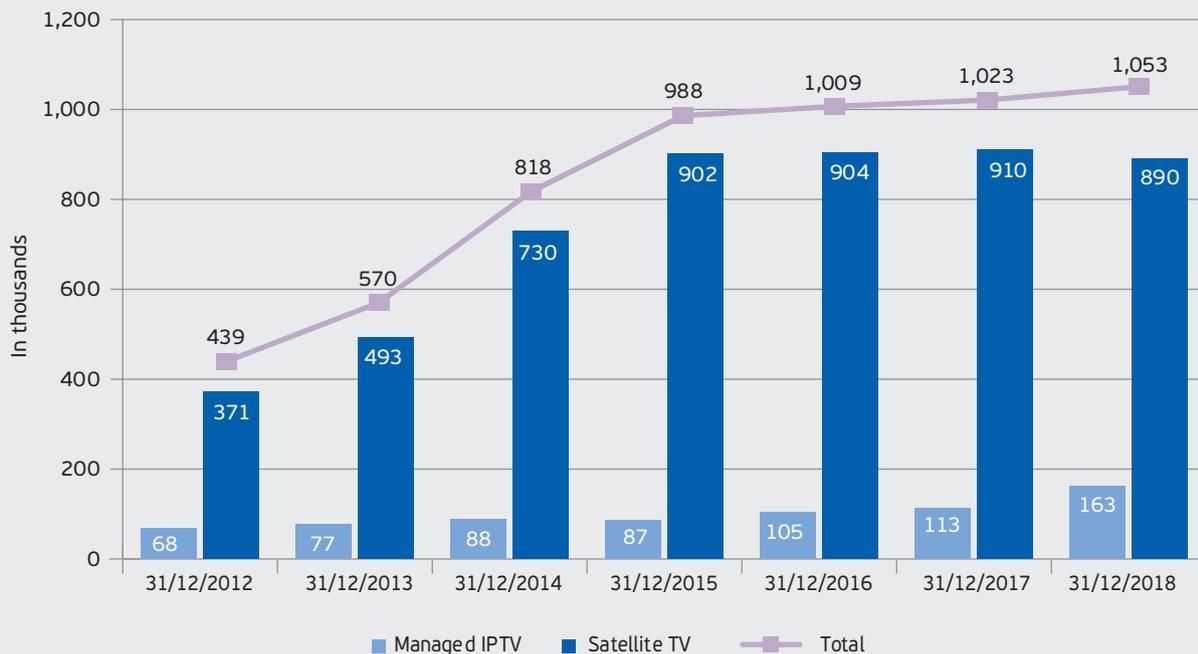
tent providers, amounted to 1.05 million at the end of 2018, registering an increase of 3% compared to 2017 (Chart 1.65). The corresponding market shares are presented in Table 1.16.

Table 1.16: Shares of pay-TV providers based on subscriptions

	31/12/2015	31/12/2016	31/12/2017	31/12/2018
FORTHNET/NOVA	45%-55%	35%-45%	35%-45%	35%-45%
OTE	45%-55%	45%-55%	45%-55%	45%-55%
VODAFONE	-	5%-10%	5%-10%	5%-10%
WIND	-	-	-	0%-5%
CYTA	0%-5%	0%-5%	0%-5%	0%-5%
HOL	0%-5%	-	-	-

Source: EETT (based on providers' data)

Chart 1.65: Evolution of pay-TV subscriptions



Source: EETT (based on providers' data)

1.2.7. Bundled offers

The increase in the penetration of bundled offers (or bundles) continued in 2018. At the end of the year, these offers were over 3.9 million, corresponding to 83% of the total fixed telephony subscriptions in the country. It is noted that the data collection for bundled offers is based on the definition of "bundled offers" of the European Commission and the Body of European Regulators for

Electronic Communications (BEREC)¹⁵. In particular, the applied definition requires that in the case of mixed bundles there is direct or indirect financial benefit for the subscriber in relation to the purchase (acquisition, continuation or renewal) of the combination of services. Also, it allows the exemption from "bundled offers" of those service combinations where the incentive (benefit) is not provided for the purchase of the combination but exclusively for the purchase of

15. EC and BEREC definition of "Bundled offers" (2015): "Bundled offers" or "Bundles" are commercial offers, provided by one or more operators, of two or more of the following services: (1) Fixed Broadband, (2) Fixed Telephony, (3) Mobile service(s) (including voice and/or broadband) and (4) Pay-TV. "Bundled offers" are either:

- (a) Pure bundles, comprising services that are unavailable individually;
- (b) Combinations of tied and tying services, consisting of a service ("tying service") that can only be purchased in connection with another service ("tied service"). The purchase of the former is conditional on the purchase of the latter but not vice versa;
- (c) Mixed bundles, combining services that are available individually, while the operator(s) provide(s) an incentive for buying these services jointly by granting the customer permanent beneficial conditions (i.e. throughout the joint purchase duration) that cannot be obtained by purchasing these services separately. Permanent beneficial conditions may include discounts (e.g. a single discounted "pack" price or a discount that applies to a certain service conditional to the purchase of another service) and/or non-monetary benefits (e.g. enhanced data consumption allowances). Gifts and temporary discounts or promotions are not regarded as beneficial conditions.

It is clarified that:

- i) The term "Pay-TV" used by EETT in its data collection, refers exclusively to the provision of pay-TV services via managed IP or satellite broadcast connections. Mobile TV is not taken into account.
- ii) The term "Mobile service(s)" refers to mobile telephony and/or mobile broadband (with no distinction between computer-based and handset-based access). Only the two aforementioned mobile communications services are taken into account but are treated as a single service (regardless of whether one or both are being provided).

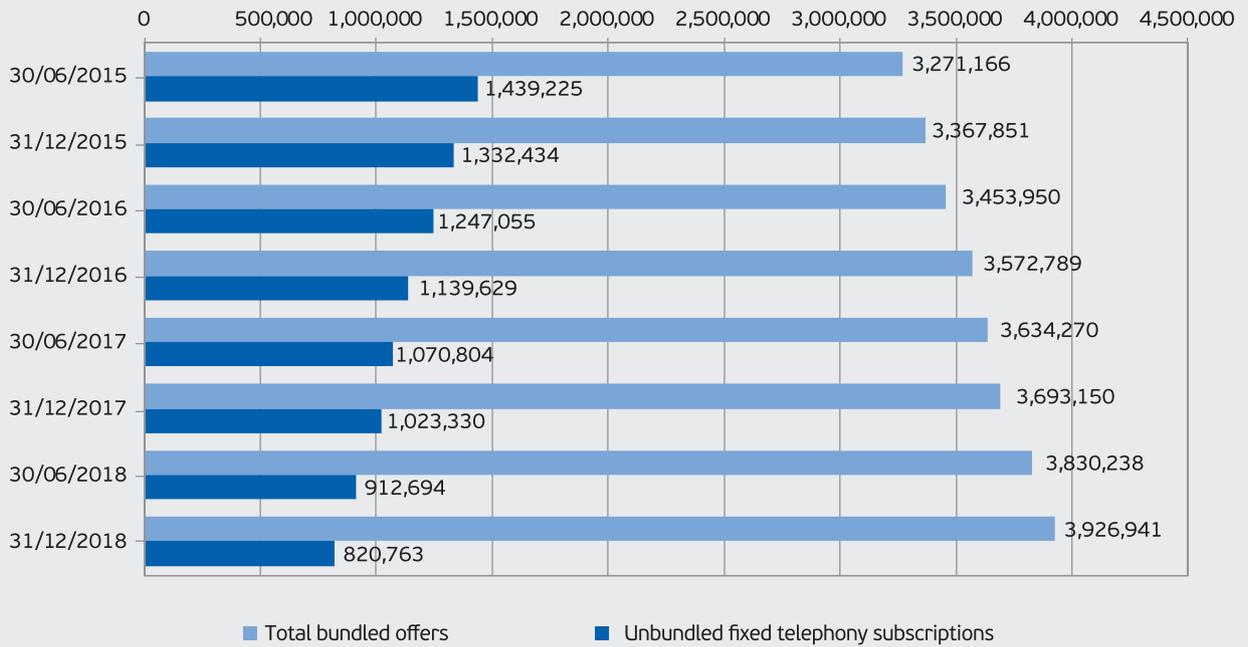
individual services of it (e.g. pay-TV), and which incentive is maintained even when the purchase of the rest of the services is discontinued. Taking the above into account, the main conclusions based on the data collected from the providers, are as follows:

- All bundled offers seem to include fixed telephony and their overwhelming majority (nearly 99% at the end of 2018) also include fixed broadband (Table 1.17).
- Bundled offers amounted to 3,926,941 at the end of 2018, increased by around 234 thousand compared to 2017, while on the other hand and for the same period unbundled fixed telephony subscriptions decreased by almost 203 thousand (Chart 1.66). It is also noted that fixed telephony subscriptions show a stabilizing and slightly upward trend in the last few years (Table 1.17).
- The providers' market shares with reference to the total bundled offers at the end of the year, are presented as ranges in Table 1.18. OTE-COSMOTE's share at the end of 2018 is estimated in the range of [45%- 55%], followed by VODAFONE and WIND with their shares in the range of [15%-25%]. FORTHNET, with no business activity in mobile services and combinations of fixed and mobile services, is in the fourth place with its share in [10%-15%], followed by CYTA with its share in [5%-10%].
- Pay-TV as a whole (i.e. bundled offers that include this service and unbundled pay-TV subscriptions), registered an increase in 2018 of around 30 thousand, with the corresponding subscriptions amounting to 1,052,958 at the end of the year (Table 1.17). Of these, about 59% (616 thousand) appears as unbundled pay-TV subscriptions and only 41% as subscriptions participating in bundled offers, when the corresponding percentages in mid-2017 were 20% and 80% respectively (Chart 1.67). These significant changes, i.e. the decrease in the triple and quadruple play bundles that include pay-TV, together with the simultaneous increase in the unbundled pay-TV subscriptions, are mainly attributed to a change, within 2017, by one of the providers in its pay-TV pricing policy. More specifically, these changes are due to the revocation of the discount offered until that time to the TV service for as long as this service was purchased simultaneously with a fixed telephony connection of the same provider. As a result, a considerable number of pay-TV subscriptions, previously registered as bundled offers that included TV (double, triple or quadruple play), began to be registered as unbundled pay-TV subscriptions.
- At the end of 2017, both the decrease in the total triple and quadruple play offers and a large part of the increase in the double play offers, are mainly attributed to the aforementioned pricing policy change (Chart 1.68).
- The double play offers, and more specifically the double play of fixed telephony and fixed broadband were still number one in popularity among the consumers (Charts 1.68 and 1.69).
- The triple play combination of fixed telephony, fixed broadband and mobile service(s) was the second most popular bundled offer, followed by the triple play of fixed telephony, fixed broadband and pay-TV and the 4-play offer (Chart 1.69).
- The increase in bundled offers in 2018 is attributed to the increase in the triple play combinations of fixed telephony, fixed broadband and mobile service(s), as this becomes clear from Chart 1.70, where the evolution of the most popular bundled offers is presented.
- The bundled offers that include mobile service(s) amounted to 1,190,319 at the end of 2018, registering an important increase by around 319 thousand (about 37%) compared to 2017. Of these bundled offers, 89.1% (i.e. 1,060,309 subscriptions) concerned the triple play of fixed telephony, fixed broadband and mobile service(s), 6.8% the quadruple play and 4.1% the combination of fixed and mobile telephony (Chart 1.71).
- The bundled offers that include mobile service(s) corresponded to more than 30% of the total bundled offers at the end of 2018. Moreover, one out of four fixed telephony subscriptions seem to have been purchased in combination with mobile service(s).
- OTE-COSMOTE's market share based on the bundled offers that include mobile service(s) was, at the end of 2018, in the range of [45%-55%] (Table 1.19).
- Finally, while, as previously mentioned, the bundled offers that include mobile service(s) increased in 2018 by around 319 thousand, the SIM cards that participate in bundled offers, for

the same period, increased by 201 thousand¹⁶ (Chart 1.72). Based on the relevant data, at the end of 2018, the estimated average num-

ber of SIM cards per bundled offer with mobile service(s) was 1.15, compared to 1.33 at the end of 2017.

Chart 1.66: Bundled offers and unbundled subscriptions of fixed telephony



Source: EETT (based on data provided by the licensed providers)

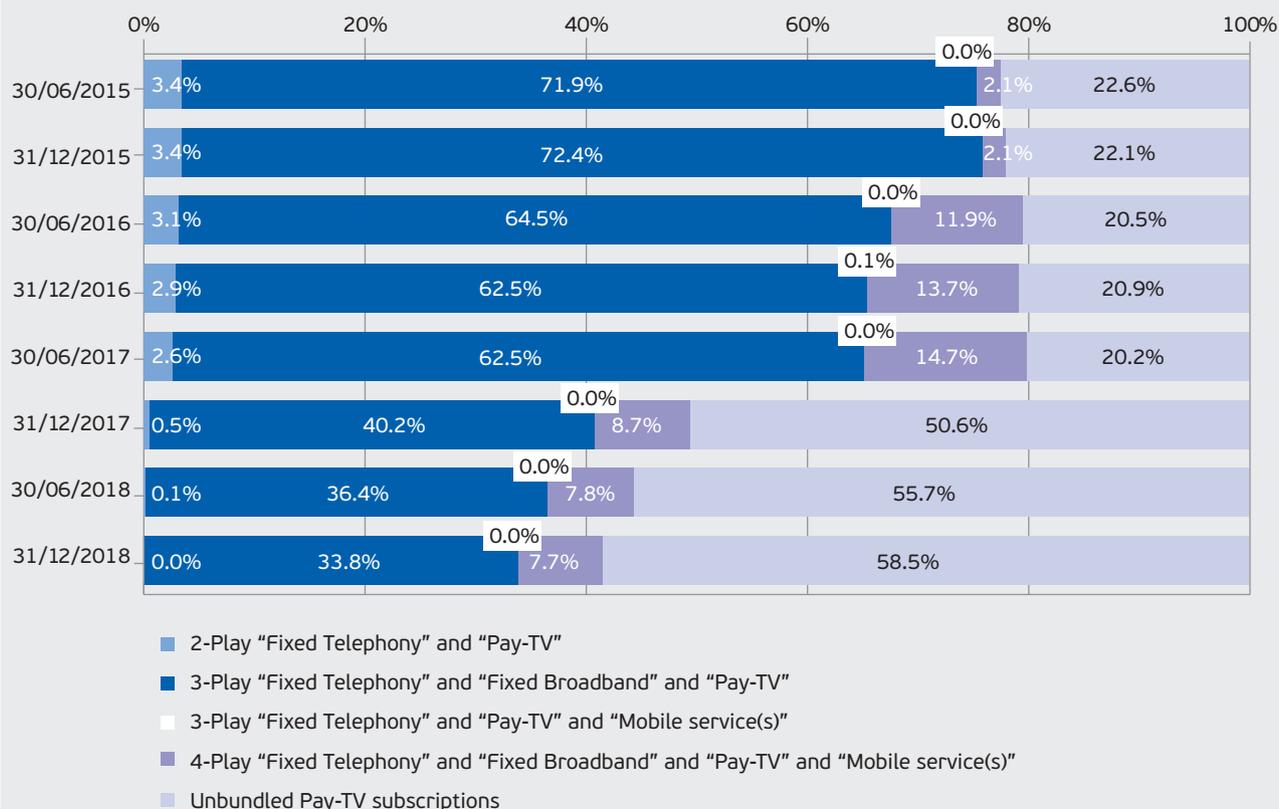
16. It is clarified that each bundled offer that includes mobile service(s) can include more than one SIM cards.

Table 1.17: Number of bundled offers and unbundled subscriptions

A. Perspective of fixed services' provider (i.e. based on (residential and non-residential) fixed subscriptions)		30/06/2016	31/12/2016	30/06/2017	31/12/2017	30/06/2018	31/12/2018	
Bundled offers	2-Play	"Fixed Telephony" and "Fixed Broadband"	2,031,505	2,092,681	2,098,331	2,405,296	2,549,250	2,380,762
		"Fixed Telephony" and "Pay-TV"	30,835	28,968	26,451	4,631	556	218
		"Fixed Telephony" and "Mobile service(s)"	51,043	53,141	44,866	37,012	30,214	49,178
		2-Play total	2,113,383	2,174,790	2,169,648	2,446,939	2,580,020	2,430,158
	3-Play	"Fixed Telephony" and "Fixed Broadband" and "Pay-TV"	638,216	630,690	624,794	411,542	372,740	355,642
		"Fixed Telephony" and "Fixed Broadband" and "Mobile service(s)"	584,405	629,050	692,916	745,603	797,816	1,060,309
		"Fixed Telephony" and "Pay-TV" and "Mobile service(s)"	227	505	37	8	67	20
		3-Play total	1,222,848	1,260,245	1,317,747	1,157,153	1,170,623	1,415,971
	4-Play	"Fixed Telephony" and "Fixed Broadband" and "Pay-TV" and "Mobile service(s)"	117,719	137,754	146,876	89,059	79,596	80,812
		4-Play total	117,719	137,754	146,876	89,059	79,596	80,812
	Total bundled offers (i.e. 2-Play, 3-Play, 4-Play)		3,453,950	3,572,789	3,634,270	3,693,150	3,830,238	3,926,941
	Bundled offers including each service (a)	"Fixed Telephony"	3,453,950	3,572,789	3,634,270	3,693,150	3,830,238	3,926,941
		"Fixed Broadband"	3,371,845	3,490,175	3,562,916	3,651,499	3,799,401	3,877,525
"Pay-TV"		786,997	797,917	798,158	505,240	452,959	436,692	
"Mobile service(s)"		753,394	820,450	884,695	871,682	907,693	1,190,319	
Unbundled subscriptions per service (b)	"Fixed Telephony"	1,247,055	1,139,629	1,070,804	1,023,330	912,694	820,763	
	"Fixed Broadband"	122,355	112,619	111,991	114,642	69,275	45,377	
	"Pay-TV"	203,217	211,137	201,913	517,404	570,448	616,266	
Subscriptions including each service (totals, i.e. (a)+(b))	"Fixed Telephony"	4,701,005	4,712,418	4,705,074	4,716,480	4,742,932	4,747,704	
	"Fixed Broadband"	3,494,200	3,602,794	3,674,907	3,766,141	3,868,676	3,922,902	
	"Pay-TV"	990,214	1,009,054	1,000,071	1,022,644	1,023,407	1,052,958	
B. Perspective of mobile services' provider (i.e. based on (residential and non-residential) mobile SIM cards)		30/06/2016	31/12/2016	30/06/2017	31/12/2017	30/06/2018	31/12/2018	
Number of SIM cards (including mobile telephony and/ or mobile broadband) participating in bundled offers with at least one fixed service		860,840	969,173	1,040,888	1,163,489	1,217,942	1,364,059	

Source: EETT (based on data provided by the licensed providers)

Chart 1.67: Breakdown (%) of pay-TV subscriptions



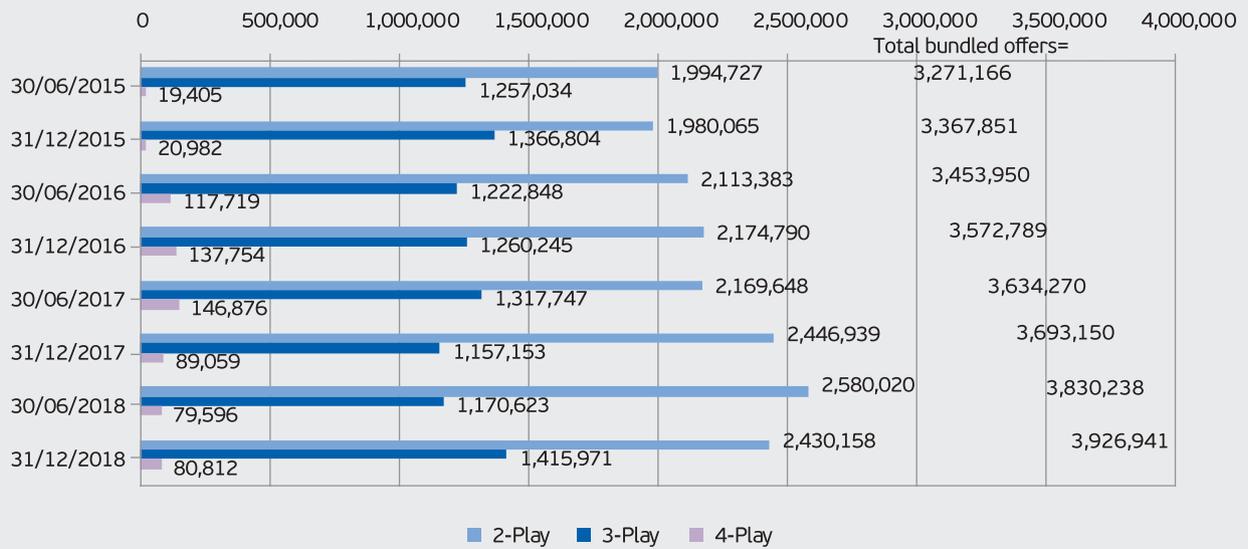
Source: EETT (based on data provided by the licensed providers)

Table 1.18: Shares based on total number of bundled offers

	31/12/2015	31/12/2016	31/12/2017	31/12/2018
CYTA	5%-10%	5%-10%	5%-10%	5%-10%
FORTHNET	15%-25%	15%-25%	10%-15%	10%-15%
HOL-VODAFONE	15%-25%	-	-	-
OTE-COSMOTE	35%-45%	35%-45%	35%-45%	45%-55%
VODAFONE	0%-5%	-	-	-
VODAFONE (after the acquisition of HOL)	-	15%-25%	15%-25%	15%-25%
WIND	10%-15%	15%-25%	15%-25%	15%-25%

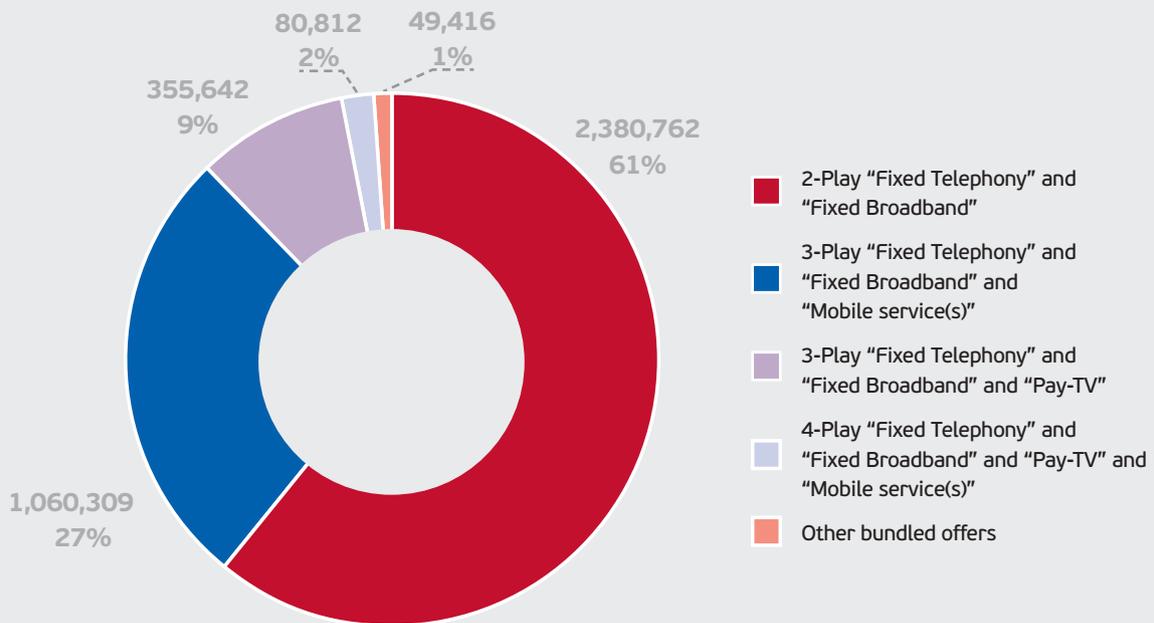
Source: EETT (based on data provided by the licensed providers)

Chart 1.68: Bundled offers per general type



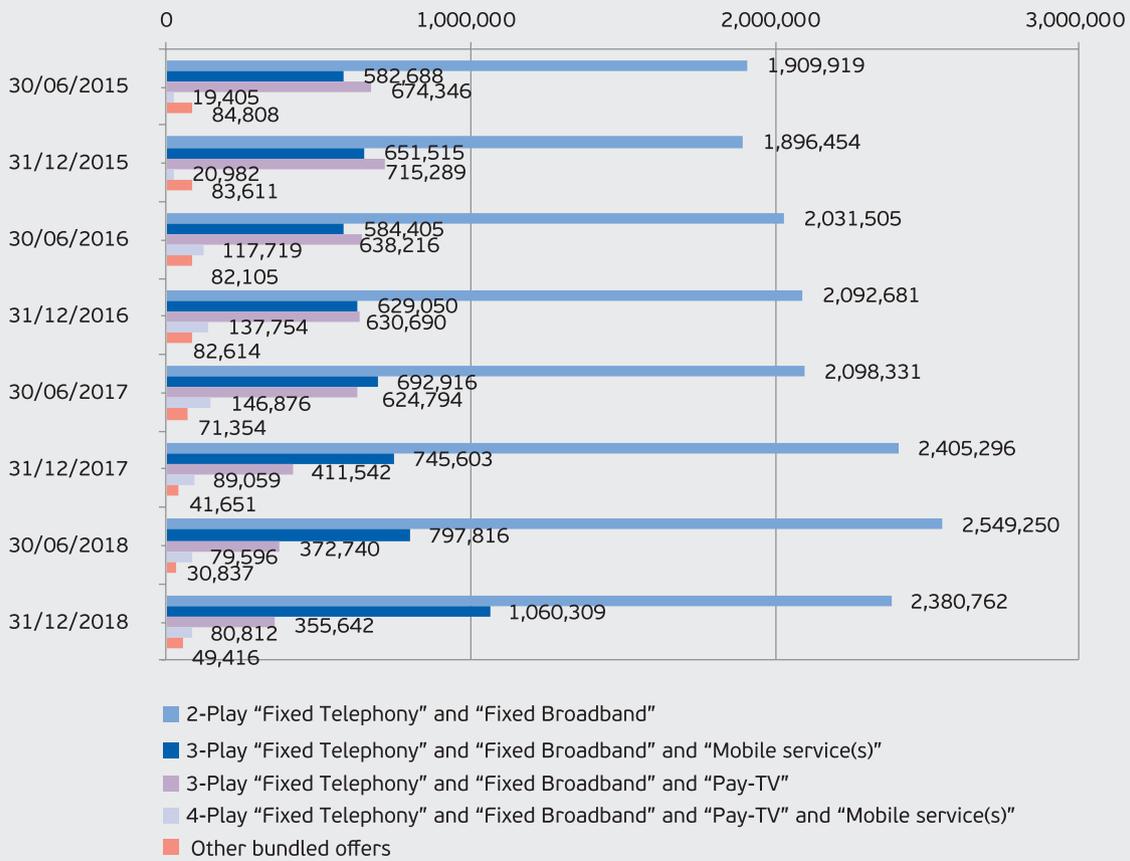
Source: EETT (based on data provided by the licensed providers)

Chart 1.69: Breakdown (%) of bundled offers, December 2018



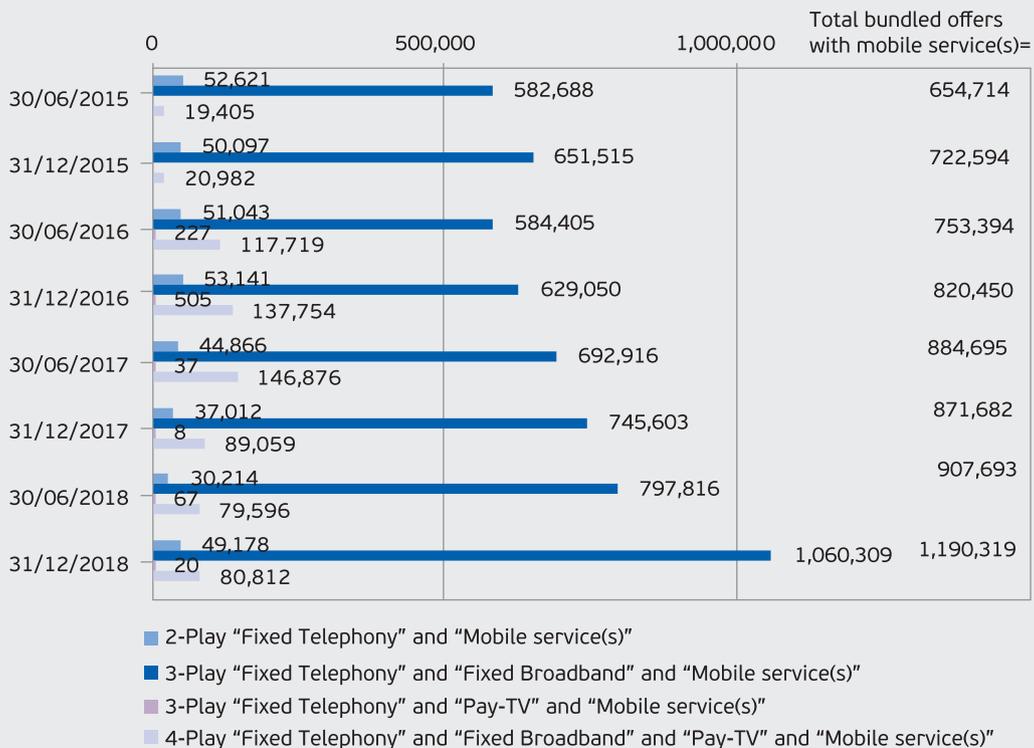
Source: EETT (based on data provided by the licensed providers)

Chart 1.70: Most popular bundled offers (per specific type)



Source: EETT (based on data provided by the licensed providers)

Chart 1.71: Bundled offers with mobile service(s) (per specific type)

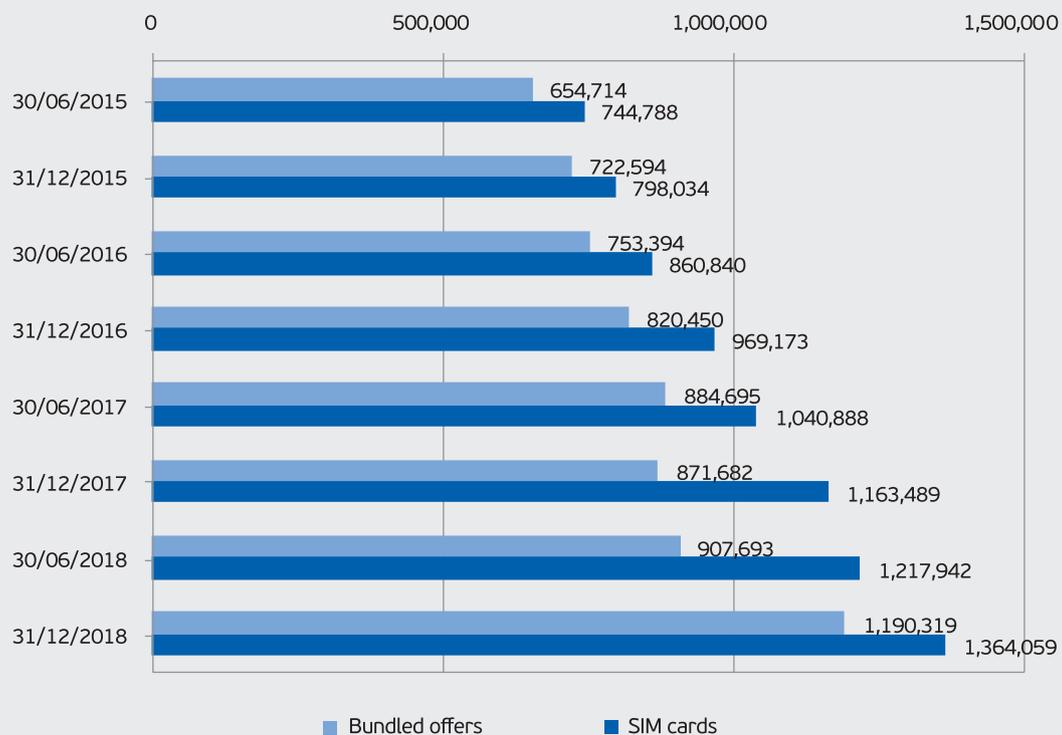


Source: EETT (based on data provided by the licensed providers)

Table 1.19: Shares based on total number of bundled offers with mobile service(s)

	31/12/2015	31/12/2016	31/12/2017	31/12/2018
CYTA	0%-5%	0%-5%	0%-5%	0%-5%
HOL-VODAFONE	25%-35%	-	-	-
OTE-COSMOTE	35%-45%	35%-45%	35%-45%	45%-55%
VODAFONE	0%-5%	-	-	-
VODAFONE (after the acquisition of HOL)	-	25%-35%	25%-35%	15%-25%
WIND	25%-35%	25%-35%	25%-35%	15%-25%

Source: EETT (based on data provided by the licensed providers)

Chart 1.72: Bundled offers with mobile service(s) and respective number of SIM cards

Source: EETT (based on data provided by the licensed providers)

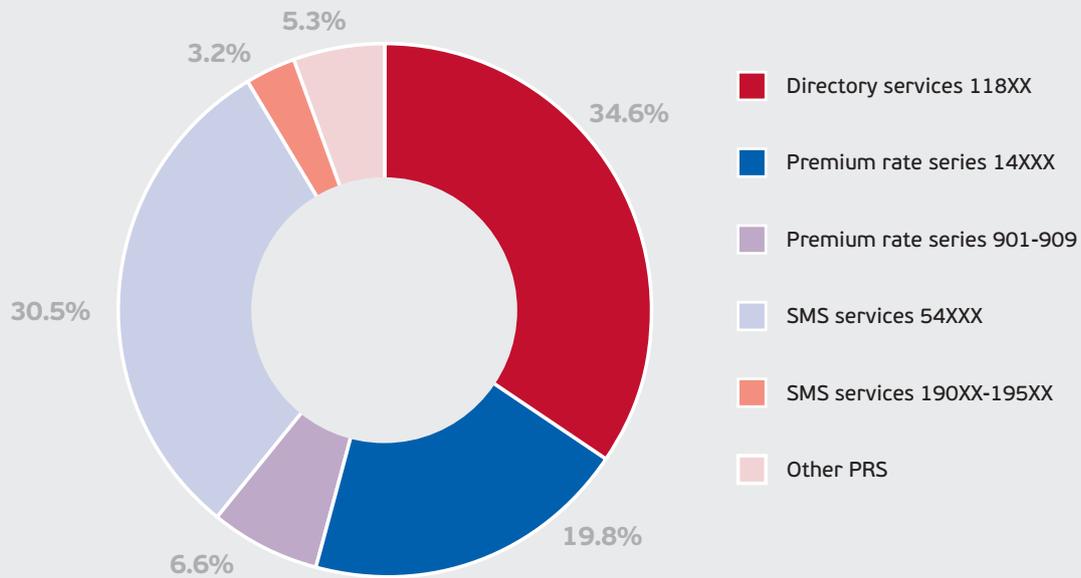
1.2.8. Premium Rate Services (PRS) and directory services

This section presents information on the traffic and revenues of telecommunications providers in 2018, from Premium Rate Services (PRS) and directory services. In particular, as regards PRS, the figures have been based on data collected from 23

providers out of a total of 60 companies licensed by EETT for the provision of these services.

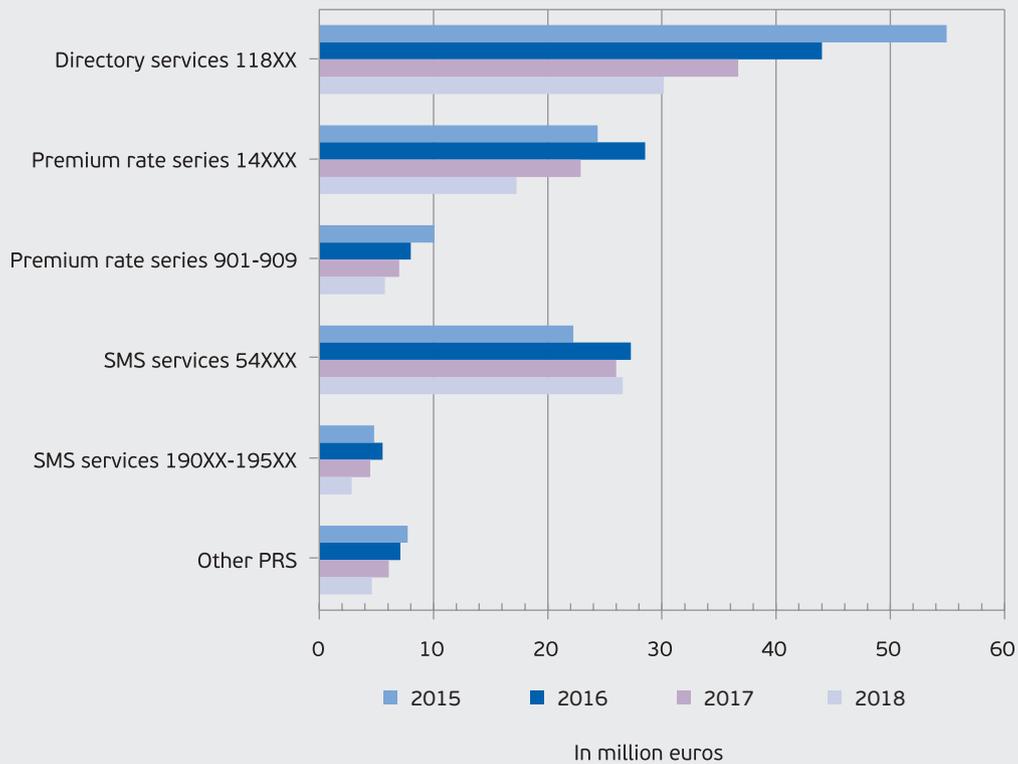
In 2018, the total invoiced traffic was 42.6 million minutes (compared to 50.6 million minutes in 2017) and 46.7 million calls/messages (compared to 57.7 million calls/messages in 2017), generating revenues of 87.2 million euros, reduced by 15.4% compared to 2017.

Chart 1.73: Breakdown (%) of PRS and directory services' revenues, 2018



Source: EETT (based on data provided by the licensed providers)

Chart 1.74: Evolution of PRS and directory services' total revenues



Source: EETT (based on data provided by the licensed providers)

The revenues from directory services 118XX amounted to 30.2 million euros and constituted 34.6% of the total market, having decreased by about 18% compared to 2017. The revenues from SMS services (54XXX and 190XX-195XX) came second, accounting for 33.7% of the market and amounting to 29.4 million euros, followed by the revenues from premium rate series (14XXX and 901-909) with a share of 26.4% and an estimated value of 23 million euros (Charts 1.73 and 1.74).

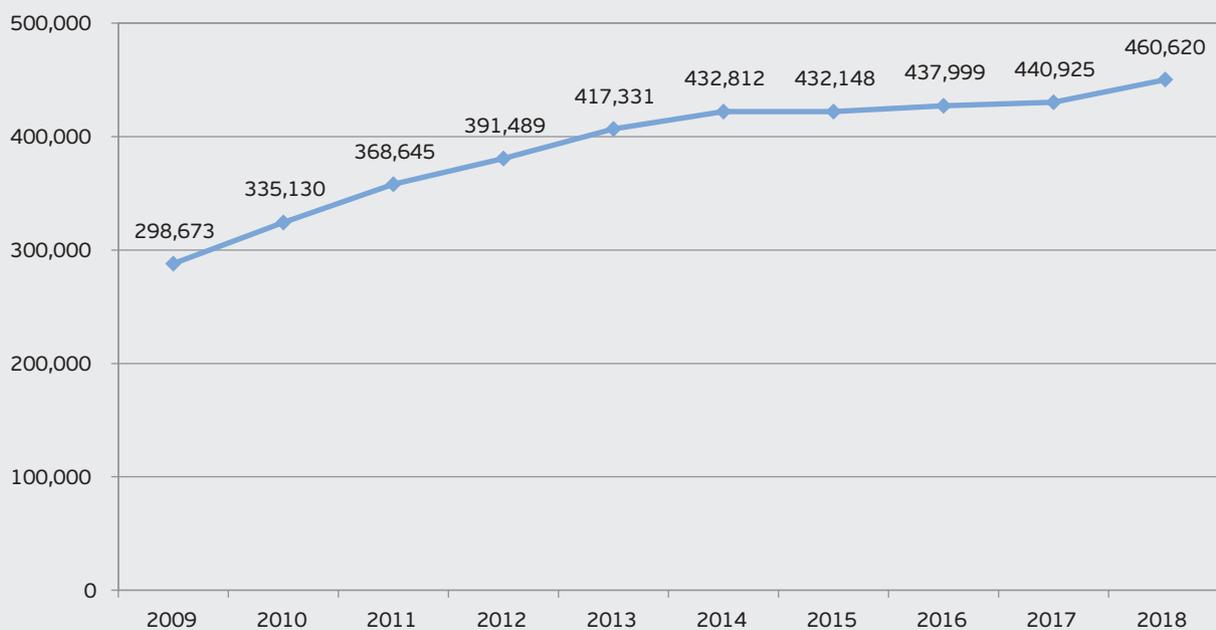
The rest PRS, i.e. those that do not fall in the above categories, accounted for 5.3% of the total turnover (4.6 million euros).

1.2.9. Domain names [.gr] and [.ελ]

In 2018, the total number of [.gr] and [.ελ] domain names, including the sub-domains (com.gr, net.gr, org.gr, edu.gr, gov.gr), amounted to 460,620, reporting an increase of 4.5% compared to 2017 (Chart 1.75).

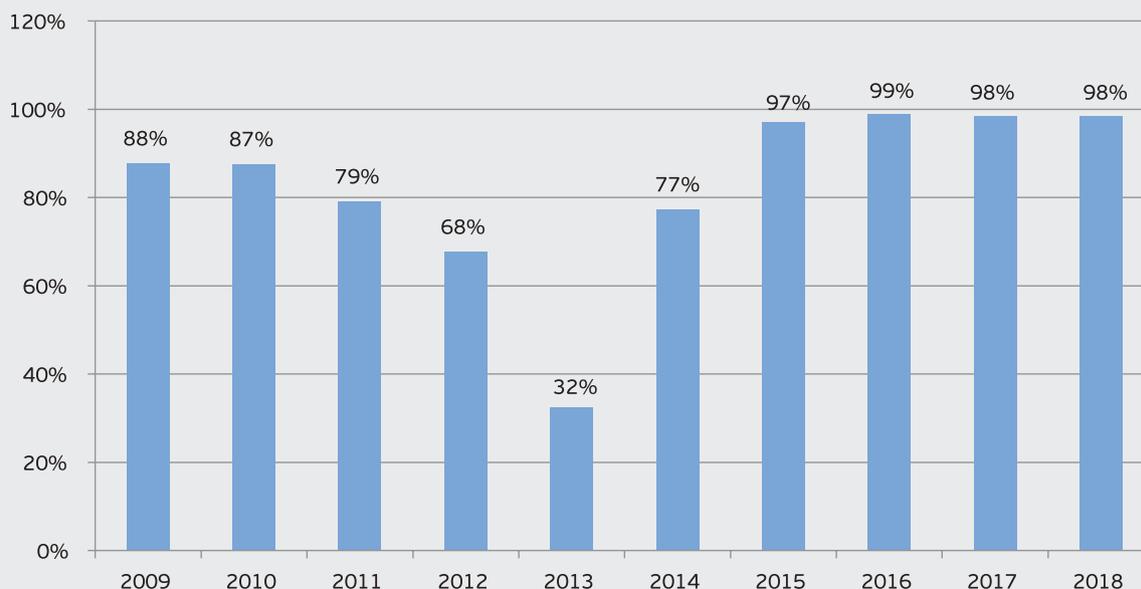
Chart 1.76 presents the annual evolution of the average assignment rate over the number of submitted applications for the period 2009-2018. The average assignment rate in 2018 was 98%, remaining at the same level as in 2017.

Chart 1.75: Evolution of domain names



Source: EETT

Chart 1.76: Average domain names assignment rate



Source: EETT

1.2.10. Price Observatory's comparison of retail prices (Pricoscope)¹⁷

Based on the data registered by the telecommunications providers in the Price Observatory (Pricoscope), at the end of 2018 the companies CYTA, FORTHNET, OTE, COSMOTE, VODAFONE and WIND were offering approximately 1,200 products/packages (Chart 1.77)¹⁸, with around 85,000 possible and dynamically produced combinations (product solutions) of basic products, add-ons and offers.

The basic conclusions drawn from Pricoscope are summarized as follows:

1. WIND had marginally more available programs than the other providers, followed by VODAFONE and COSMOTE (Chart 1.78).
2. COSMOTE, WIND and CYTA relied mainly on add-on programs (63%, 57% and 72% respectively), while FORTHNET, VODAFONE and OTE laid emphasis on basic programs with 88%, 58% and 59% respectively (Chart 1.79).

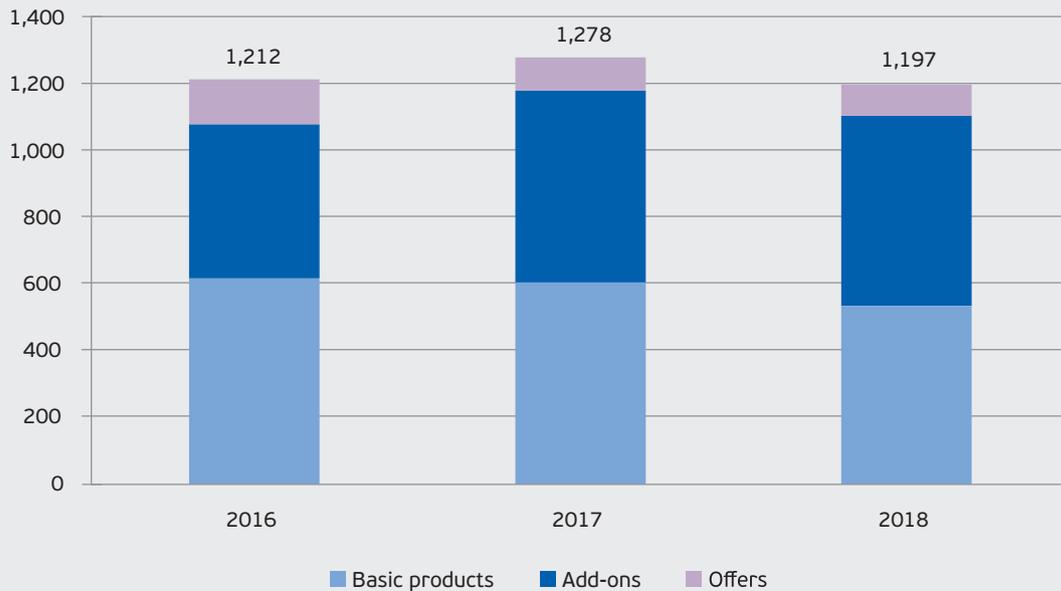
3. About one out of ten products was marketed as an offer, while around half of the products were add-ons, demonstrating the needs for multiple product, differentiated/customized solutions (Chart 1.80).
4. Most of the products concerned mobile communications, with approximately 47% corresponding to mobile voice products and 8% to products of mobile broadband. Therefore, about 45% of the products concerned fixed communications, recording however an upward trend compared to 2016 and 2017 (Charts 1.81 and 1.82).
5. Just 2% of the mobile pre-paid voice products were registered by the providers as basic (Chart 1.83), while the ratio of the add-ons to the basic products¹⁹ appeared to be higher for mobile post-paid telephony compared to fixed telephony (Charts 1.84 and 1.85), registering an increase in the case of mobile post-paid and a decrease in the case of fixed telephony, compared to 2017 (Chart 1.86).

17. The information of this section derives from data registered by the providers CYTA, FORTHNET, OTE, COSMOTE, VODAFONE and WIND in the data repository of EETT Pricoscope.

18. It is noted that in addition to the commercially available products, there are also many other registered products that, even though are not commercially active, are still preferred by customers who had chosen them in the past and continue to use them. Also, product differentiation is not solely based on the different commercial name of the products but also on other specific features, such as the commitment period that accompanies a telecommunications services contract.

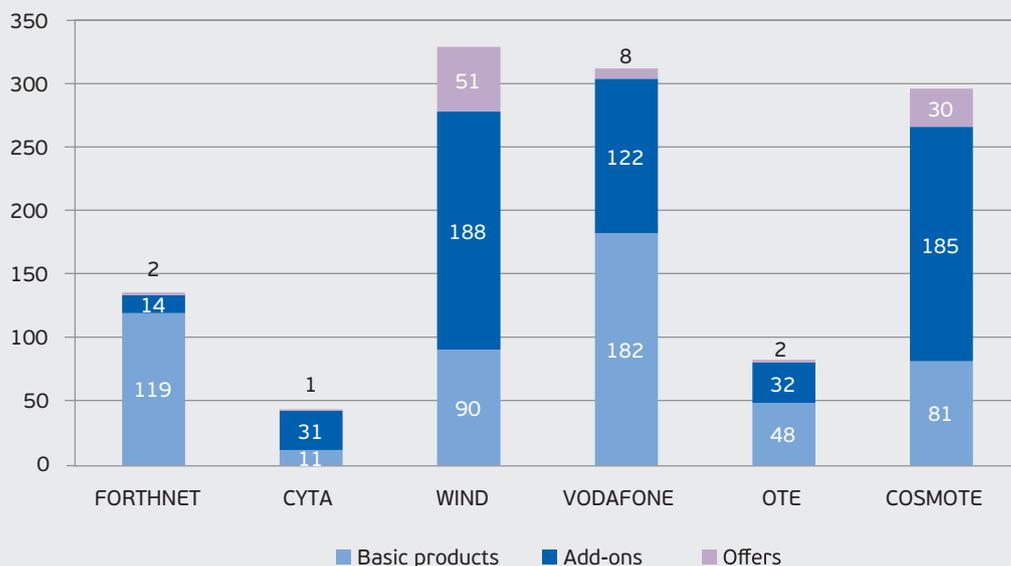
19. That is, the number of add-ons per basic product.

Chart 1.77: Number of products in the domestic market



Source: EETT

Chart 1.78: Commercially available products per provider, 2018



Source: EETT

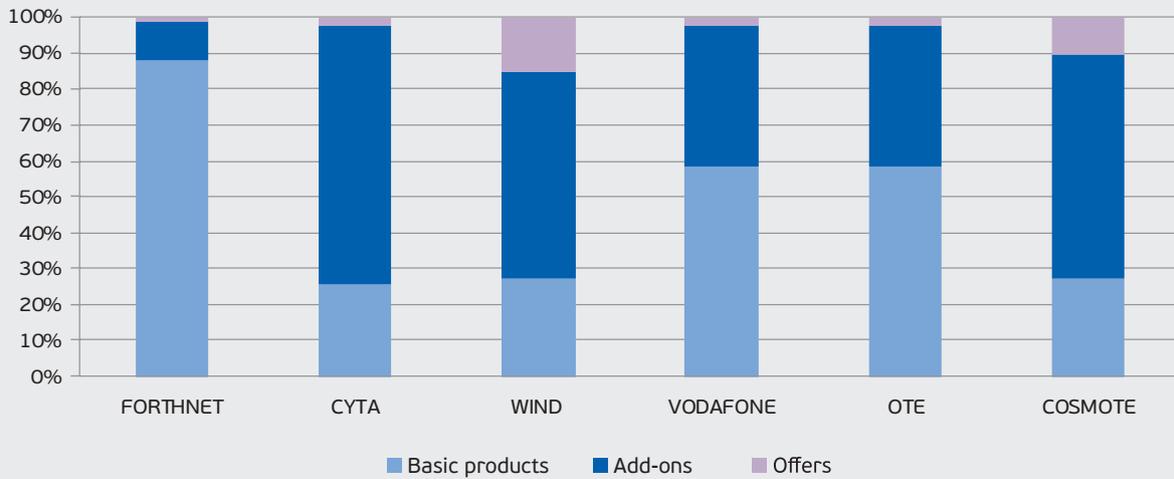
6. Approximately six out of ten products were addressed exclusively to residential customers. In contrast, about one out of four products targeted only business customers, while 12% of products targeted both customer groups (Chart 1.87).

7. The mobile pre-paid products were mainly addressed to residential customers, while most mobile post-paid products were addressed to business customers. It is noted that proportionally most of business products were included among the mobile post-paid broadband access products (Chart 1.88).

8. The programs of COSMOTE, WIND and FORTHNET were mainly aimed at residential customers. VODAFONE's programs were almost evenly distributed between residential and business customers, while a large percentage of CYTA's programs was addressed to business customers (Chart 1.89).

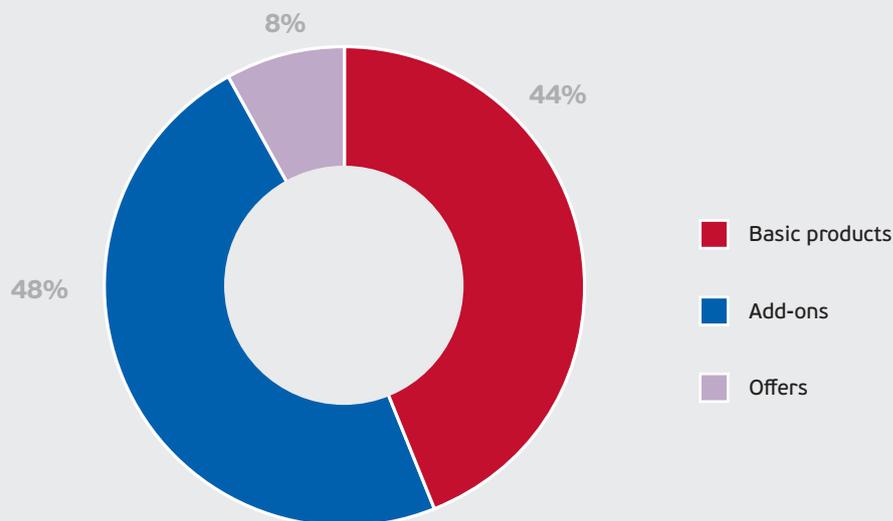
9. 55% of the mobile post-paid telephony programs concerned monthly fees up to 60 euros, with an average price of 35 euros (41 euros in 2017), median price of 34 euros (44 euros in 2017) and call allowance time of around 460 minutes per month, compared to 550 minutes per month in 2017 (Chart 1.90).

Chart 1.79: Breakdown of commercially available products per provider, 2018



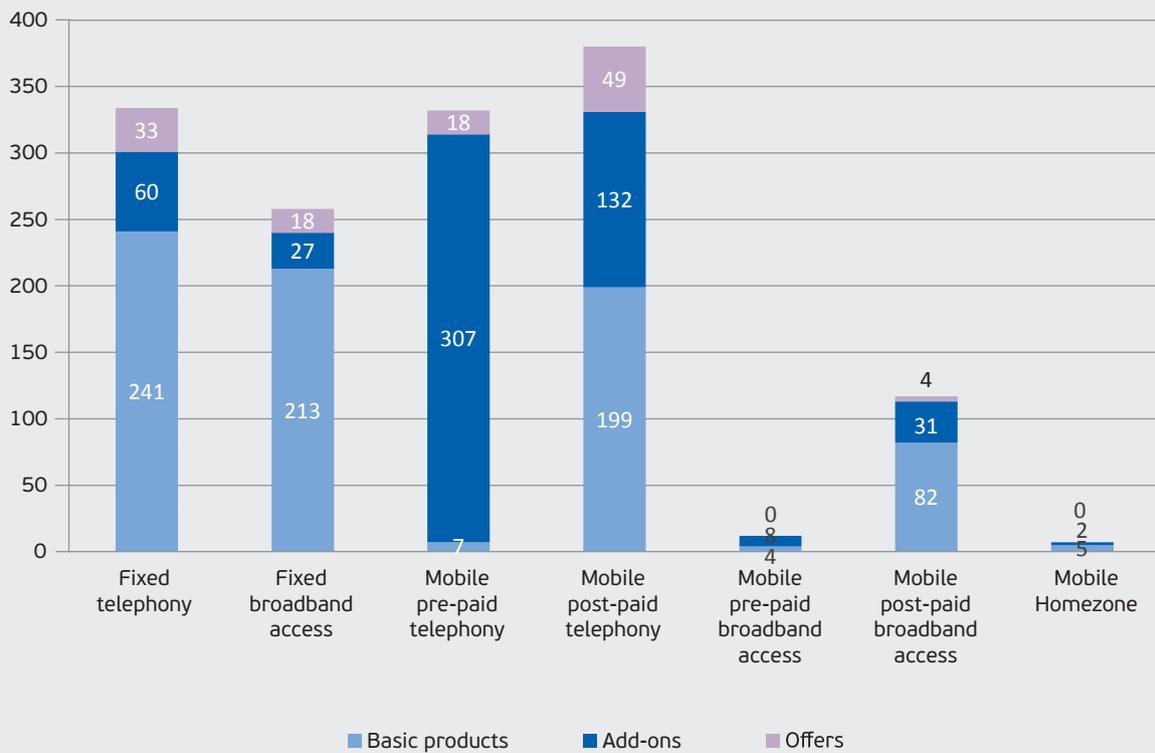
Source: EETT

Chart 1.80: Breakdown of products per product type, 2018



Source: EETT

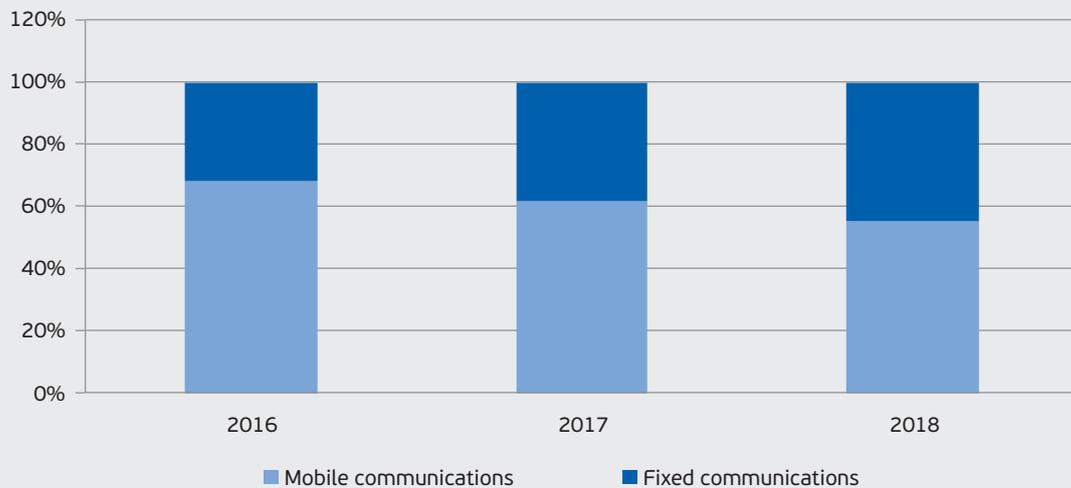
Chart 1.81: Number of products per service, 2018



Source: EETT

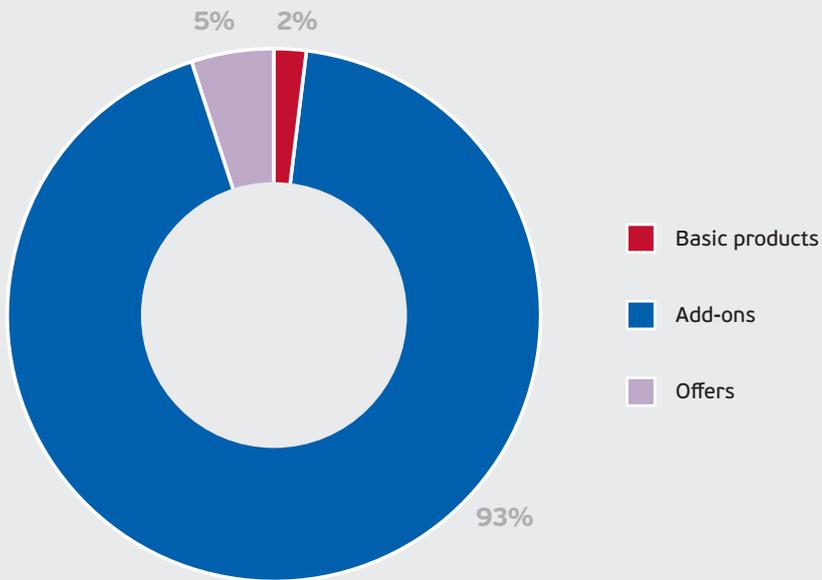
63

Chart 1.82: Fixed versus mobile communications products



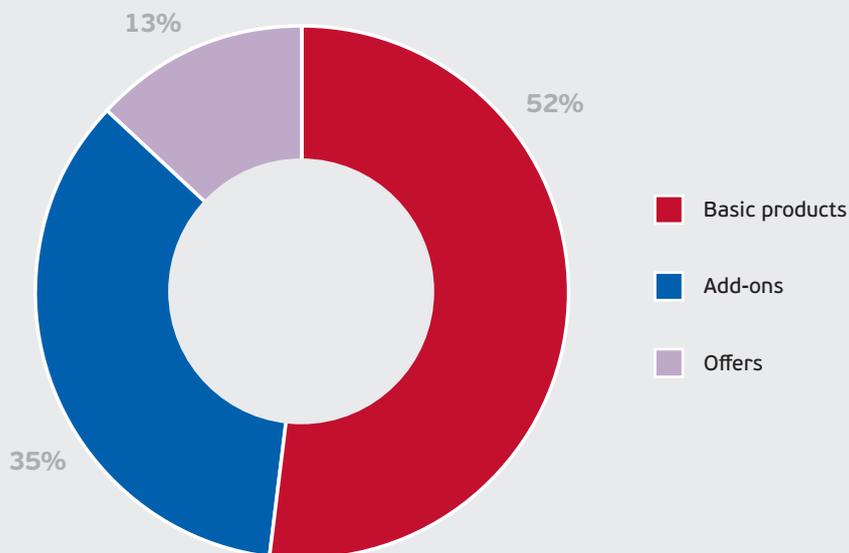
Source: EETT

Chart 1.83: Breakdown of mobile pre-paid telephony products per product type, 2018



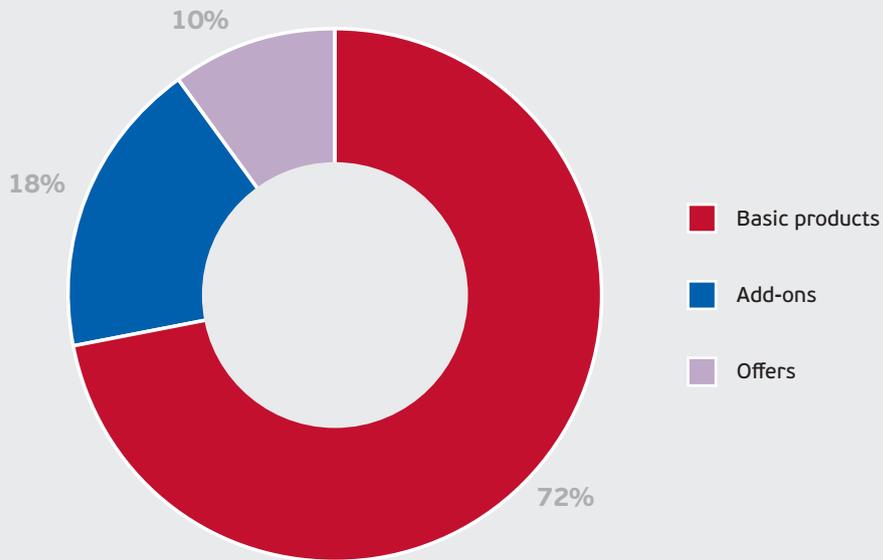
Source: EETT

Chart 1.84: Breakdown of mobile post-paid telephony products per product type, 2018



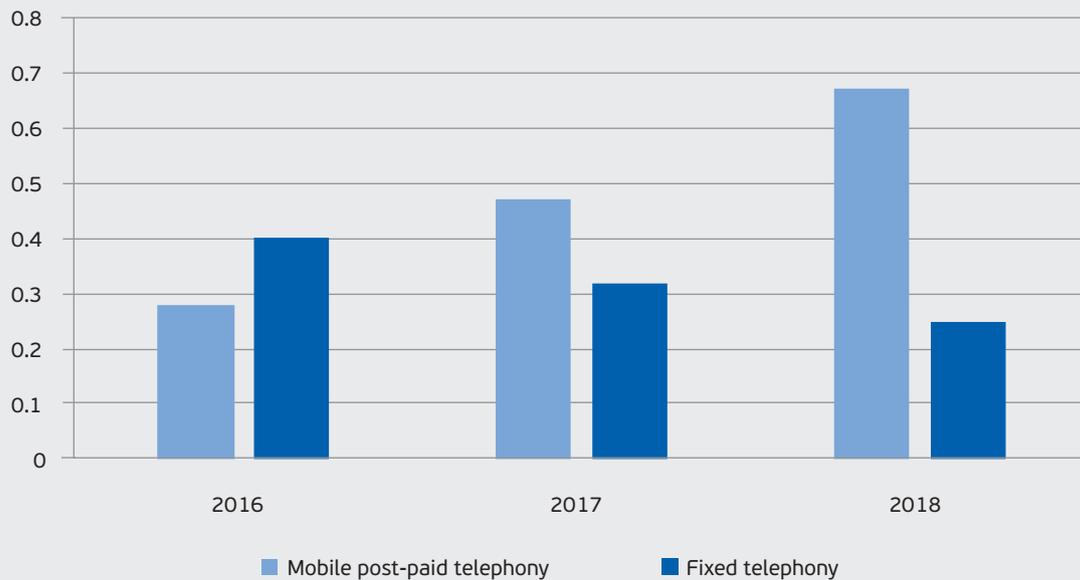
Source: EETT

Chart 1.85: Breakdown of fixed telephony products per product type, 2018



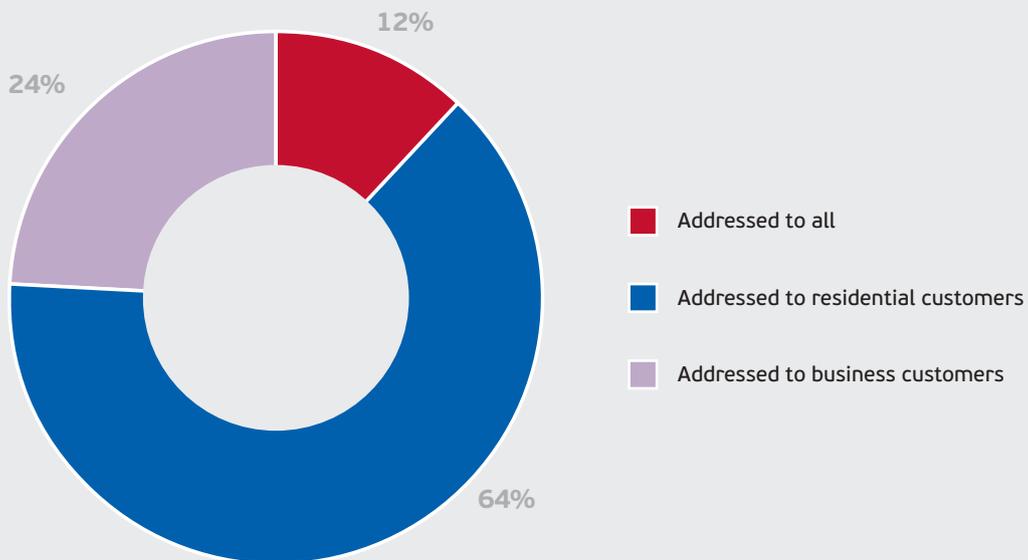
Source: EETT

Chart 1.86: Ratio of add-ons to basic products for mobile post-paid and fixed telephony



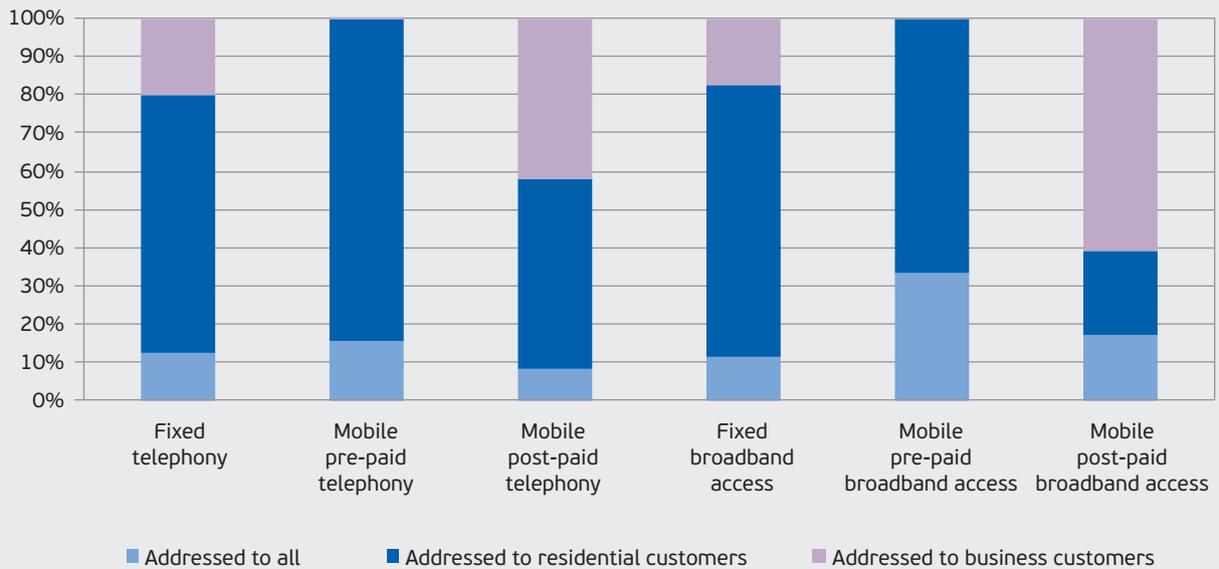
Source: EETT

Chart 1.87: Target-markets of telecommunications products, 2018



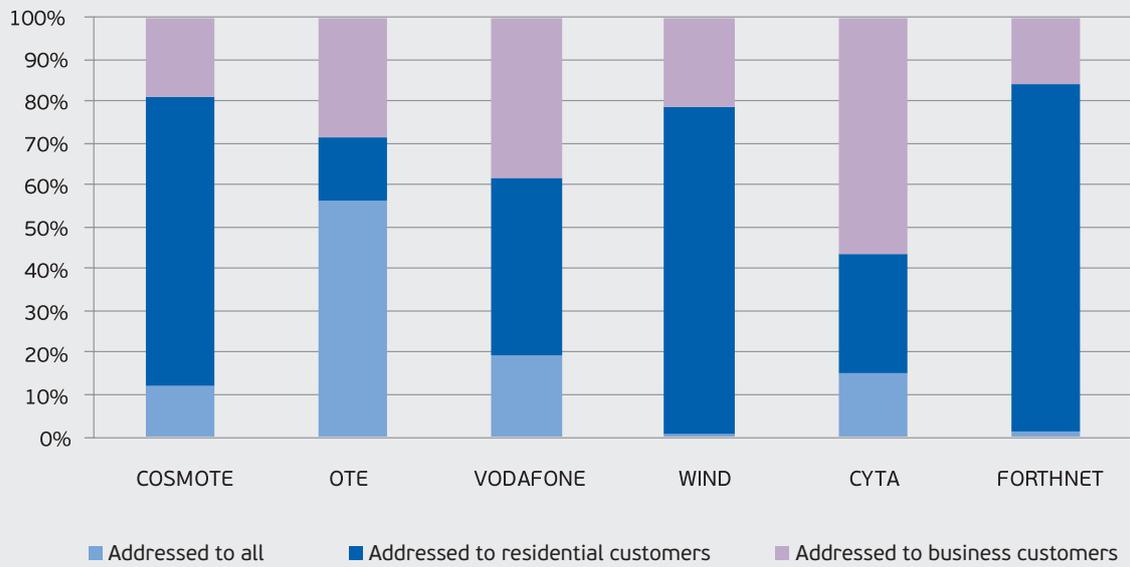
Source: EETT

Chart 1.88: Breakdown of products per service in the target-markets, 2018



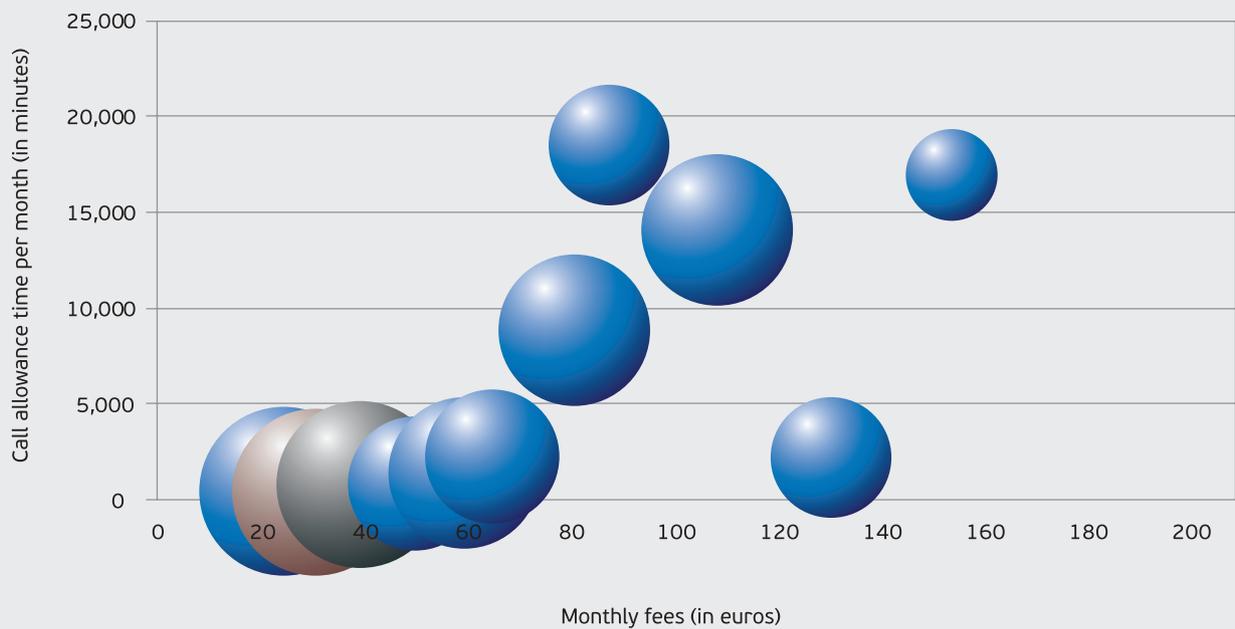
Source: EETT

Chart 1.89: Breakdown of products per provider in the target-markets, 2018



Source: EETT

Chart 1.90: Product concentration for mobile post-paid telephony, 2018



Source: EETT

1.2.11. Comparison of Greek and European market indicators²⁰

Fixed broadband

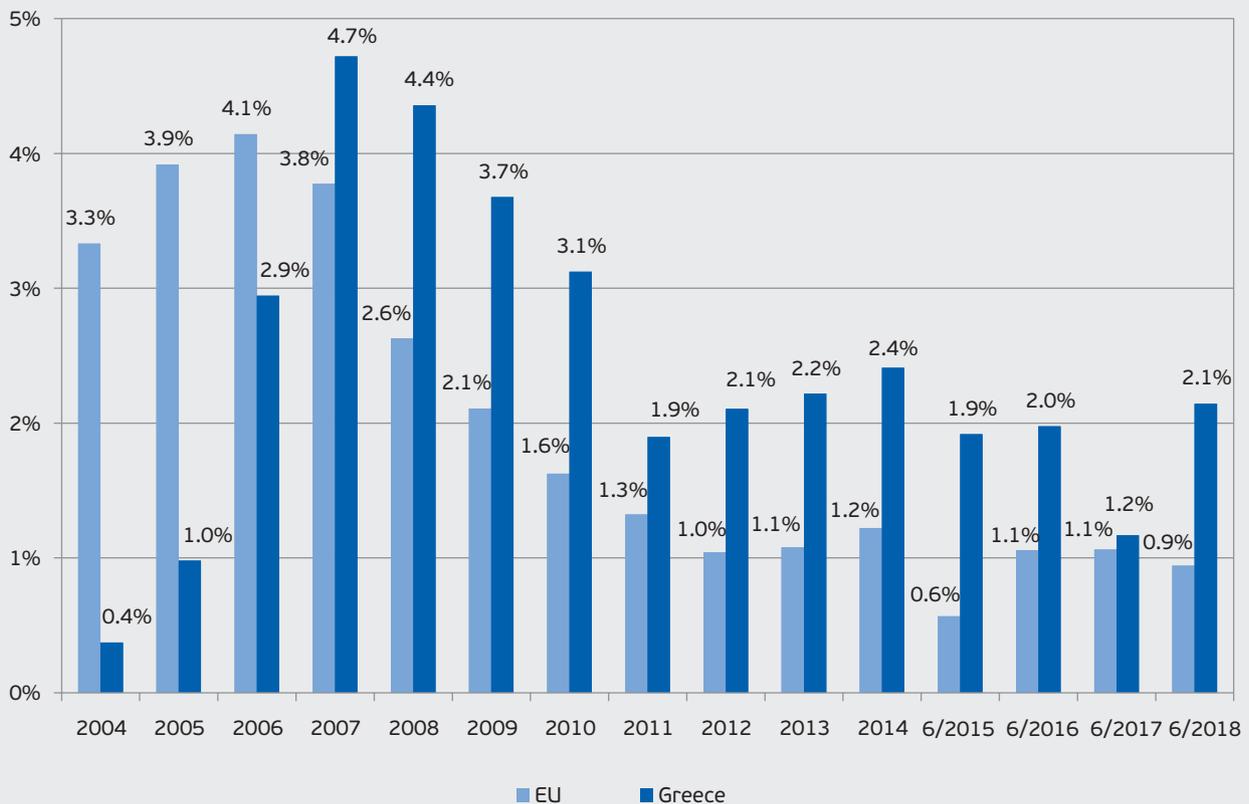
The penetration of fixed broadband in the population, i.e. the number of broadband connections per 100 people, continues to increase in Greece faster than the corresponding average penetration of the 28 EU member states (Chart 1.91).

In June 2018, the penetration of fixed broadband in the EU was 34.7% (Chart 1.92) compared to 33.7% in June 2017. The respective figures for Greece were 36.1% and 33.9%, recording the highest increase (2.1%) in Europe (Chart 1.93) and ranking Greece in the tenth position among the member states.

Given that the penetration of fixed broadband in Greece has exceeded the corresponding European average already since the middle of 2016, i.e. for five consecutive semesters, the convergence (regardless of speed or technology) has been achieved (Chart 1.94).

In addition, the demand for high-speed broadband access continued to increase, resulting in EU broadband connections with advertised download access speeds of at least 30 Mbps, to account in June 2018 for about 53% of total connections. Greece however, is still among the last ranking countries with 15.4%, compared to 10% in June 2017 (Chart 1.95). Therefore, the challenge of convergence with the EU on issues of fixed broadband penetration persists.

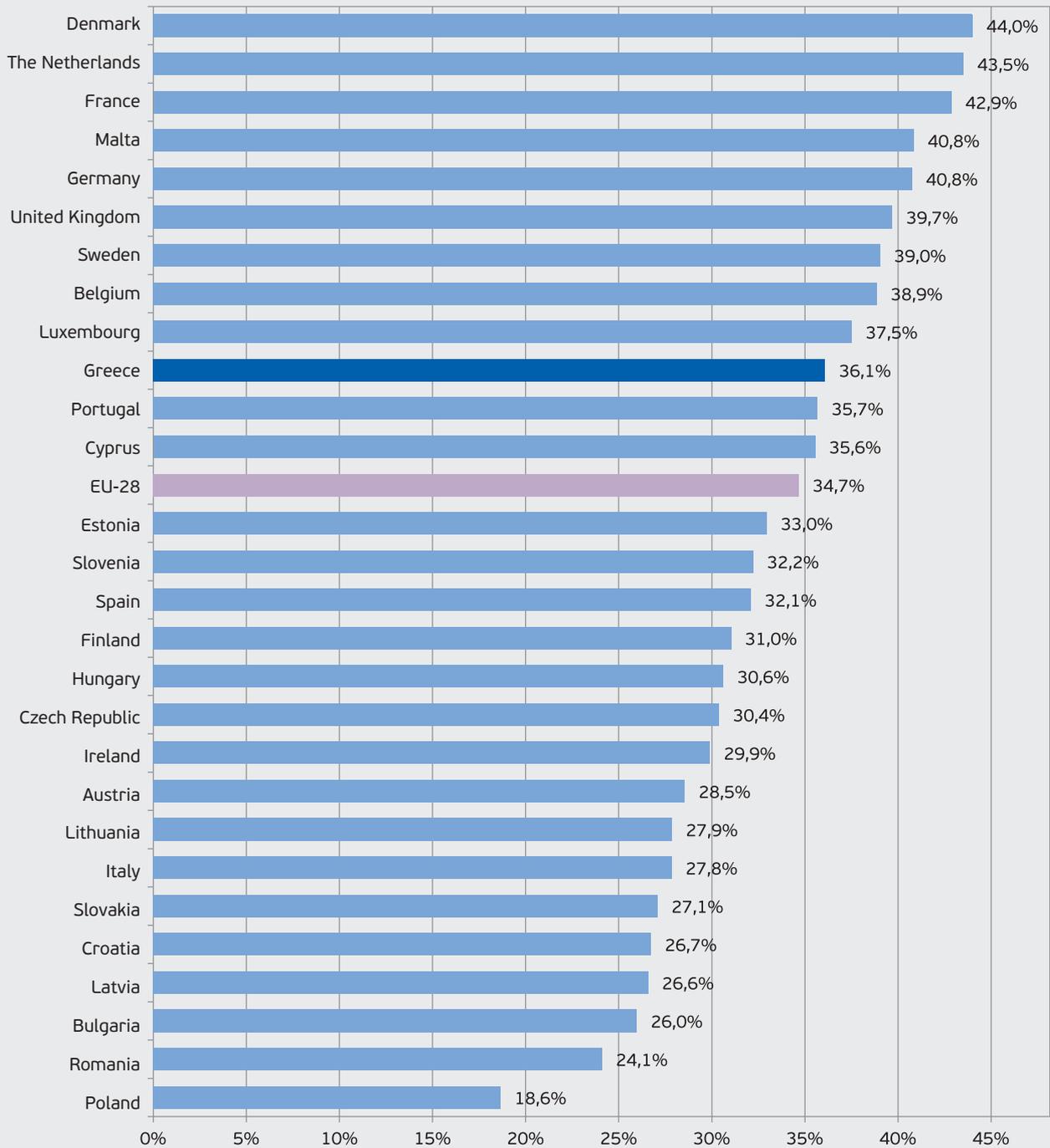
Chart 1.91: Change in fixed broadband penetration in Greece and the EU



Source: EETT (based on Digital Economy & Society Index data)

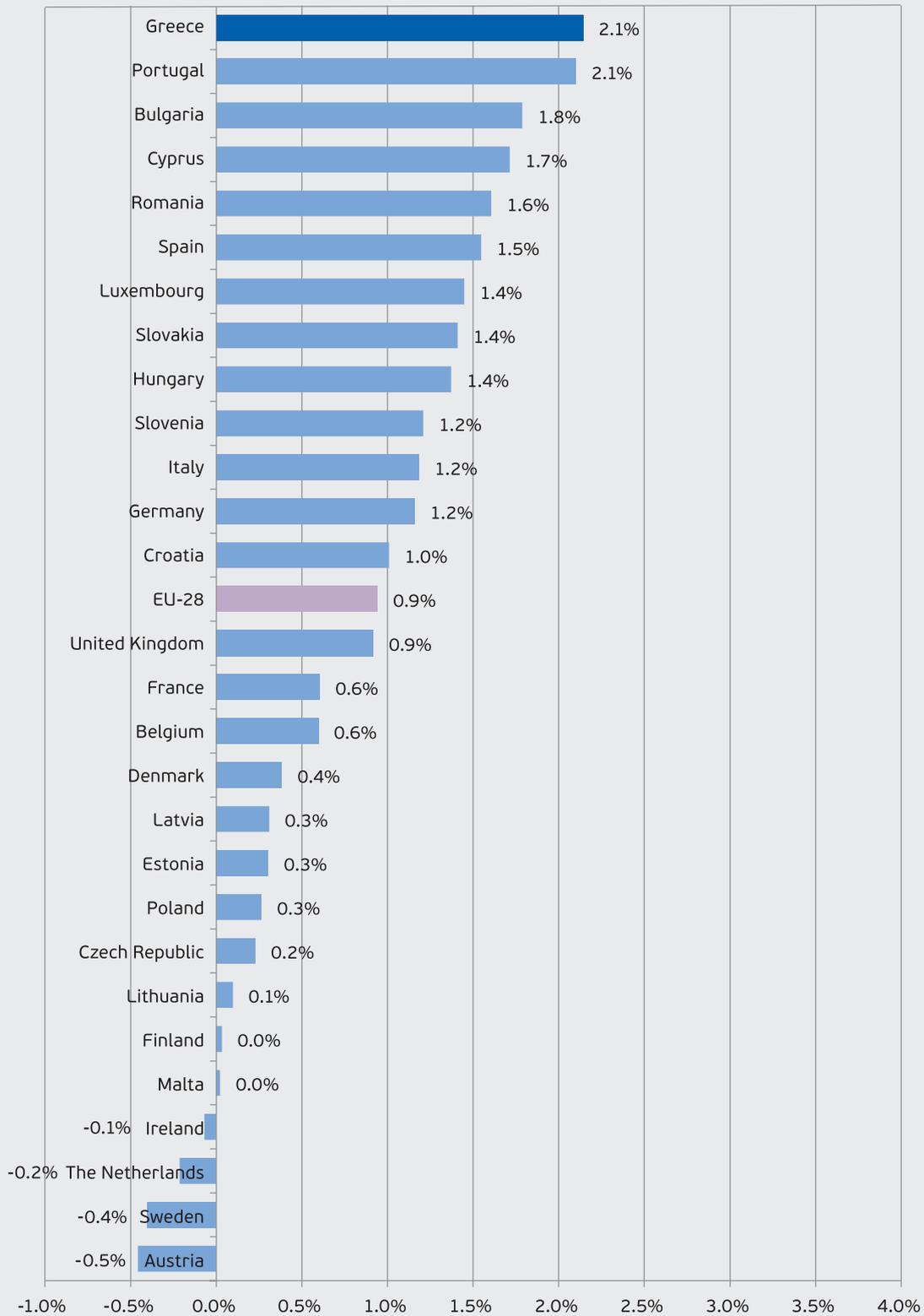
20. Based on charts published in Digital Agenda Scorecard.

Chart 1.92: Fixed broadband penetration, June 2018



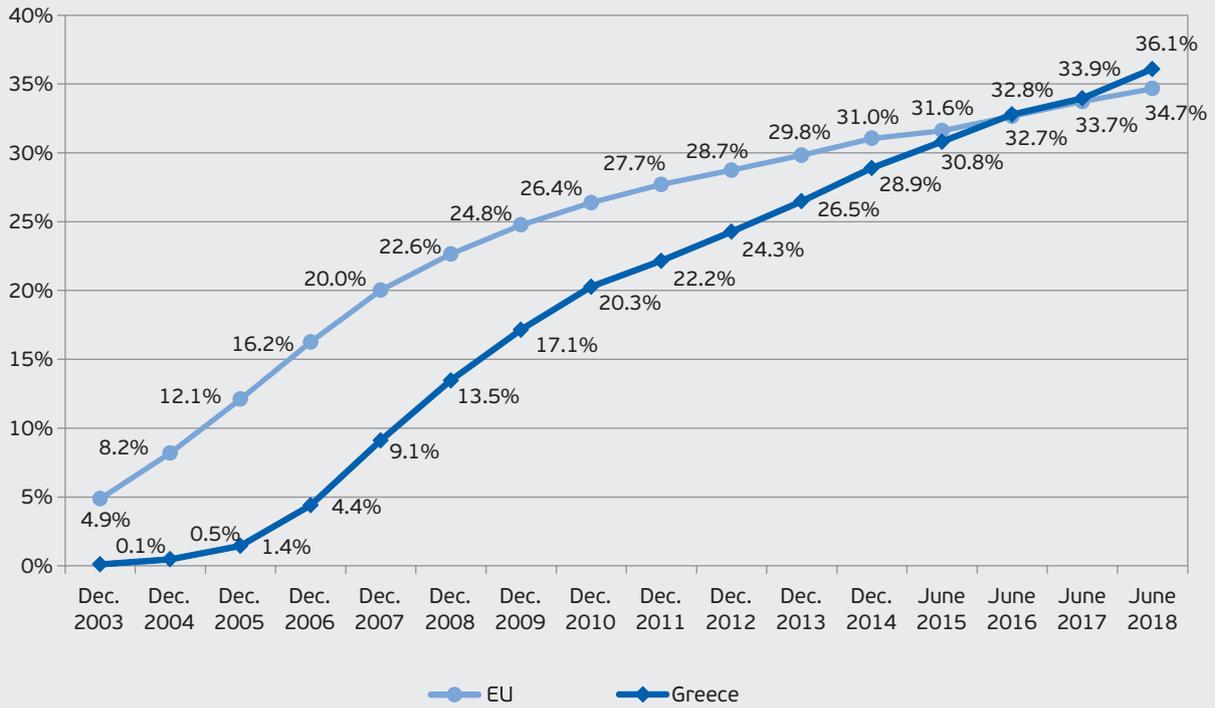
Source: EETT (based on Digital Economy & Society Index data)

Chart 1.93: Change in fixed broadband penetration, June 2018



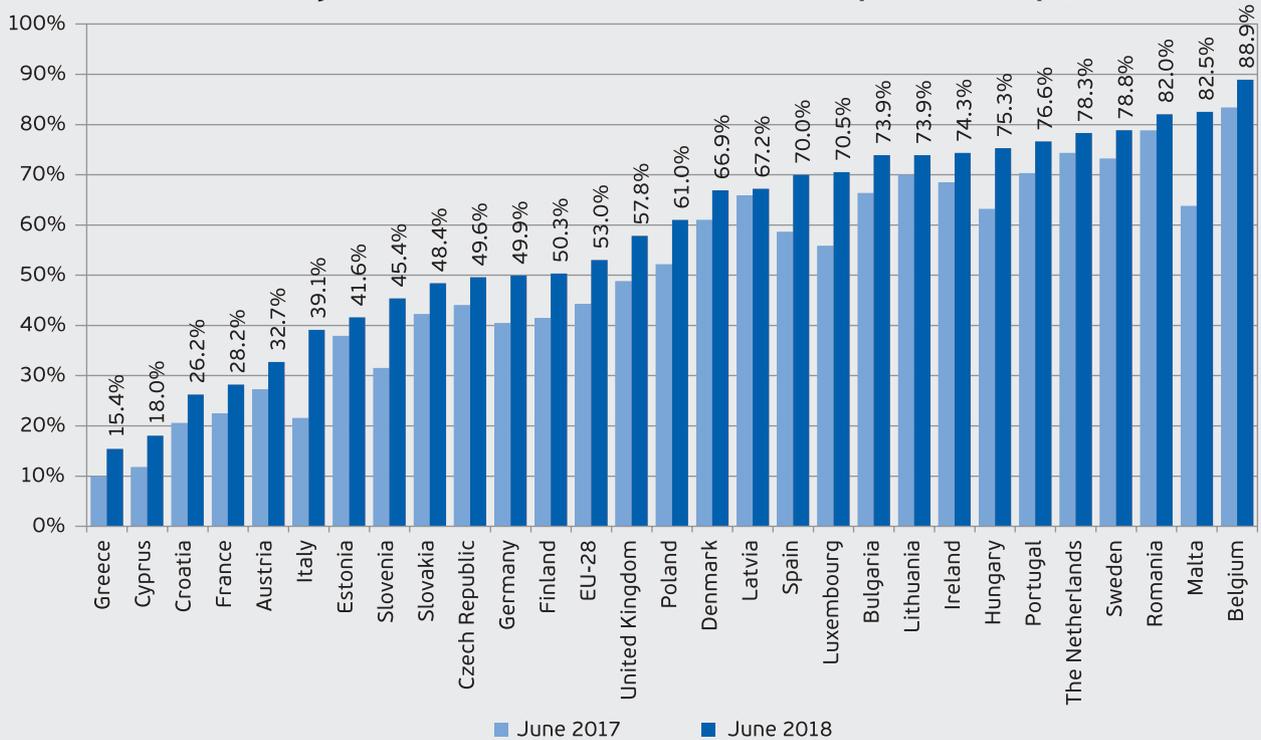
Source: EETT (based on Digital Economy & Society Index data)

Chart 1.94: Evolution of fixed broadband penetration in Greece and the EU



Source: EETT (based on Digital Economy & Society Index data)

Chart 1.95: Percentage of lines with advertised download access speeds ≥ 30 Mbps, June 2018



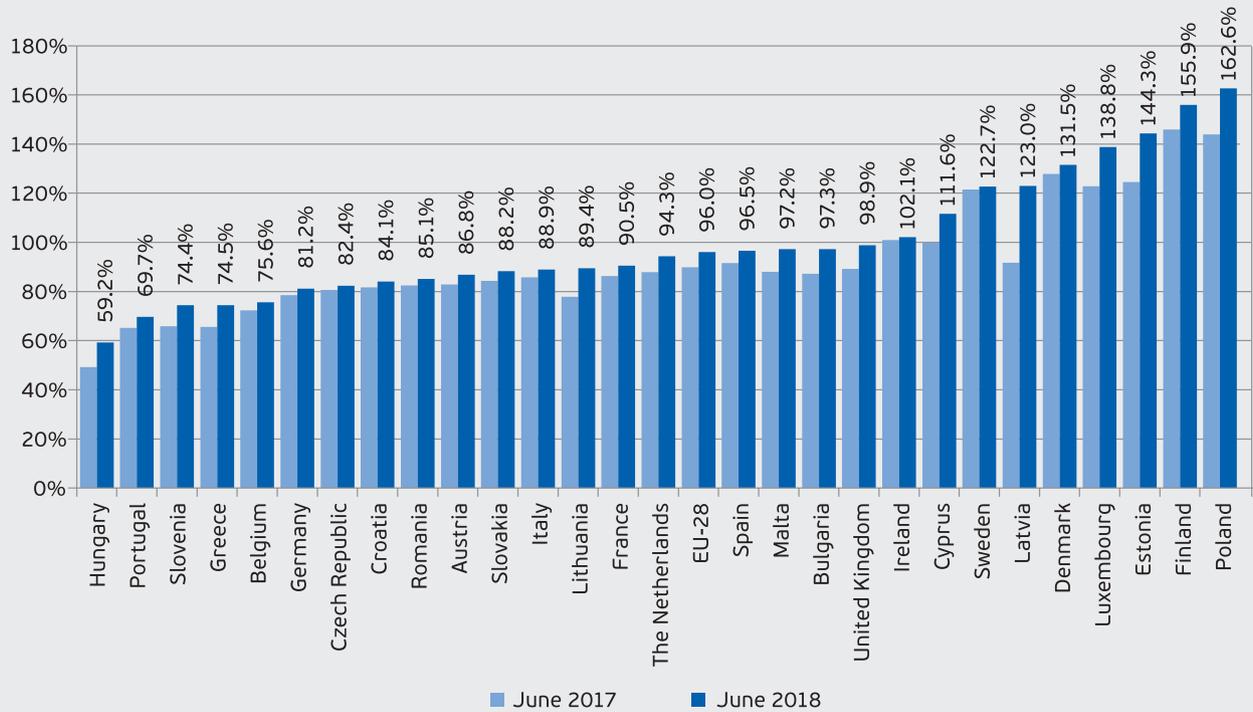
Source: EETT (based on Digital Economy & Society Index data)

Mobile broadband

The mobile broadband penetration in the EU continued its steady upward trend, reaching 96% (connections per 100 people) in June 2018, versus 90% in June 2017 (Chart 1.96). In nine countries (Poland, Finland, Estonia, Luxembourg, Denmark, Latvia, Sweden, Cyprus and Ireland) the penetration was

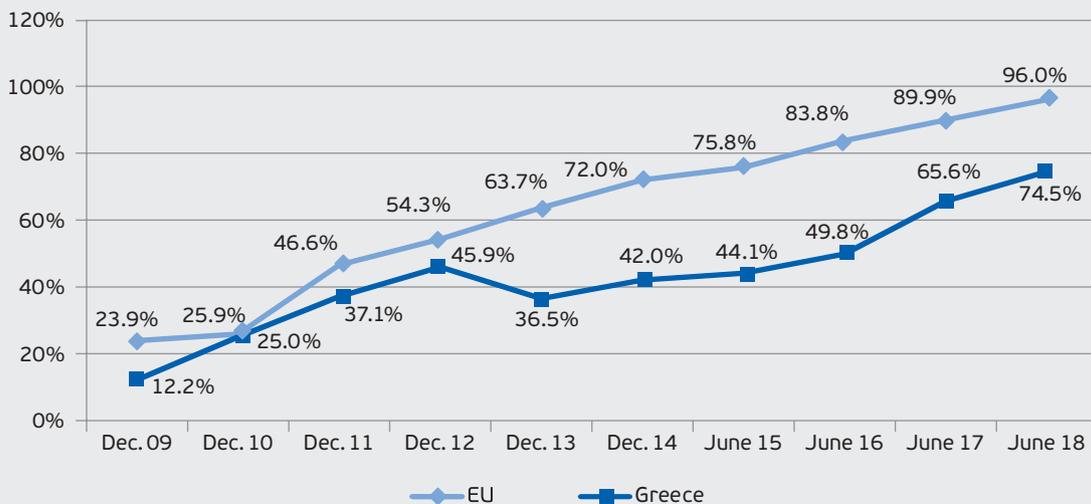
more than 100%. Greece, with 74.5%, is among the countries with the lowest mobile broadband penetration, along with Hungary, Portugal and Slovenia. However, the penetration in Greece increases faster than the average penetration in the EU, as within a year it increased by 8.9 percentage points versus 6.1 percentage points of the EU (Chart 1.97).

Chart 1.96: Mobile broadband penetration (connections per 100 people), June 2018



Source: EETT (based on Digital Economy & Society Index data)

Chart 1.97: Evolution of mobile broadband penetration in Greece and the EU (connections per 100 people)



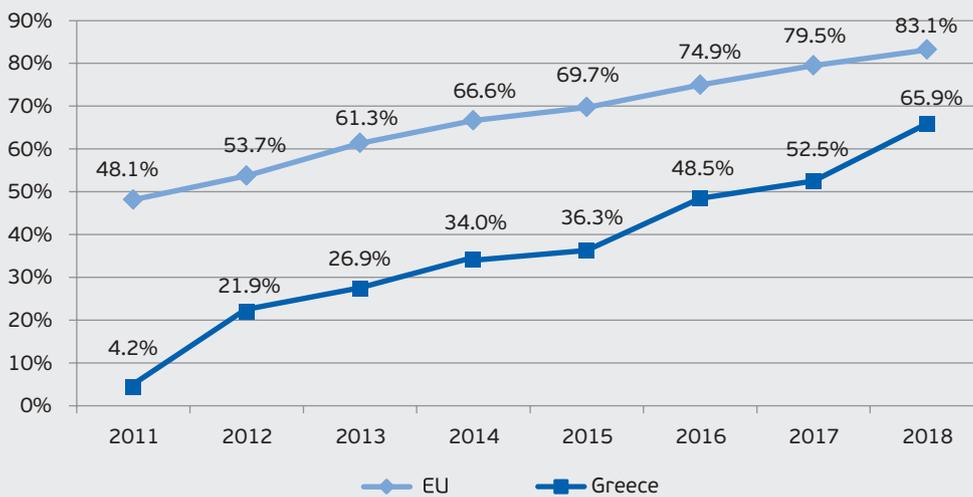
Source: EETT (based on Digital Economy & Society Index data)

Network infrastructure development

The deployment of Next Generation Access networks (NGA) continued in 2018, with the EU coverage reaching 83.1% of households in the middle of the year, versus 79.5% in the middle of 2017 (Chart 1.98). Greece however, with 65.9% coverage, is below the European average and is ranking among the last member states together with Poland, Lithuania and France, though its NGA coverage increases faster than the European average (13.37% versus 3.68%).

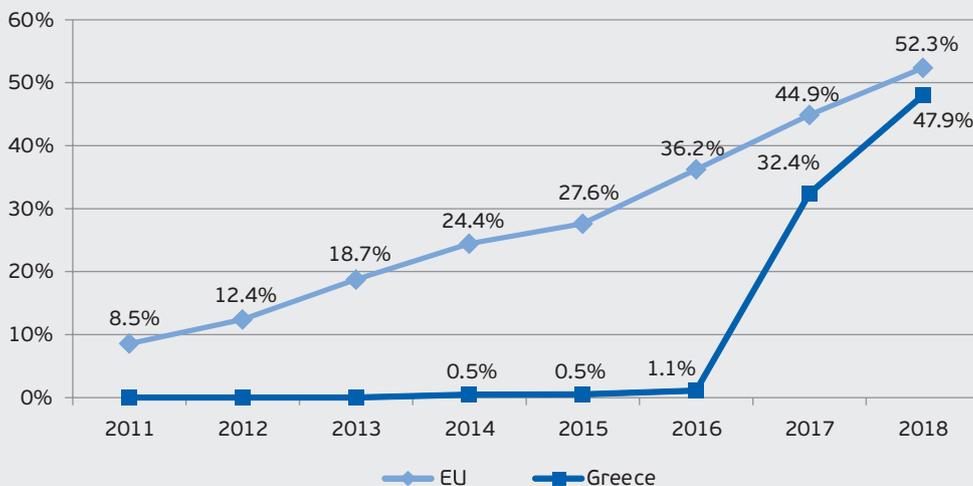
Regarding the coverage of rural areas with fixed broadband NGAs, Greece is lagging behind but appears to be converging with the EU average, with its coverage at 47.9% compared to 52.3% of the corresponding European (Chart 1.99). It is also noted that the percentage of households covered by 4G networks in the EU (coverage by at least one operator) reached 98.93% in June 2018, with Greece being slightly behind with 98.19% (Chart 1.100).

Chart 1.98: NGA broadband coverage in Greece and the EU (% of households)



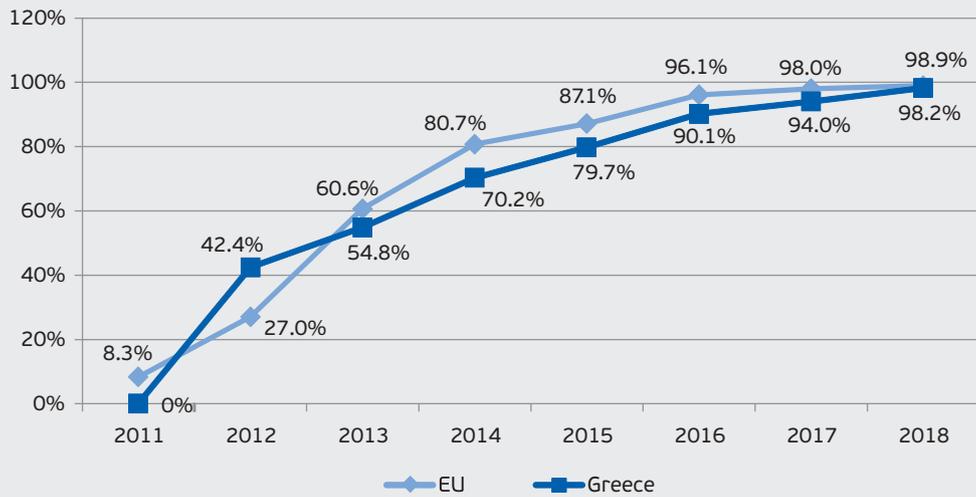
Source: EETT (based on Digital Economy & Society Index data)

Chart 1.99: Rural NGA broadband coverage in Greece and the EU (% of households)



Source: EETT (based on Digital Economy & Society Index data)

Chart 1.100: 4G coverage in Greece and the EU (% of households)



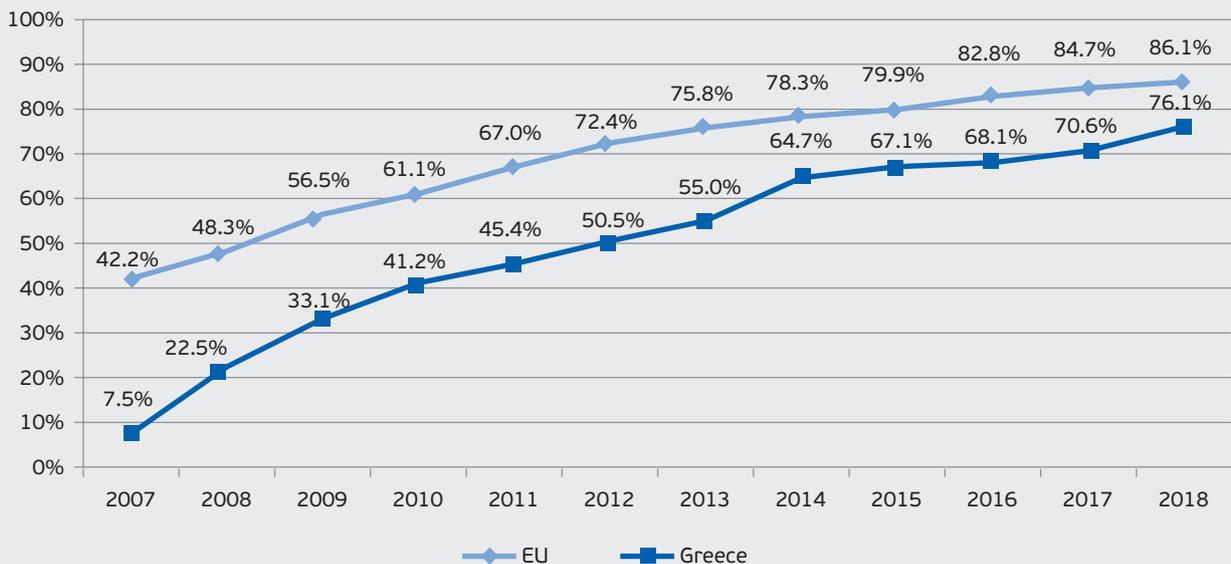
Source: EETT (based on Digital Economy & Society Index data)

Internet access

In 2018, 76.1% of Greek households had access to the Internet, with the corresponding European average at 86.1%. As a result, Greece lags behind by about 10 percentage points from the EU. The performance is significantly improved com-

pared to the previous year, when the difference from the EU average was 14 percentage points. This is due to the faster increase of the Internet penetration in Greece compared to the EU, which translates to 5.48 versus 1.38 percentage points (Chart 1.101).

Chart 1.101: Internet penetration in households in Greece and the EU



Source: EETT (based on Digital Economy & Society Index data)

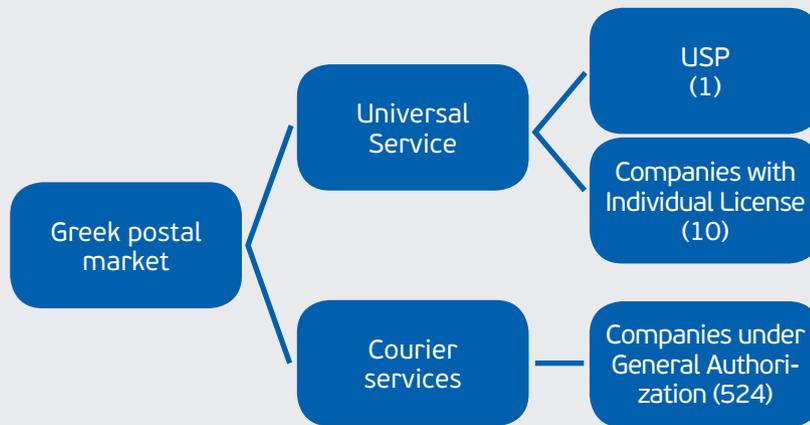
2. Postal services

2.1. The Greek postal market

In recent years, there is an intense activity in the Greek postal market while in 2018, 535 companies

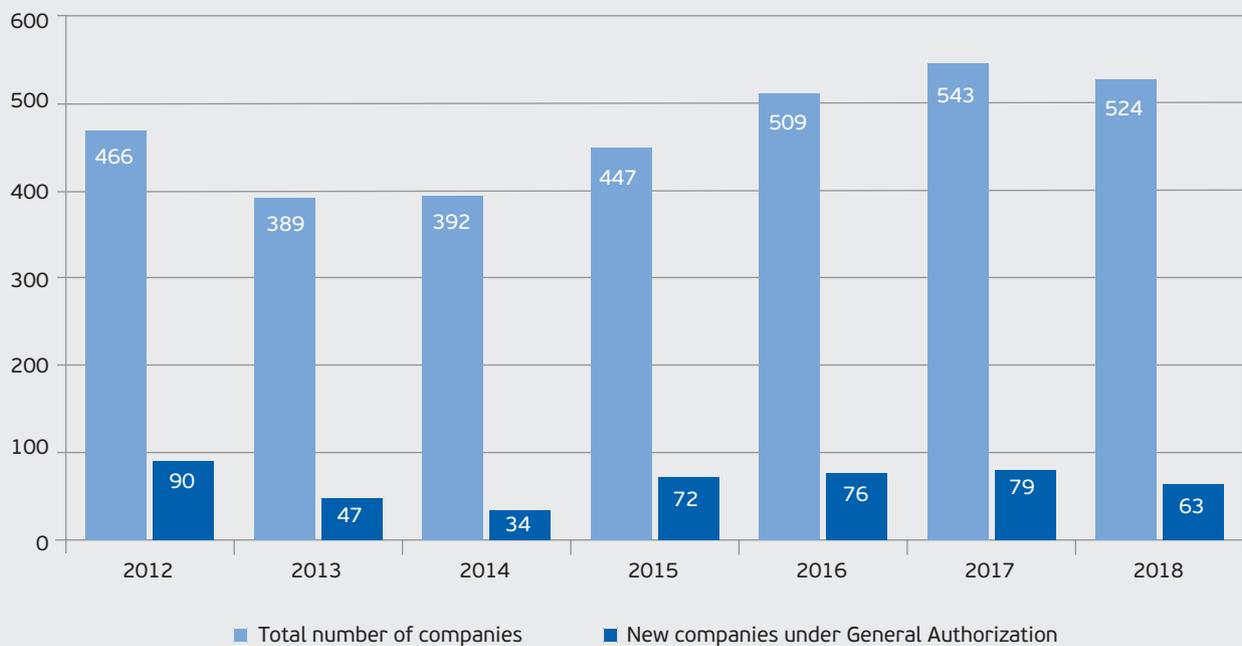
operated in total (Graph 2.1 and Chart 2.1). More precisely, a) in the Universal Services (US) sector, operate the USP (Hellenic Post-ELTA) and ten private companies holding an Individual License and b) in the courier services sector operate 524 companies under General Authorization.

Graph 2.1: Number of companies in the Greek postal market



Source: EETT (Register of postal services providers)

Chart 2.1: Number of companies under General Authorization



Source: EETT (Register of postal services providers)

2.2. Evolution of key figures of the postal services market in Greece

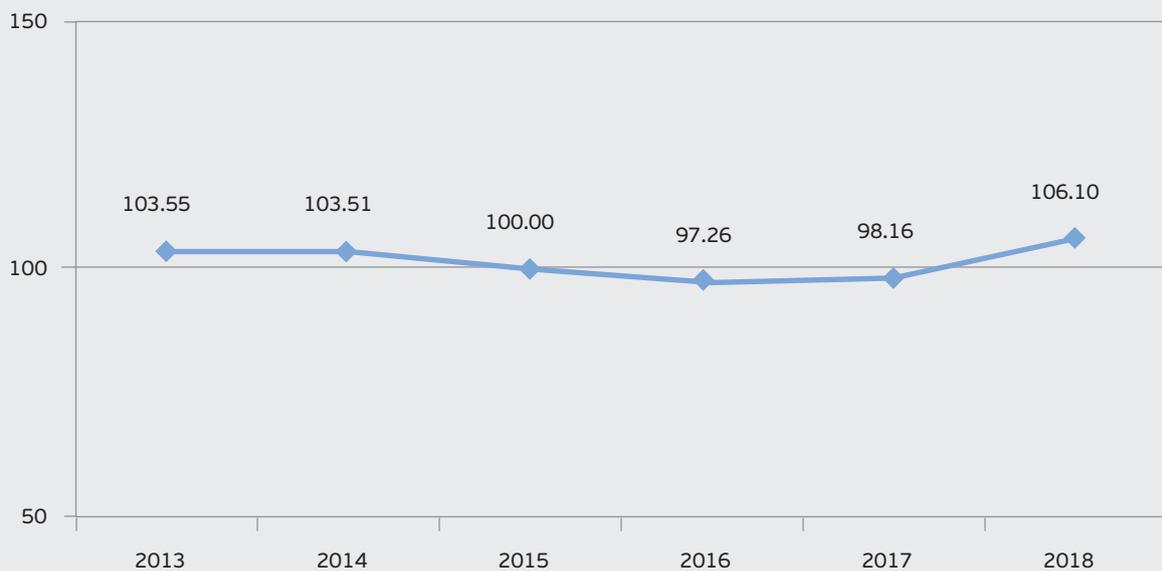
2.2.1. Financial data from the published financial statements

The postal services sector showed a positive trend in 2018, as presented in Chart 2.2. The following analysis takes into account the published financial statements of the USP (ELTA) and eight of the largest companies operating in the courier sector (under General Authorization). It is noted that for one of these companies the data included in the analysis is an estimate as it was not available until the drafting of this report.

Turnover

The postal services sector showed an upward trend compared to 2017, as it is indicated in Chart 2.3. In 2018, the postal companies under General Authorization showed an improving trend on turnover of 8% compared to previous year, while the USP's turnover increased by 11% compared with the revised turnover of 2017. It is noted that the USP corrected downwards the revenue from the US service by 17.5 million euros, according to EETT's justified Decision on the verification of the US net cost.

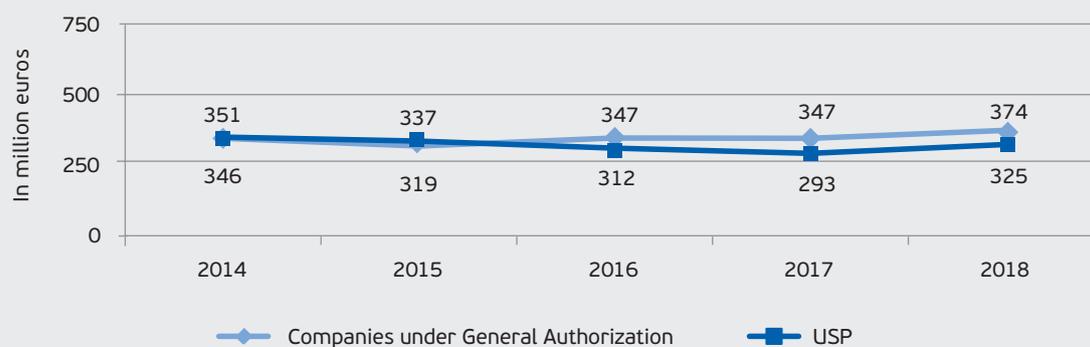
Chart 2.2: Evolution of the market turnover index for postal and courier activities (base year 2015)



Source: HELLASTAT

Note: The presented data is corrected regarding the actual number of working days.

Chart 2.3: Turnover of postal companies



Source: Annual published financial statements

Table 2.1: Key financial data of postal companies, 2018 (in million euros)

	Turnover	Gross profit	Gross profit margin	Net profit	Net profit margin
USP	325	10	3.1%	-15	-4.6%
Companies under General Authorization	374	66	17.5%	17	4.5%

Source: Annual published financial statements

The turnover and the key financial data relevant to the profitability of the postal companies are listed in Table 2.1. The net profit margin is positive for the postal companies and negative for the USP.

The postal companies' turnover may include data from non-postal activities, since some companies under General Authorization, also, operate in other sectors of the economy. Consequently, there may be a discrepancy in relation to the amount of revenue analyzed below, which only concerns the postal market.

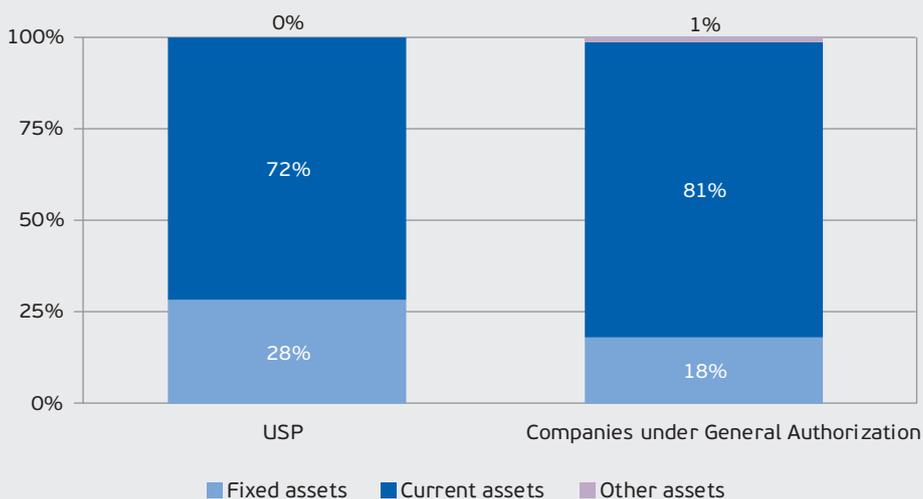
Balance sheet analysis

The companies under General Authorization held the majority of their capital (81%) in current assets, while the USP held 72% of its capital in current assets and the remaining 28% in fixed assets.

Regarding the structure of liabilities, the obligations of the companies under General Authorization accounted for 75% of total liabilities. USP's equity is negative due to a number of reasons, such as financial data, value reduction, tangible assets write-downs and the review of demands from the provision of US. According to the USP's financial statements, the Board of Directors plans to strengthen the company's financial position.

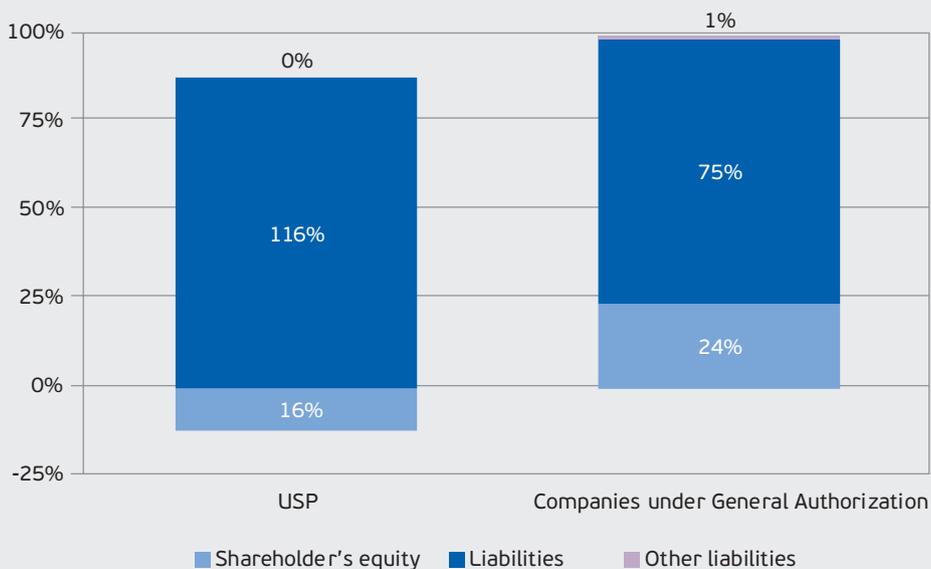
The allocation of assets and liabilities for the USP and the companies under General Authorization is shown in Charts 2.4 and 2.5.

Chart 2.4: Assets share in the postal market, 2018



Source: Annual published financial statements

Chart 2.5: Liabilities share in the postal market, 2018



Source: Annual published financial statements

Ratio analysis

The main ratios derived from the analysis of the balance sheets of the postal companies, are presented in Table 2.2.

In 2018, the liquidity ratio for the underlying companies remained higher than one, suggesting that they could meet short-term liabilities by means of their current assets.

The turnover ratio remained higher than one for companies under General Authorization, due to

their current asset intensive character (mainly receivables). The respective USP index remained below one, due to its capital-intensity and requirements of fixed assets high value.

The day sales outstanding ratio for companies under General Authorization showed a decrease, while the USP's corresponding index remained in a particularly high level. This ratio shows how effectively the company is managing receivables as well as the degree of their liquidity.

Table 2.2: Postal market financial indicators

	2014	2015	2016	2017	2018
Liquidity ratio					
USP	0.89	1.07	1.08	0.96	0.92
Companies under General Authorization	1.33	1.09	1.11	1.15	1.29
Turnover ratio					
USP	0.81	0.69	0.60	0.64	0.74
Companies under General Authorization	2.48	2.00	2.16	2.15	2.12
Day sales outstanding ratio					
USP	99.19	179.62	287.94	331.19	292.87
Companies under General Authorization	89.56	96.19	97.04	103.61	89.63
Return on equity capital					
USP	12.6%	7.4%	1.4%	-	-
Companies under General Authorization	73.0%	59.5%	36.3%	45.0%	39.9%

Source: Annual published financial statements

The return on equity capital ratio remained at almost the same level for companies under General Authorization over the previous year. The corresponding index for the USP cannot be estimated due to loss.

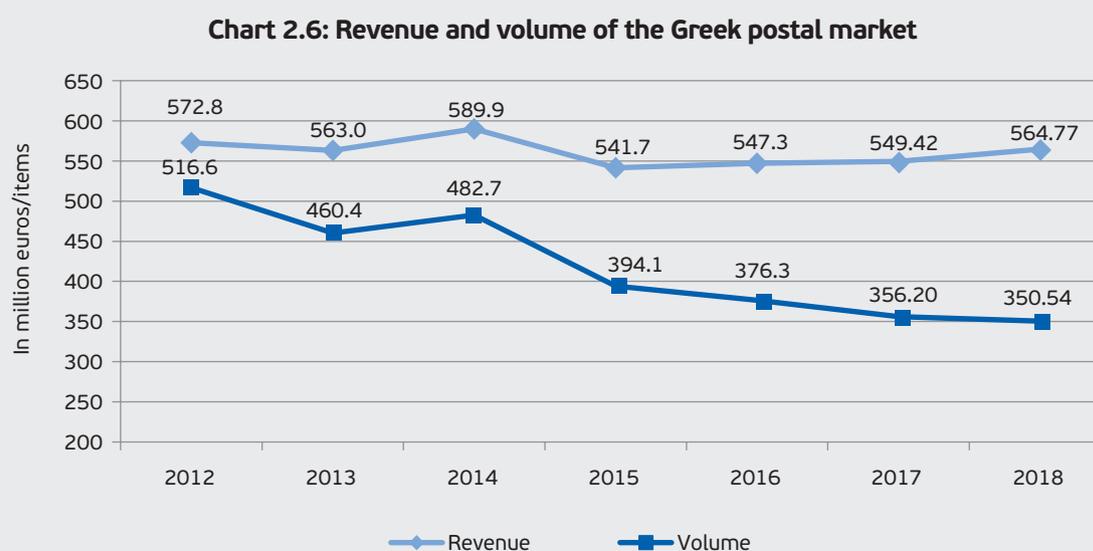
upward trend, as regards to revenue, while the volume of postal items continued to drop. Specifically, 350.5 million items were handled, generating revenue of 564.7 million euros.

The course of the postal market over the last seven years is shown in Chart 2.6.

2.2.2. Postal revenue and volume

Total postal market

In 2018, the Greek postal market showed an



Per market sector

The course of the three sectors that constitute the Greek postal market, thus Universal Service, Individual Licenses and General Authorizations, is shown in Tables 2.3 and 2.4. The total revenue of the postal market grew in 2018 (2.8%), thanks to the revenue growth of companies under Ge-

neral Authorization and those holding Individual License, by 7.2% and 5.3% respectively. The total volume of postal items decreased in the same year, despite the volume growth of companies under General Authorization (8.5%) and those holding Individual License (13.9%). The USP showed significant decrease in both the volume (-6.8%) of postal items and total revenue (-5.0%).

Table 2.3: Postal market volume (in thousand items)

	2012	2013	2014	2015	2016	2017	2018	2018/17
USP	461,361	402,818	398,325	308,300	278,523	248,452	231,607	-6.8%
Companies with Individual License	8,065	5,326	26,854	27,251	32,060	37,136	42,312	13.9%
Companies under General Authorization	47,162	52,278	57,563	58,578	65,752	70,613	76,624	8.5%
Total	516,588	460,422	482,742	394,129	376,334	356,201	350,543	-1.6%
Annual change	-12.5%	-10.9%	4.8%	-18.4%	-4.5%	-5.4%	-1.6%	-

Source: EETT (based on data provided by postal services providers)

Table 2.4: Postal market revenue (in thousand euros)

	2012	2013	2014	2015	2016	2017	2018	2018/17
USP	317,486	282,919	272,658	227,417	207,313	195,059	185,273	-5.0%
Companies with Individual License	3,486	2,471	14,496	14,309	15,865	18,251	19,220	5.3%
Companies under General Authorization	251,814	277,628	302,753	299,954	324,086	336,110	360,274	7.2%
Total	572,786	563,018	589,907	541,680	547,265	549,421	564,768	2.8%
Annual change	-10.7%	-1.7%	4.8%	-8.2%	1.0%	0.4%	2.8%	-

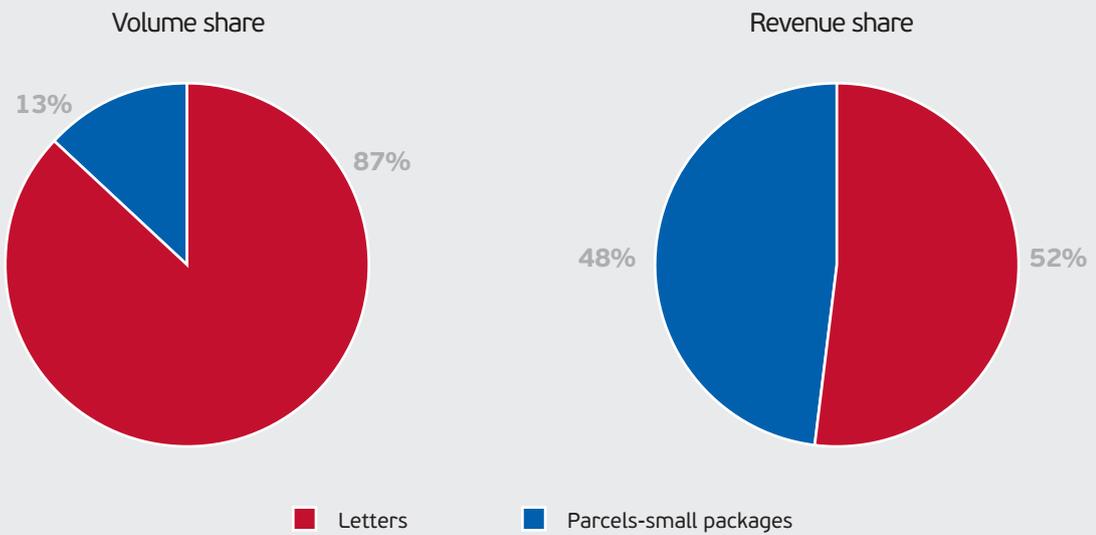
Source: EETT (based on data provided by postal services providers)

Per postal service

Postal items are divided into letters and parcels (including small packages). The shares of postal items for the total postal market in 2018 are depicted in Chart 2.7.

It's noteworthy that the parcels sector, which handled mere 13% of the total volume of postal items, accounted for 48% of total revenue. The overtime growth of volume and revenue of parcels-small packages as well as the respective decline of volume and revenue of letters, although

Chart 2.7: Volume and revenue shares per postal service, 2018

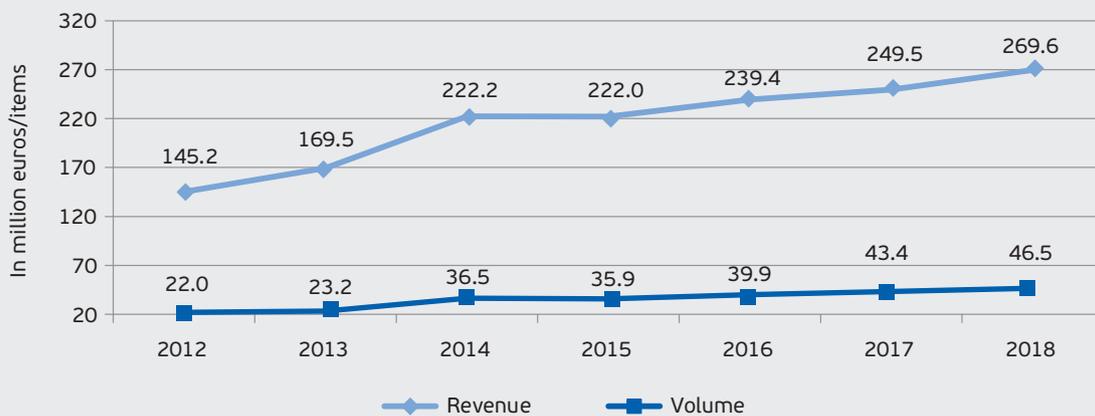


Source: EETT (based on data provided by postal services providers)

letter mail accounted for 87% of total volume, are mainly due to e-commerce growth and e-substitution of letter mail. The course of volume and

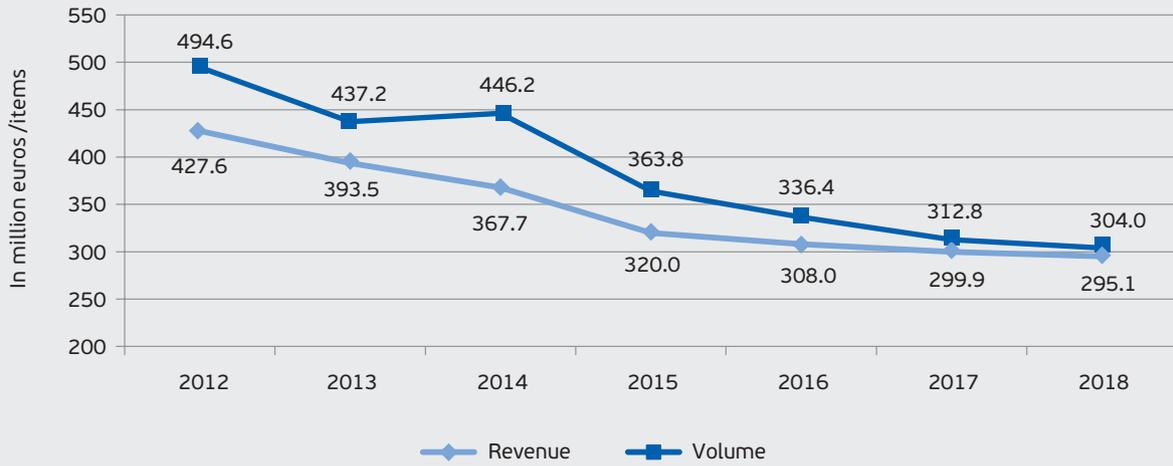
revenue of the two postal services over the last seven years is presented in Charts 2.8 και 2.9.

Chart 2.8: Volume and revenue of parcels-small packages



Source: EETT (based on data provided by postal services providers)

Chart 2.9: Volume and revenue of letters



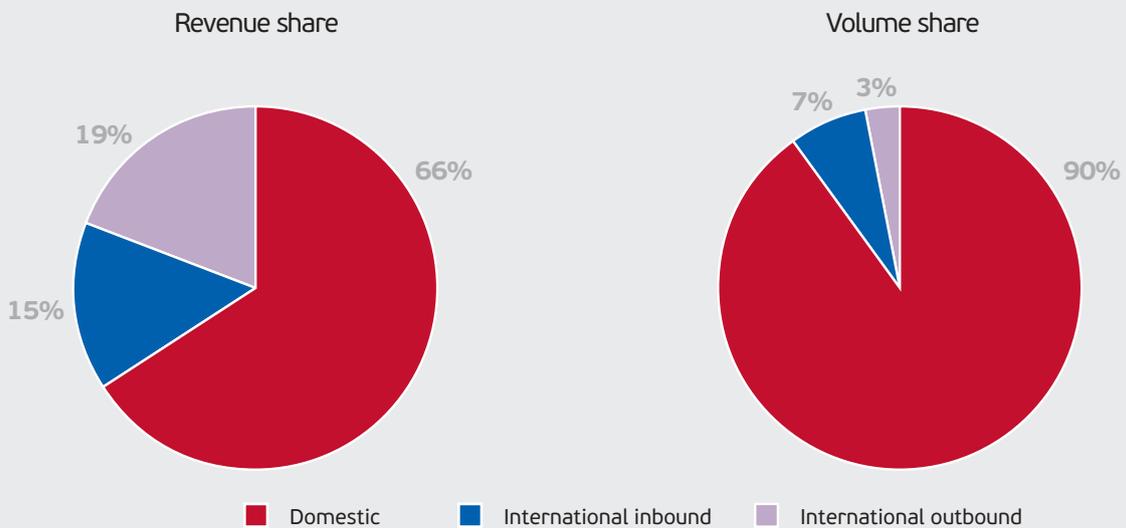
Source: EETT (based on data provided by postal services providers)

Per destination and origin of deliveries

In 2018, the highest percentage of revenue in the Greek postal market (66%) resulted from domestic

traffic (90%). The revenue and volumes share of domestic, international inbound and international out-bound items is depicted in Chart 2.10.

Chart 2.10: Volume and revenue shares per domestic-international service, 2018

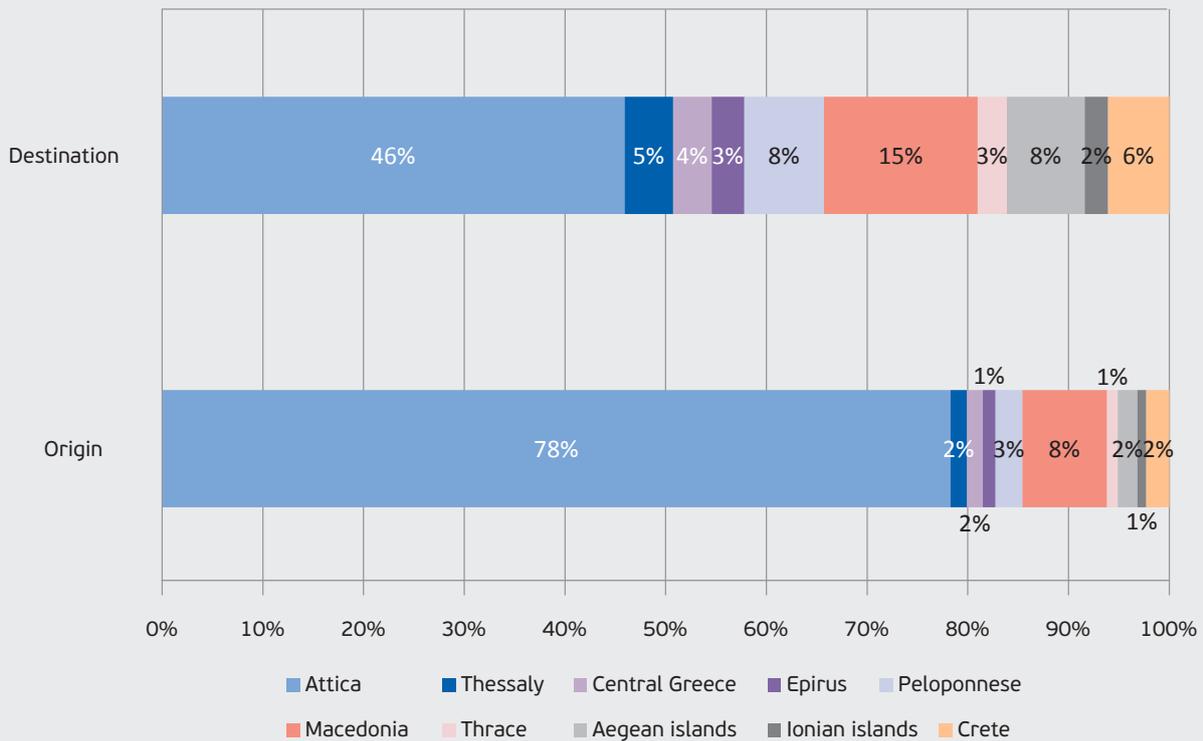


Source: EETT (based on data provided by postal services providers)

As shown in Chart 2.11, the majority of postal items was delivered from Attica (78%) and Macedonia (8%) to domestic and international destinations. These two regions were also the most popular destinations of the items being sent domestically and from international destinations. More specifically, 46% of postal items was delivered in Attica and 15% in Macedonia.

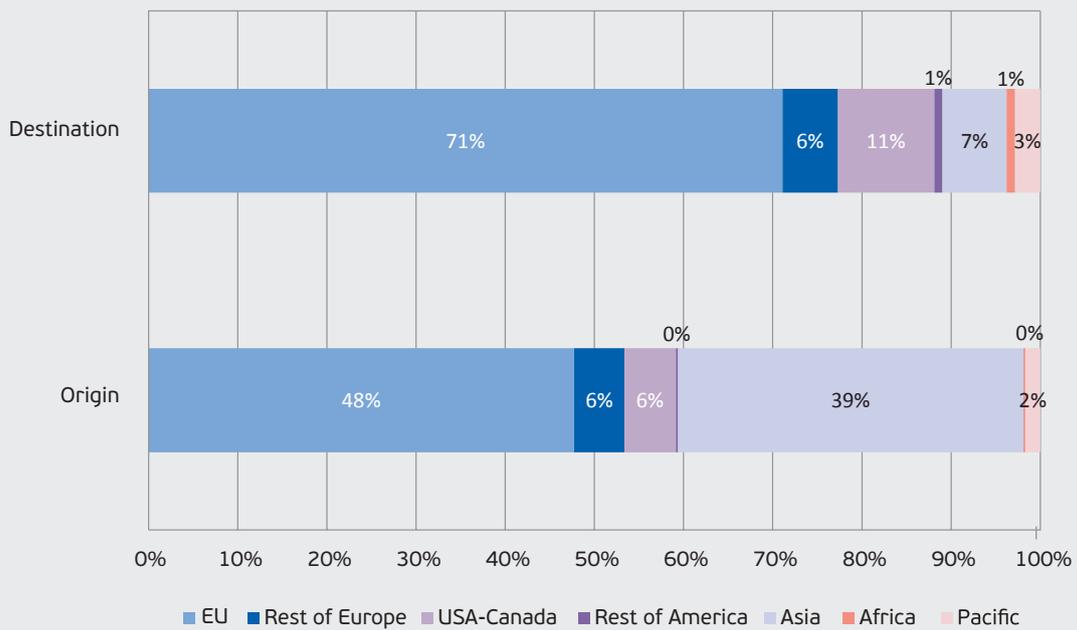
The largest volume of postal items delivered in Greece from international destinations were from the European Union (EU) (48%) and Asia (39%), while the deliveries of postal items to international destinations concerned mostly the EU (71%) and the USA-Canada (11%), as presented in Chart 2.12.

Chart 2.11: Destination and origin of postal items deliveries per geographic region, 2018



Source: EETT (based on data provided by postal services providers)

Chart 2.12: Destination and origin of international postal items deliveries, 2018



Source: EETT (based on data provided by postal services providers)

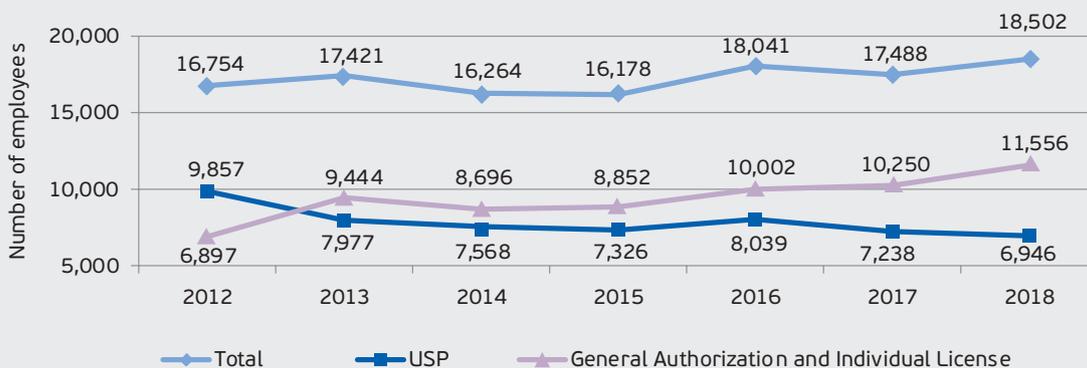
2.2.3. Employment and infrastructure of postal companies

The total number of people employed in the Greek postal market in 2018 reached 18,502, showing an increase compared to 2017 (17,488

employees). The course of employment over the last seven years is shown in Chart 2.13.

In 2018, 38% of the people was employed by the USP, while the remaining 62% was employed by the other postal services providers with Individual License or under General Authorization.

Chart 2.13: Employment in the Greek postal market



Source: EETT (based on data provided by postal services providers)

Regarding the infrastructure of postal service providers, in 2018 the USP owned 1,253 post offices and 2,375 vehicles, while the other providers with Individual License or under General Authorization owned 1,757 post offices and 6,930 vehicles.

2.2.4. Consumers complaints for postal companies

In Table 2.5 the evolution of the consumers complaints submitted to postal companies is presented.

The USP received 13,533 claims in 2018, (less by 27.4% than in 2017), referring to a total 231.6 mil-

lion handled items. All other companies with Individual License received 10,669 complaints referring to a total of 42.3 million handled items, while the companies under General Authorization received 12,004 complaints referring to a total of 76.6 million handled items.

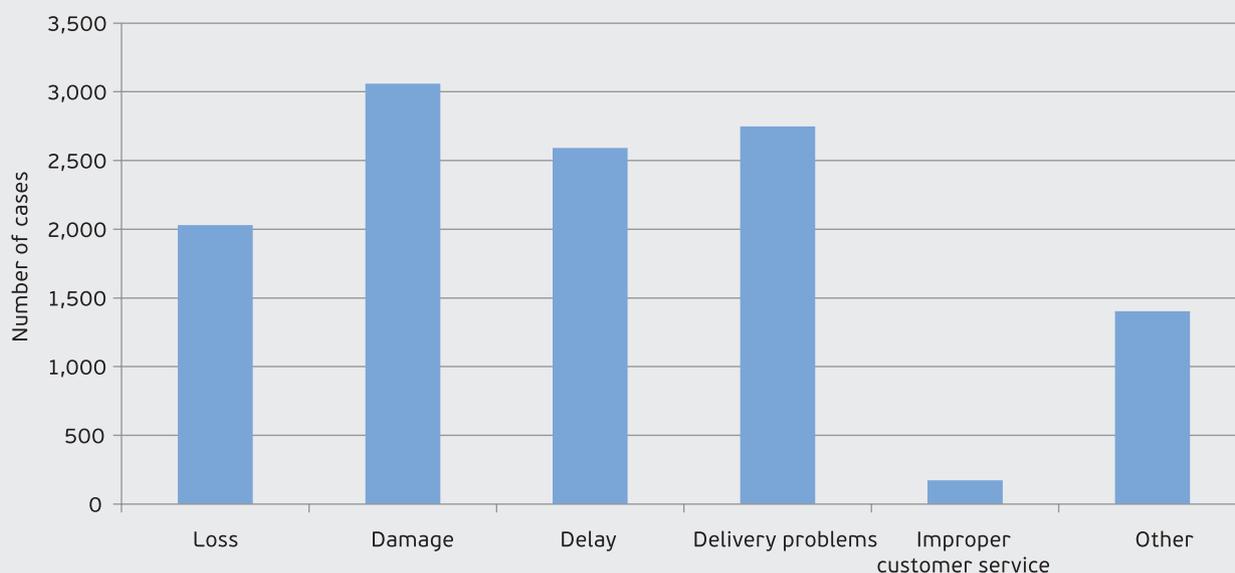
More specifically, the cases regarding differences resolution between consumers and companies under General Authorization referred mainly to damages, delivery issues and delays (Chart 2.14). The compensations given in 2018 referred mainly to cases of loss and damage of postal items (Chart 2.15).

Table 2.5: Evolution of consumers complaints submitted to postal companies

	2016	2017	2018
A. Complaints to USP	15,772	18,646	13,533
B. Complaints to other companies with Individual License (except USP)	11,250	10,227	10,669
C. Complaints to companies under General Authorization	6,868	10,347	12,004

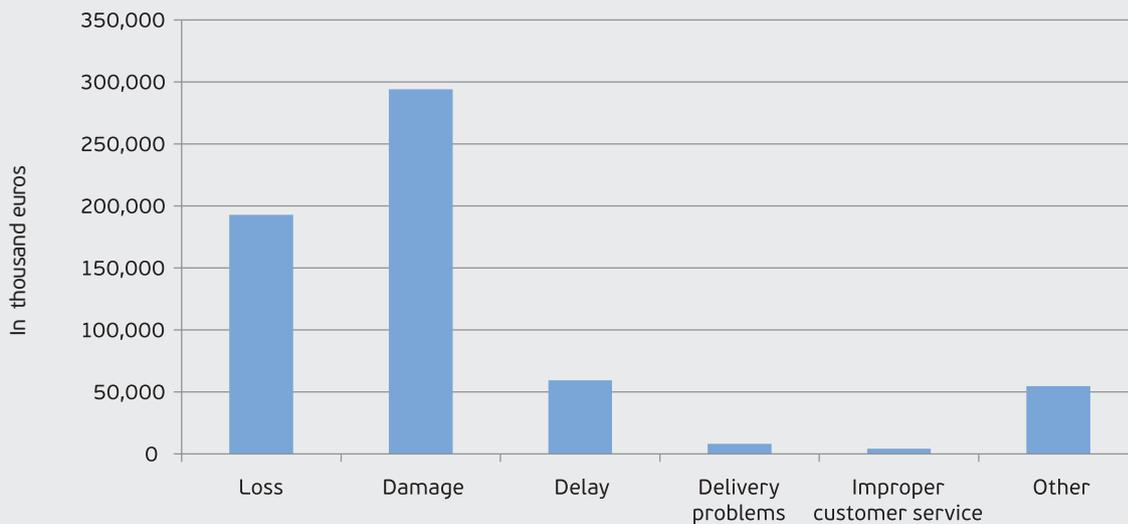
Source: EETT (based on data provided by postal services providers)

Chart 2.14: Classification of cases regarding differences resolution between consumers and companies under General Authorization, 2018



Source: EETT (based on data provided by postal services providers)

Chart 2.15: Compensations referring to cases of differences resolution between consumers and companies under General Authorization, 2018



Source: EETT (based on data provided by postal services providers)

2.3. Competition in the postal market

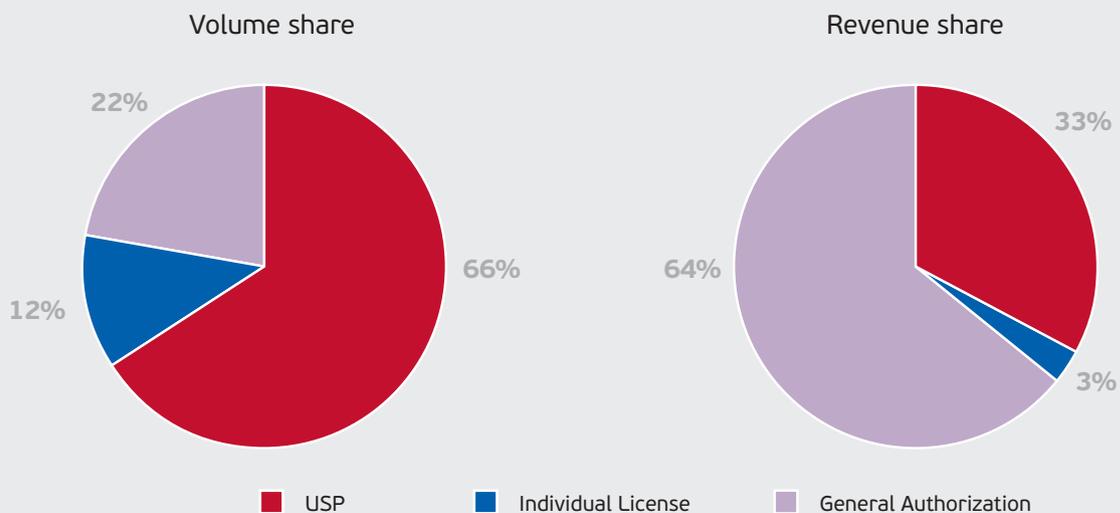
2.3.1. Market shares

In 2018, the USP accounted for 66% of the market in terms of volume while the postal operators with Individual License and under General Authorization accounted for 12% and 22%, respectively. However, in

terms of revenue, the postal companies under General Authorization held the largest market share (64%), followed by the USP which held 33% (Chart 2.16).

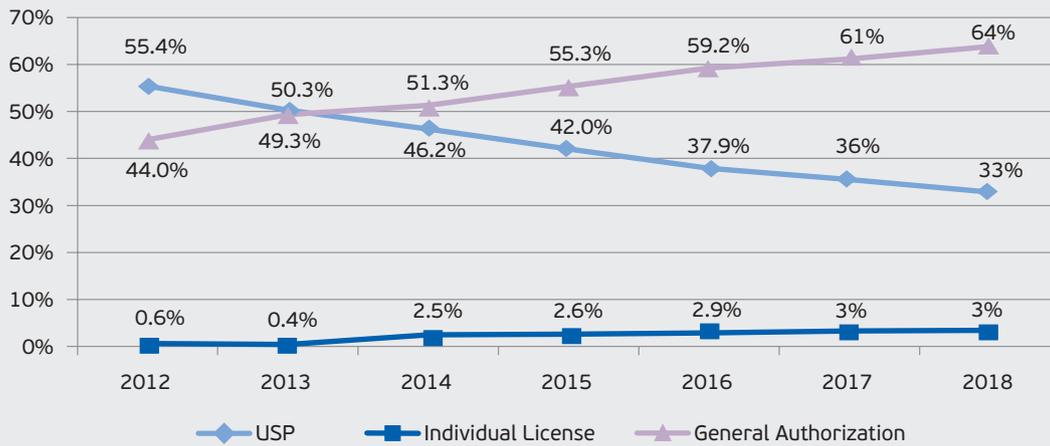
The USP's revenue share decreased over the last seven years, while the respective figure for operators with Individual License and under General Authorization has shown a steady upward trend (Chart 2.17).

Chart 2.16: Volume and revenue shares of postal operators, 2018



Source: EETT (based on data provided by postal services providers)

Chart 2.17: Revenue share of postal operators

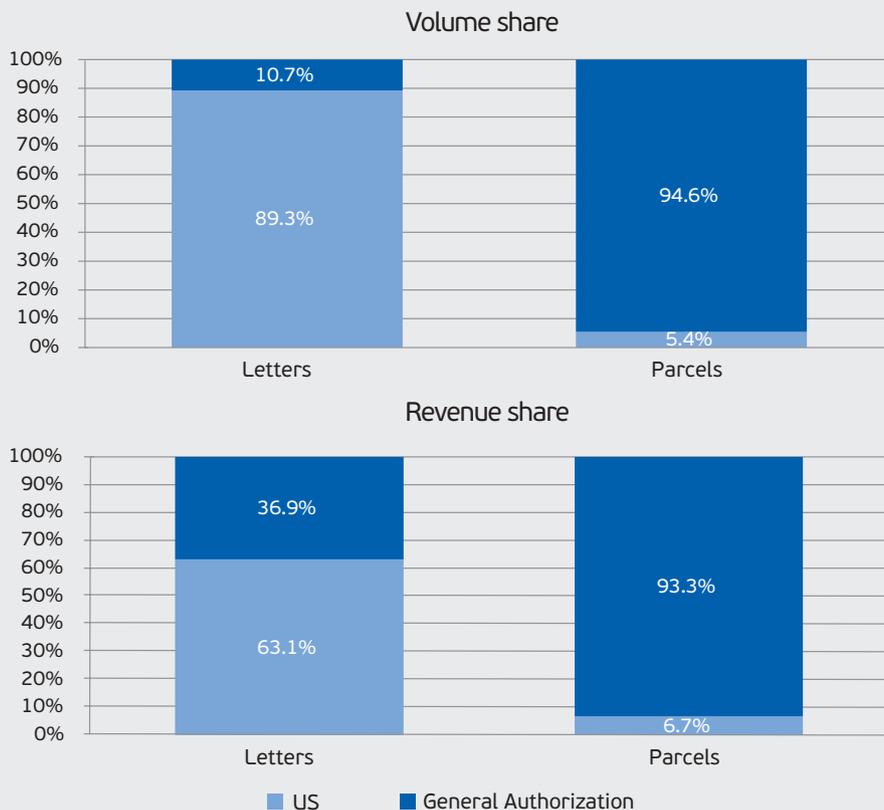


Source: EETT (based on data provided by postal services providers)

In terms of the provided services, it is obvious that the US dominates the letter mail sector²¹, accounting for 89.3% of the volume and 63.1% of the revenue in 2018. As regards to the sector of parcels-small

packages, courier companies had a dominant role, accounting for 94.6% of the volume and 93.3% of the revenue (Chart 2.18).

Chart 2.18: Letters and parcels shares for US and courier services, 2018



Source: EETT (based on data provided by postal services providers)

21. Including direct mail, newspapers, books, catalogues and periodicals.

2.3.2. The Universal Service sector

The USP and the companies with Individual License are the two types of providers operating in the US sector. According to the current legal framework, ELTA is the USP in Greece and has undertaken the provision of the US for a period of 15 years since the beginning of the postal market liberalization until 31/12/2028²².

The provision of the US includes the handling of

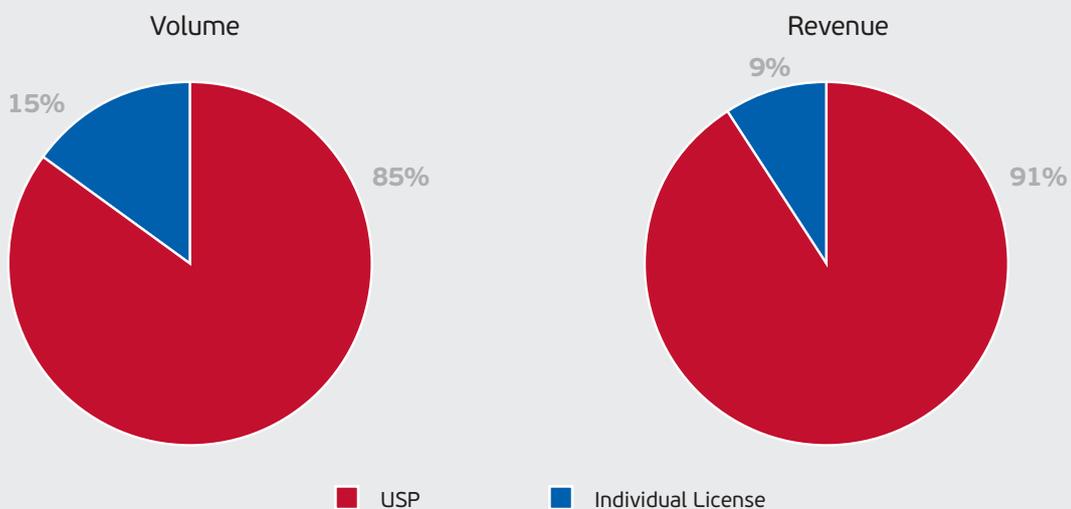
letters, direct mail, newspapers, books, catalogues and periodicals weighing up to 2 kg, as well as parcels up to 20 kg. The share of these postal items in the US sector for 2018 is shown in Table 2.6. Letters are the prevalent postal item in the US sector, accounting for 89.5% of the sector's volume and 85.3% of its revenue. In 2018, the USP was the dominant player in the US market, accounting for 85% of the volume and 91% of the revenue from postal items, as shown in Chart 2.19.

Table 2.6: Volume and revenue shares of postal items within the US sector, 2018

Services	Volume	Revenue
Letters	89.5%	85.3%
Direct mail	4.8%	2.2%
Newspapers	4.8%	3.5%
Books-catalogues-periodicals	0.1%	0.04%
Parcels & small packages	0.9%	8.9%
US total	100%	100%

Source: EETT (based on data provided by postal services providers)

Chart 2.19: Volume and revenue shares of postal operators within the US sector, 2018



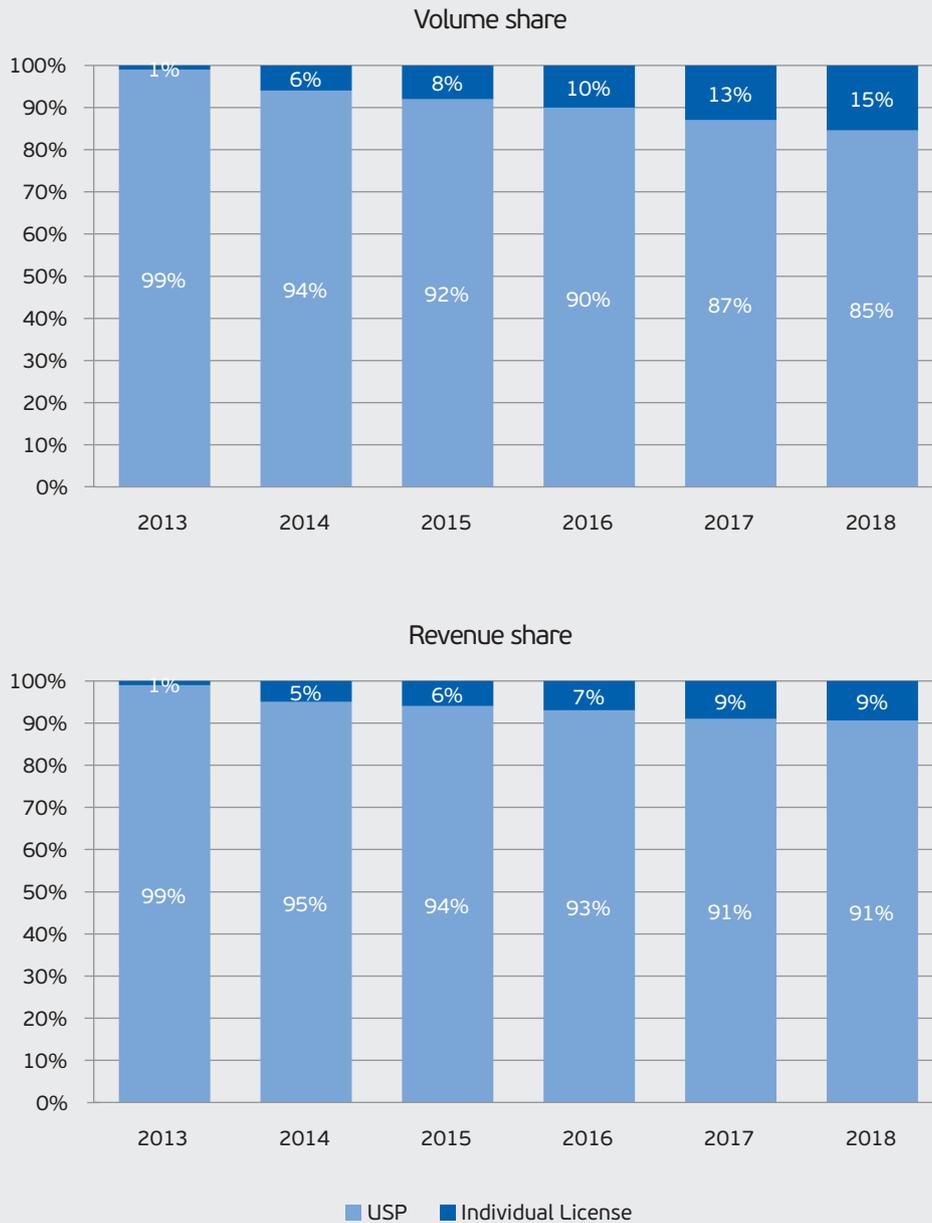
Source: EETT (based on data provided by postal services providers)

22. L.4053/2012 "Regulation for the operation of the postal market, e-telecommunication issues and other rules", Government Gazette (GG) 44/A/2012.

Companies with Individual License seem to gradually increase their market share in the US sector. The course of the market shares of companies with-

in the US sector over the last six years, since the postal market liberalization, is shown in Chart 2.20.

Chart 2.20: Market shares of postal operators within the US sector

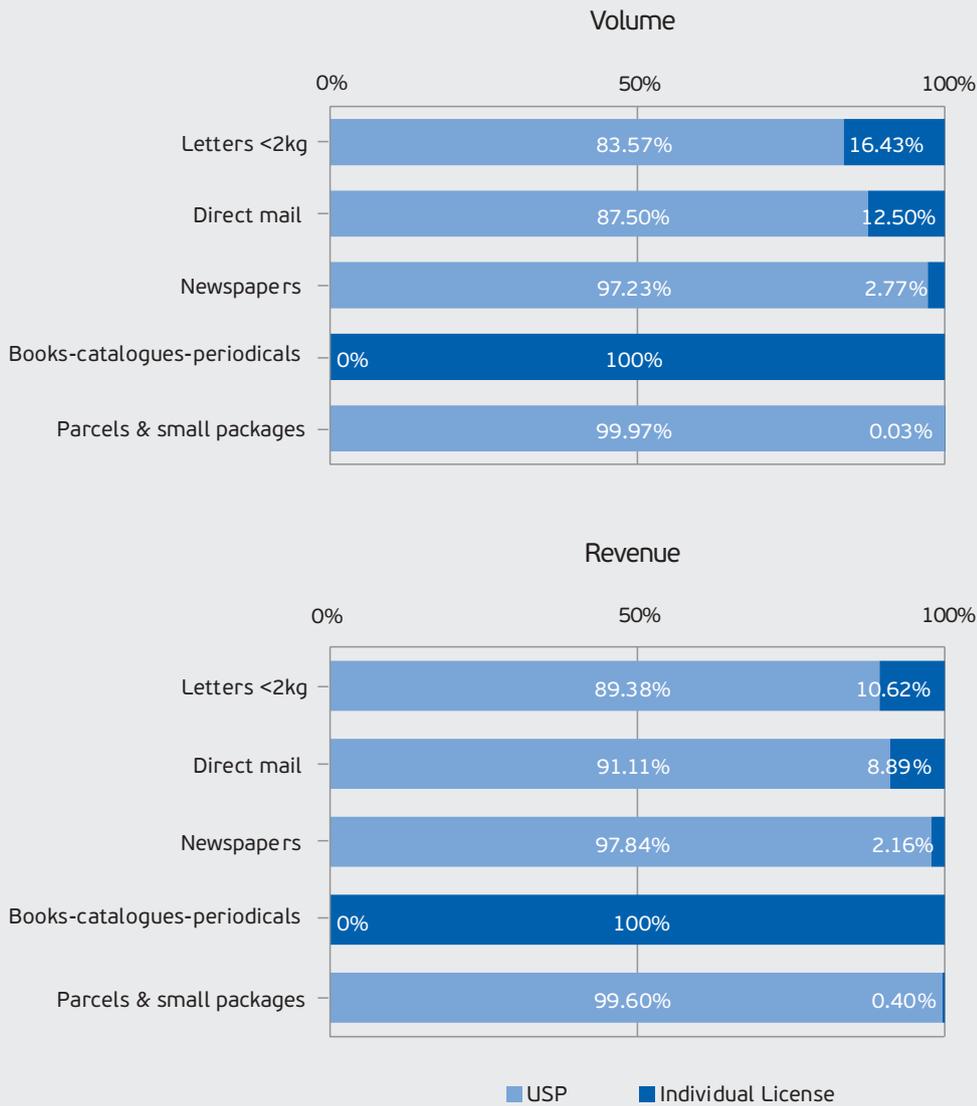


Source: EETT (based on data provided by postal services providers)

The increase of the market share of companies with Individual License, compared to the previous year, was mainly the result of the letters handling weigh-

ing up to 2 kg. The market shares of operators regarding all postal items within the US sector in 2018 are shown in Chart 2.21.

Chart 2.21: Market shares of postal operators by postal item type within the US sector, 2018



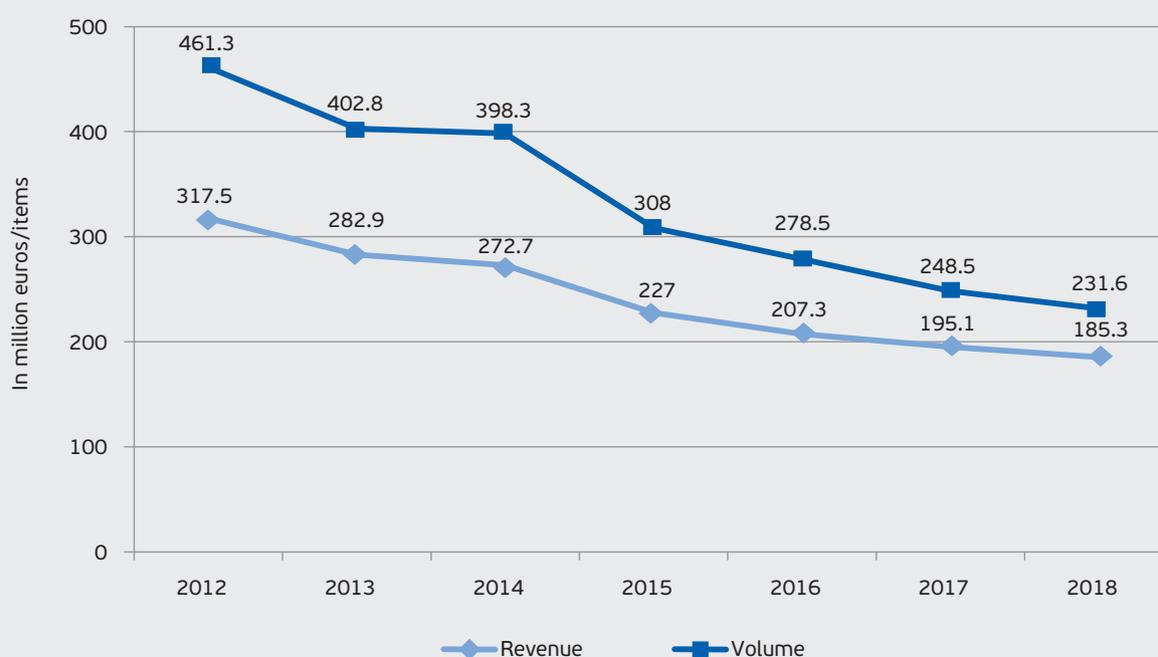
Source: EETT (based on data provided by postal services providers)

The Universal Service Provider (USP)

In 2018, USP's revenue totaled in 185.3 million euros, decreased by 5% compared to the previous year. These revenues came from the handling of 231.6 million postal items, 6.8% less compared to 2017. The overtime progress of the USP's revenue and volume during the last seven years is presented in Chart 2.22.

The majority of the USP's revenue (84.2%) was generated mainly from the handling of letters up to 2kg, followed by parcels up to 20 kg (9%) and newspapers (3.8%). In 2018, the average revenue per service increased significantly for small packages up to 2 kg as well as for letters and parcels up to 20 kg, compared to the previous year, as shown in Table 2.7.

Chart 2.22: USP revenue and volume



Source: Annual financial statements of the USP

Table 2.7: USP revenue and volume shares per service, 2018

Services	Total items (%)	Total revenue (%)	Average revenue (in euro)	Difference 2016-2017 (%)
Letters	88.9%	84.2%	0.76	1.21%
Direct mail	3.6%	2.2%	0.49	13.52%
Newspapers	6.4%	3.8%	0.48	-2.31%
Books-catalogues-periodicals	0%	0%	0	0%
Small packages	0.2%	0.8%	3.07	39.99%
Parcels	0.9%	9.0%	8.20	4.71%
Total	100%	100%	-	-

Source: Annual financial statements of the USP, 2018

72% of the USP's revenue was generated by customers holding a contract and 28% from customers paying in cash. The USP's customer portfolio consisted of public sector's organizations (14%), banks/assurance companies (29%), energy supply companies (18%), publications and general trade (7%), and individuals (21%).

In 2018, the USP's personnel decreased compared to 2017, to 6,946 employees. Regarding infrastructure, the USP owned 1,253 post offices, 566 of which were agencies. In addition, the USP owned 645 cars and 1,730 motorbikes.

Companies with Individual License

Besides the USP, ten companies with Individual License were operating in the US sector in 2018 (Chart 2.23).

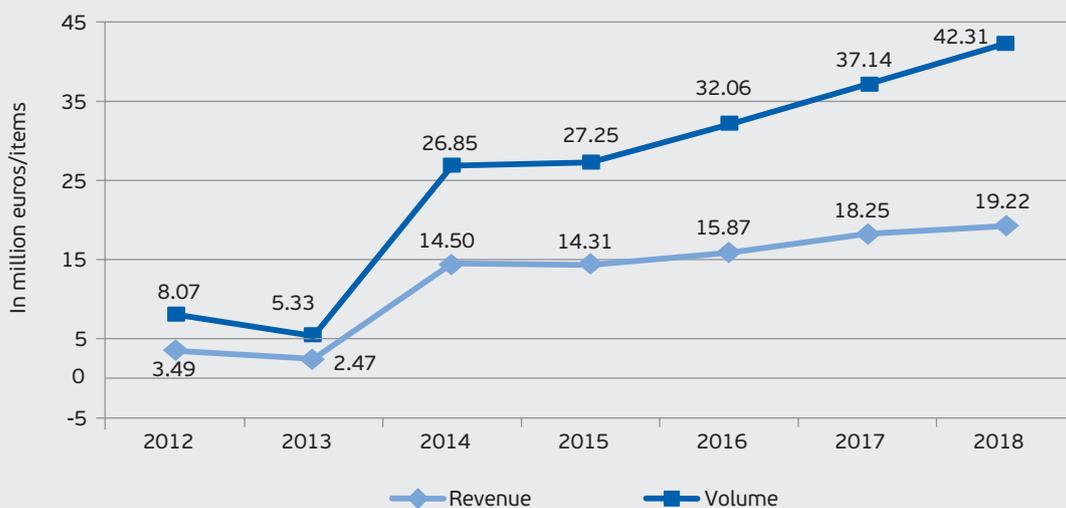
In 2018, the companies with Individual License generated 19.22 million euros revenue, increased by 5% year-on-year and handled 42.31 million postal items, 14% more than in 2017. The overtime progress of the revenue and volume of companies with Individual License during the last seven years, is presented in Chart 2.24.

Chart 2.23: Number of companies with Individual License



Source: EETT (Register of postal services providers)

Chart 2.24: Revenue and volume of companies with Individual License



Source: EETT (based on data provided by postal services providers)

Since the liberalization of the Greek postal market in 2013, large courier companies are showing great interest in letter mail services, and this trend is reflected in the fact that in 2018 companies with Individual License held 9% of revenue and 15% of volume of the US sector.

Particularly, five companies operated in letter mail handling, three in direct mail handling, two in the handling of newspaper and books/catalogues/periodicals and one of them in parcels handling. It is worth noting that 71,4% of the revenue was generated by a single company, which handled 76% of letters.

Despite the fact that until 2013 the core activity of the companies with Individual License was the distribution of direct mail, in 2018, similarly to 2017, let-

ter mail handling monopolized almost the sector's activity, as shown in Table 2.8.

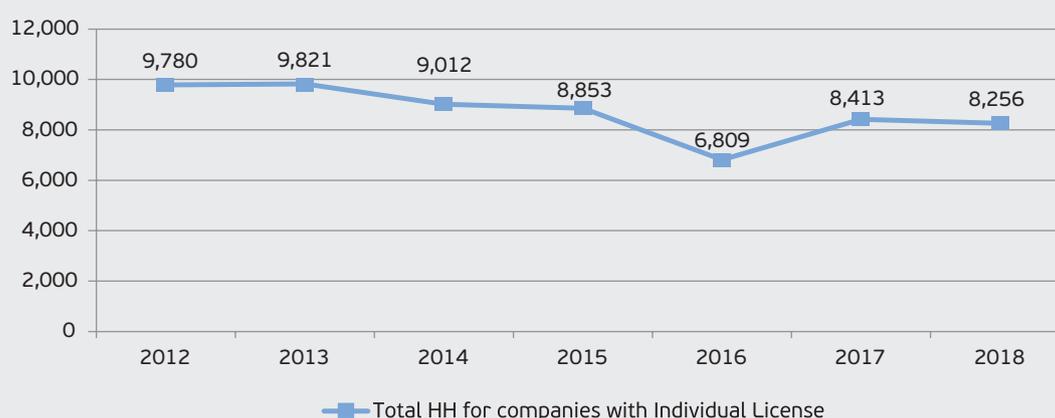
Herfindahl-Hirschman Index (HHI)²³ gives an indication of the level of competition among courier services operators. It is an index reflecting market concentration, which shows the degree to which a small number of companies represents a large part of the market. The higher the HHI, the higher is the concentration. Particularly, a HHI between 1,000 and 1,800 indicates a moderate level of market concentration. In 2018, the HHI for the postal market of companies with Individual License was slightly lower than in the previous year. It shows a high degree of concentration due to the presence of the USP, which holds the 66% of the market share (Chart 2.25).

Table 2.8: Volume and revenue shares per service for companies with Individual License, 2018

Services	Total items (%)	Total revenue (%)
Letters	95.7%	96.4%
Direct mail	2.8%	2.1%
Newspapers	1%	0.8%
Books-catalogues-periodicals	0.5%	0.4%
Parcels and small packages	0.002%	0.3%
Total	100%	100%

Source: EETT (based on data provided by postal services providers)

Chart 2.25: Index Herfindahl-Hirschman for companies with Individual License



Source: EETT (based on data provided by postal services providers)

23. Source: Hirschman A. (1945), National Power and the Structure of Foreign Trade, Berkley and Los Angeles: Publications of the Bureau of Business and Economic Research, University of California and Herfindahl, O.C. (1950), Concentration in the U.S. Steel Industry, Columbia University, unpublished Ph.D. thesis. $HHI = \sum_{i=1}^n s_i^2$, where s_i is the market share of company "i" and n is the number of companies.

2.3.3. The courier services sector

The courier services sector is a sector of particular interest mainly because of its considerable activity in the area of parcels and small packages delivery. This sector's companies operate under General Authorization and provide "courier" services, meaning express delivery of postal items including monitoring and "track and trace" systems.

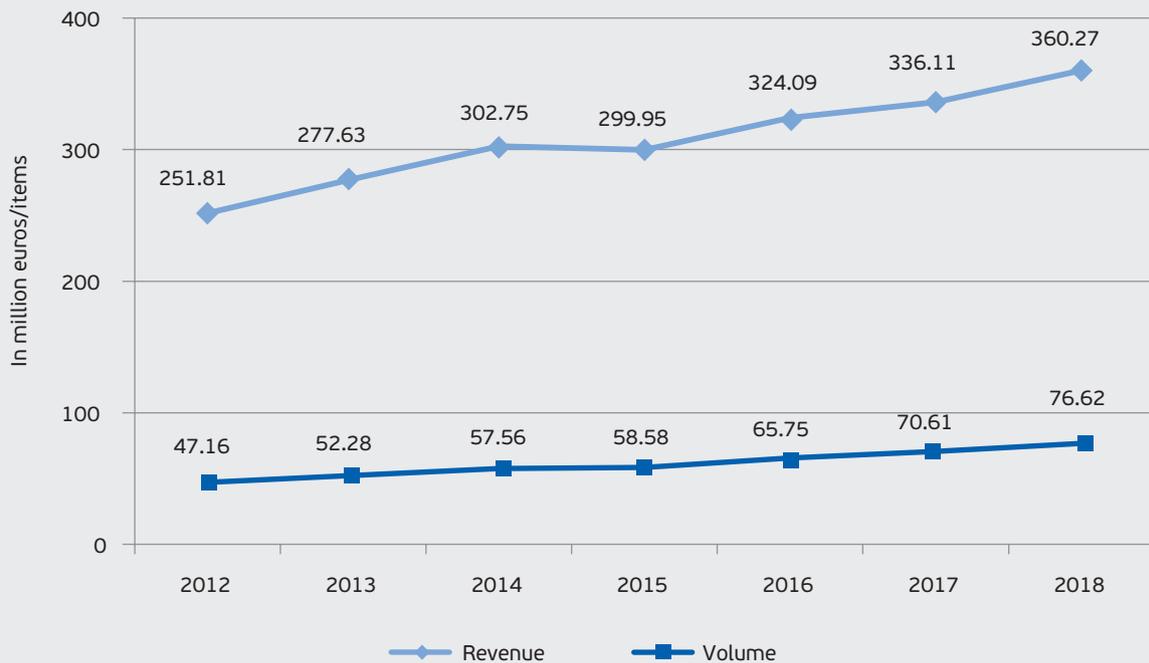
In 2018, 63 new companies entered the courier services sector, raising the total number of companies operating under General Authorization to 524²⁴ versus 543 in 2017. The 3.5% decrease in the number of companies is mainly due to deleting businesses from EETT's Register, following the relevant Regulator's Decisions.

The activities of the courier services companies include the handling of:

- letters up to 2 kg,
- small packages up to 2 kg,
- parcels from 2 up to 20 kg and
- parcels heavier than 20 kg.

In 2018, companies operating under General Authorization generated 360.27 million euros revenue, increased by 7.2 compared to 2017 and handled 76.62 million postal items, 8.5% more than in 2017. The overtime progress of revenue and volume of the companies under General Authorization during the last seven years, is presented in Chart 2.26.

Chart 2.26: Revenue and volume of companies operating under General Authorization



Source: EETT (based on data provided by postal services providers)

24. Including companies that were active even for a part of the reference year.

The volume and revenue share per category of postal items handled by the courier services operators in 2018, is presented in Chart 2.27.

Letters constitute 43% of postal items handled by courier services companies were letters and parcels-small packages constitute 57%. Letters generated significantly less revenue (30%) than parcels-small packages (70%).

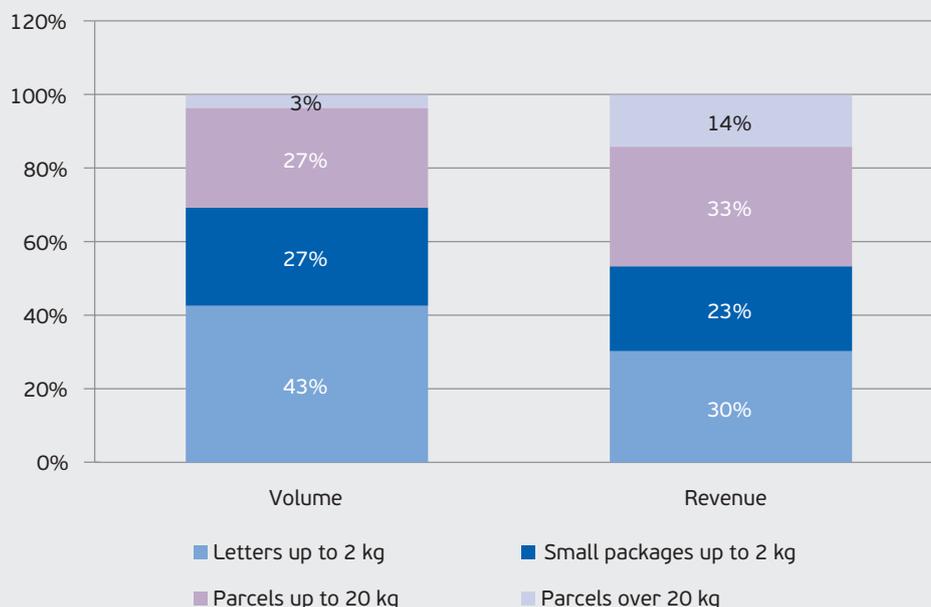
Courier companies owned in total more than 1,757 branches (including network outlets), and 472 parcel lockers. Additionally, they owned more

than 6,930 vehicles (cars and motorbikes) and employed more than 11,556 employees.

Competition in the courier services sector

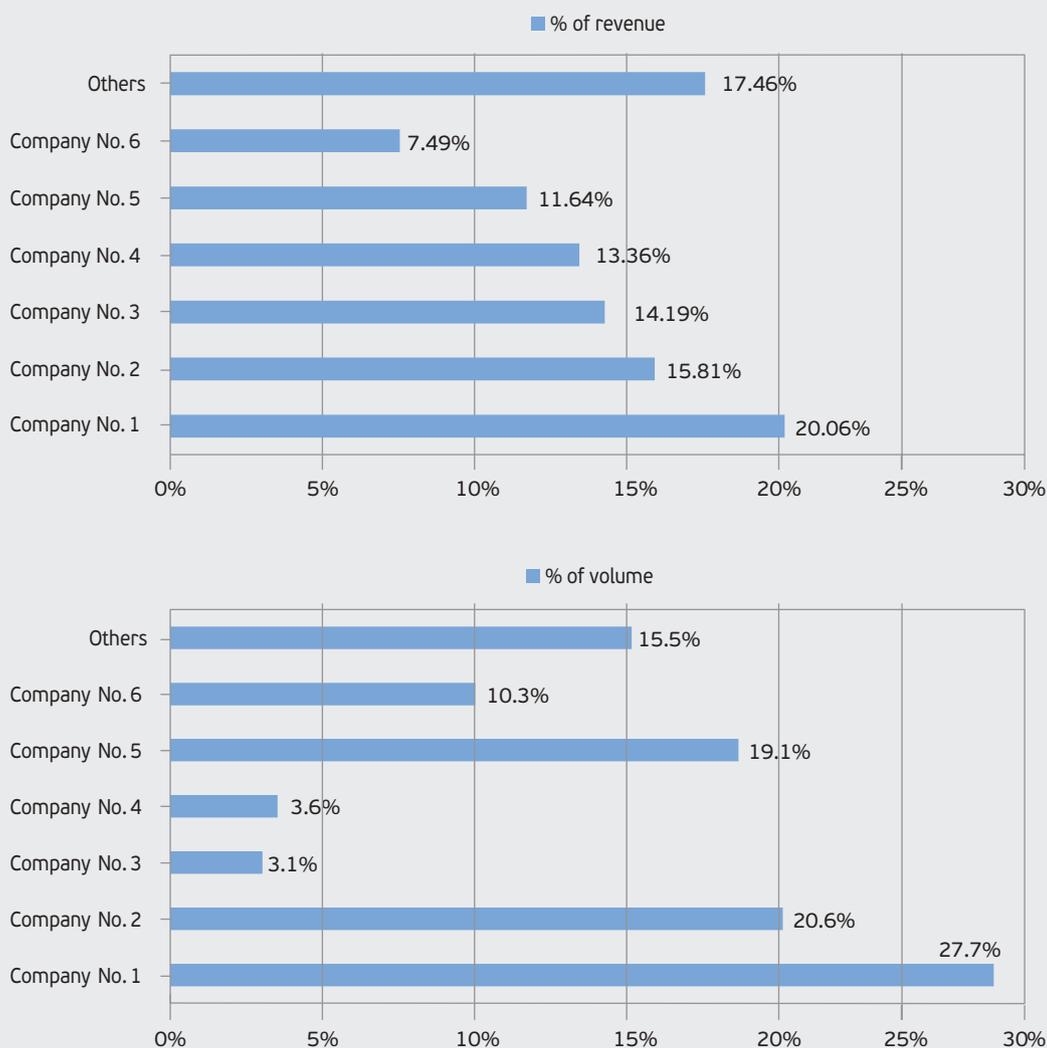
Despite the large number of companies operating in the courier services sector in 2018 (524), the largest share of postal items volume was handled by just six companies that generated the majority of revenue in the market. As demonstrated in Chart 2.28, in 2018, the six major companies handled 82.5% of the postal items and generated 84.4% of the courier services market revenue.

Chart 2.27: Volume and revenue shares per service in the courier sector, 2018



Source: EETT (based on data provided by postal services providers)

Chart 2.28: Volume and revenue shares of courier services companies, 2018



Source: EETT (based on data provided by postal services providers)

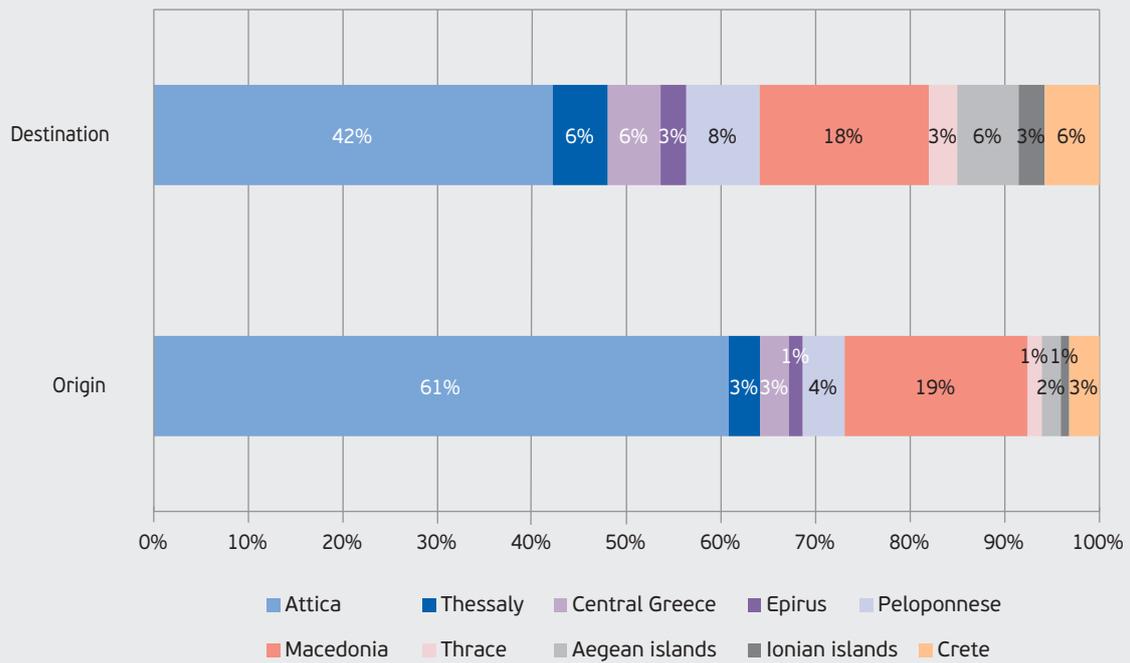
Chart 2.29 demonstrates that the competition was more intense in the regions of Attica and Macedonia, from where approximately 80% of the postal items was delivered to domestic and international destinations. Moreover, 60% of postal items originating from domestic and international destinations was delivered to these areas.

The growth of cross-border e-commerce boosted the activity of courier operators, since one fifth of their revenue was generated by international outbound traffic. The most significant part of outbound traffic was directed to EU countries (73%) and the rest of Europe (7.7%), while the majority of inbound

traffic originated from EU countries (83%) and Asia (8.2%) (Chart 2.30).

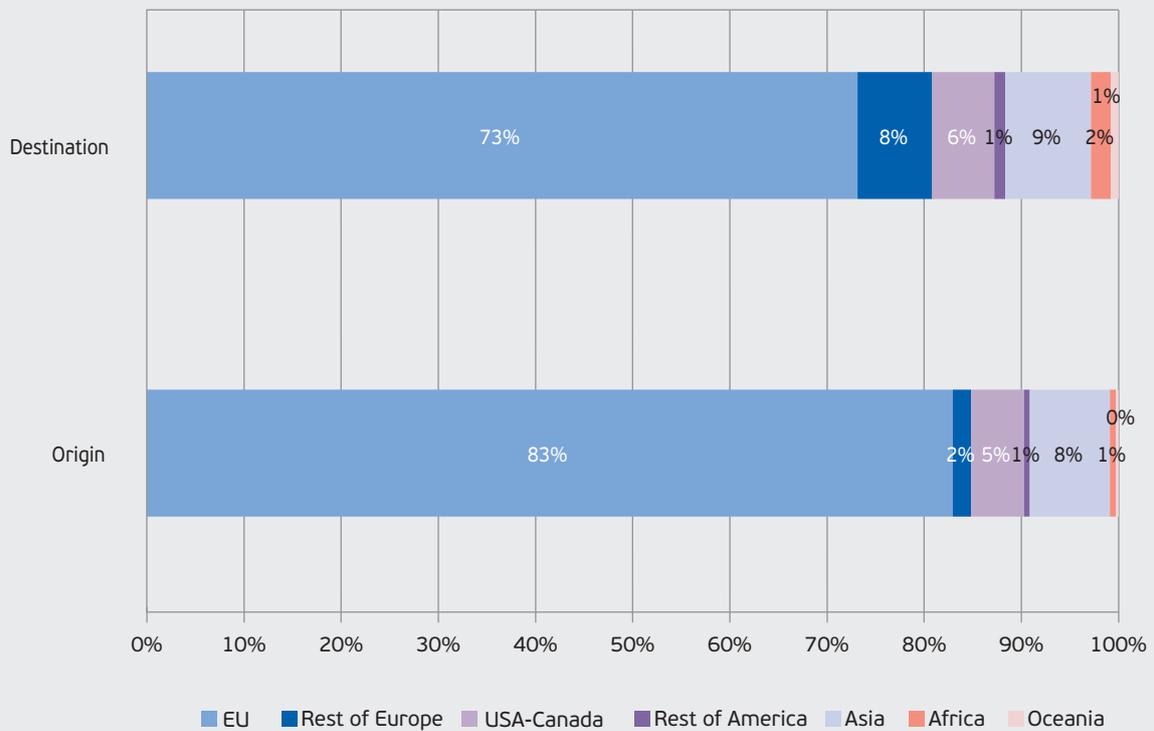
The clientele of courier companies consisted mainly of companies and less of individual consumers, as shown in Chart 2.31. Main business customers came from the e-commerce sector, followed by retail customers, industry, telecommunications, pharmaceutical industry etc.

Chart 2.29: Destination and origin of courier items deliveries per geographic region, 2018



Source: EETT (based on data provided by postal services providers)

Chart 2.30: Destination and origin of cross border deliveries per geographic region, 2018



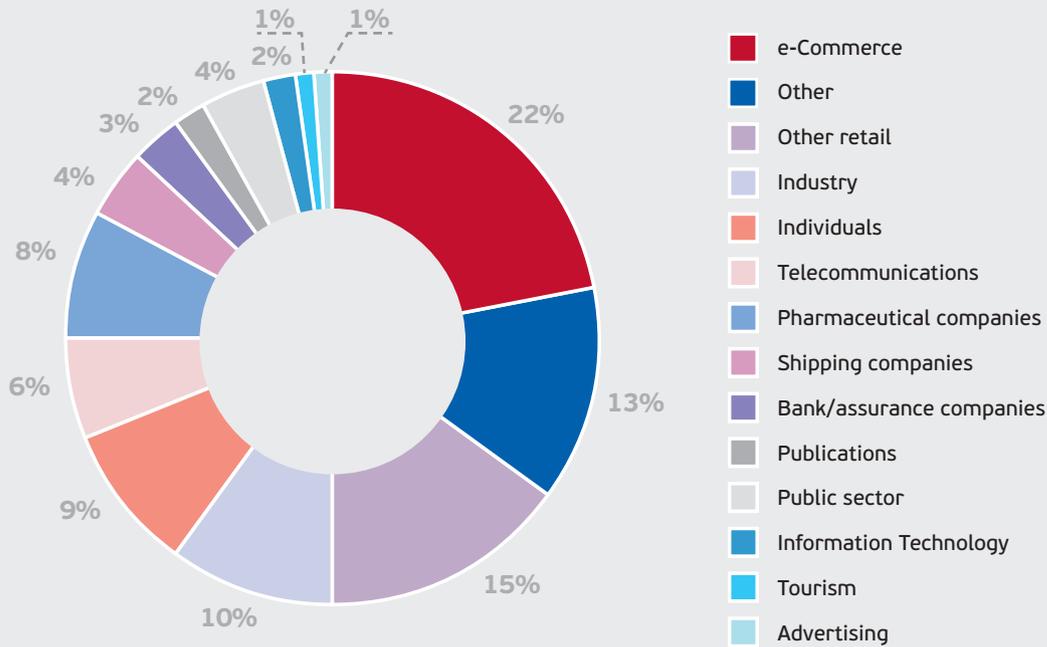
Source: EETT (based on data provided by postal services providers)

Customers holding a contract generated 89% of courier companies' revenue while cash-paying customers generated 11%. Revenue per customer type is depicted in Chart 2.32.

In 2018, the index Herfindahl-Hirschman (HHI), which

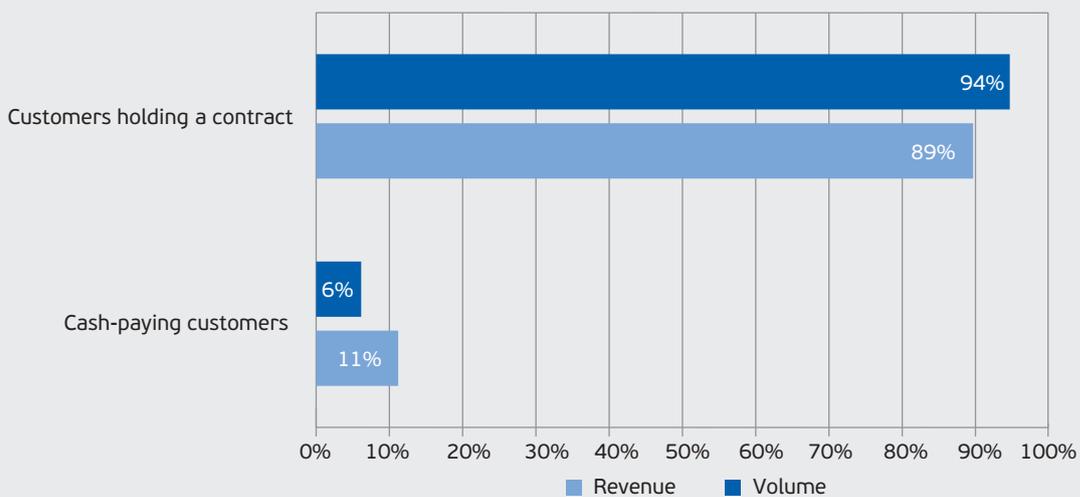
gives an indication of the level of competition among courier services operators, was slightly lower for the total market of courier companies, than in the previous year, showing a low level of market concentration (Chart 2.33).

Chart 2.31: Breakdown of courier companies' clientele, 2018



Source: EETT (based on data provided by postal services providers)

Chart 2.32: Volume and revenue of courier companies per customer type, 2018



Source: EETT (based on data provided by postal services providers)

Chart 2.33: Index Herfindahl-Hirschman of companies under General Authorization

Source: EETT (based on data provided by postal services providers)

2.4. The European postal market

In the European postal market (countries of European Union and non-European Union reporting to the European Regulators group for Postal Services-ERGP) the total traffic volume has been declining since 2014, showing an average decrease of 1.9% (approximately eight billion items). This decline is due to letter mail volumes, which dropped, on average by 2.7% (around nine billion items). In contrast, parcels increased, approximately by 5.3% (nearly two billion items) (Table 2.9).

The traffic of postal items kept dropping especially in the letter mail but on the other hand, parcels, due to the ongoing development of e-Commerce, kept growing. This trend is similar across all countries,

with letter mail decreasing mostly in the Southern Europe (-7%) and parcels registering a significant growth of 11%.

The European postal market revenues grew by around 3 billion euros compared to 2014. This increase is mainly due to the boost in parcel revenue, which increased by 14% (approximately five billion euros). Conversely, the letter mail revenue decreased, on average, by 5% (nearly two billion euros).

Table 2.10 reflects the revenue performance in postal market in 2018, where revenue continued to increase particularly for the parcels, due to the ongoing growth of e-Commerce, while letter mail revenue decreased.

Table 2.9: Volume of postal items in the European postal market

Volume	2014 (in billions)	2017 (in billions)	2018 (in billions)	Percentage change 2017-2018	Annual percentage change 2014-2018
Total volume	109.9	103.3	101.8	-1.4%	-1.9%
Total letter mail volume	86.9	80.03	78.09	-2.4%	-2.7%
Total parcels volume	6.8	8.02	8.4	4.6%	5.3%

Source: ERGP CN II (19) 37 Report on postal core indicators

Table 2.10: Total revenue of the European postal market

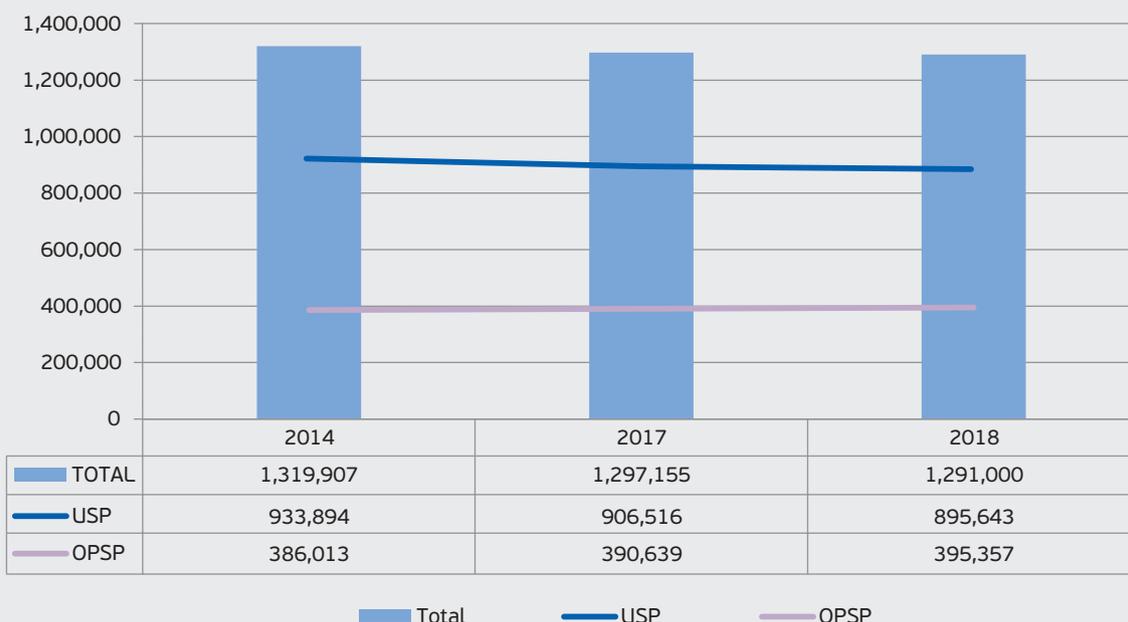
Revenue	2014 (in billion euros)	2017 (in billion euros)	2018 (in billion euros)	Percentage change 2017-2018
Total letter mail revenue	38.9	37.2	37.01	- 0.5%
Total parcels revenue	33.8	36.8	38.6	+ 2.9%

Source: ERGP CN II (19) 37 Report on postal core indicators

As far as the total employment in postal market is concerned, there is a drop approximately by 2.2% in the period 2014-2018 (Chart 2.34). The main reason of this drop is the gradual decrease of the USP's employees by approximately 4.1%. On the

other hand, the number OPSP's (Other Postal Services Providers) employees slightly rose by around 2.4%. The share of the USP employment on total employment remained stable (70.8% in 2014 and 69.4% in 2018).

Chart 2.34: Number of employees in the European postal market



Source: ERGP CN II (19) 37 Report on postal core indicators

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Annex

Consumer market research on the use of electronic communications services in Greece

In the context of monitoring the electronic communications market and competition, EETT conducted a nationwide consumer market research from 24 November 2017 until 9 January 2018. The aim of the research was to record and evaluate mainly:

- the access of households to electronic communications services,
- the use of bundled offers (bundles) of electronic communications services,
- consumers' perceptions and attitudes towards issues related to electronic communications services,
- the impact of various social and demographic factors on the collected responses.

The research was carried out by the company Metron Analysis and focused on the following services:

1. Fixed Telephony.
2. Broadband Internet in the household.
3. Pay-TV.
4. Mobile telephony.
5. Over The Top (OTT) communications services.

Research methodology

The research was conducted across the country through face to face interviews in respondents' households (one respondent per household), with the use of a structured questionnaire. The sample of respondents consisted of 2,002 individuals, men and women aged 18 years and above.

The sample was selected with the use of a three-stage sampling method. 33% of the interviews was checked via telephone follow up calls, on-the-spot checks and via the accompaniment of interviewers by supervisors. The logical consistency of the questionnaires was checked electronically at 100%.

Research findings

The main findings of the research are presented below.

Fixed telephony

During the research period, the penetration of fixed telephony in the households is estimated at around 79% (Chart 1), having dropped by 4% from 2009. The reasons for not having a fixed telephony access are mainly related to cost as well as to the use of mobile phones to meet the household's telecommunications needs. Other less important reasons are the long absence of consumers from their home and the use of Internet applications for calls/videocalls and messages. The absence of a fixed telephony connection increases significantly for respondents in the age group of 25-34 (36%), single-member households (30%) and households of the lower socio-economic class (28%).

61% of all households has contracts for bundles which include fixed telephony, meeting simultaneously different needs (Chart 2). At the same time, 18% of all households has bought the fixed telephony service alone, i.e. not included in a bundle, with the corresponding figure reaching 50% for the respondents aged 65 years and above. The remaining 21% of the households, as already mentioned, doesn't have a fixed telephony connection.

The most popular bundle is the combination of fixed telephony and fixed broadband access, corresponding to 60% of the households which have a bundle with fixed telephony. Next comes the bundled offer of fixed telephony, fixed broadband access and mobile services, as well as the bundled offer of fixed telephony, fixed broadband access and pay-TV (both, at 17% of the households which have a bundle with fixed telephony).

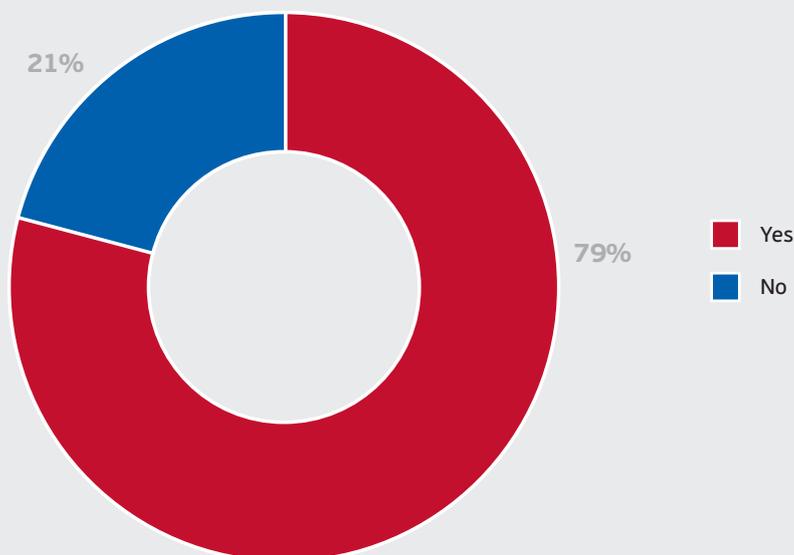
19% of the respondents who have a bundled offer for more than 12 months has considered changing provider (sample of 212 individuals). The main reasons mentioned by these respondents for not having changed provider are, as shown in Chart 3, the perception that the financial gain will not be enough, the satisfaction with the current provider's services and the existence of contracts that have not expired yet.

Broadband Internet in the household

Households without internet users constitute the majority of households where the absence of broadband Internet connection was recorded, followed by those who access the Internet exclusively from mobiles, as well as those with low ICT

Chart 1

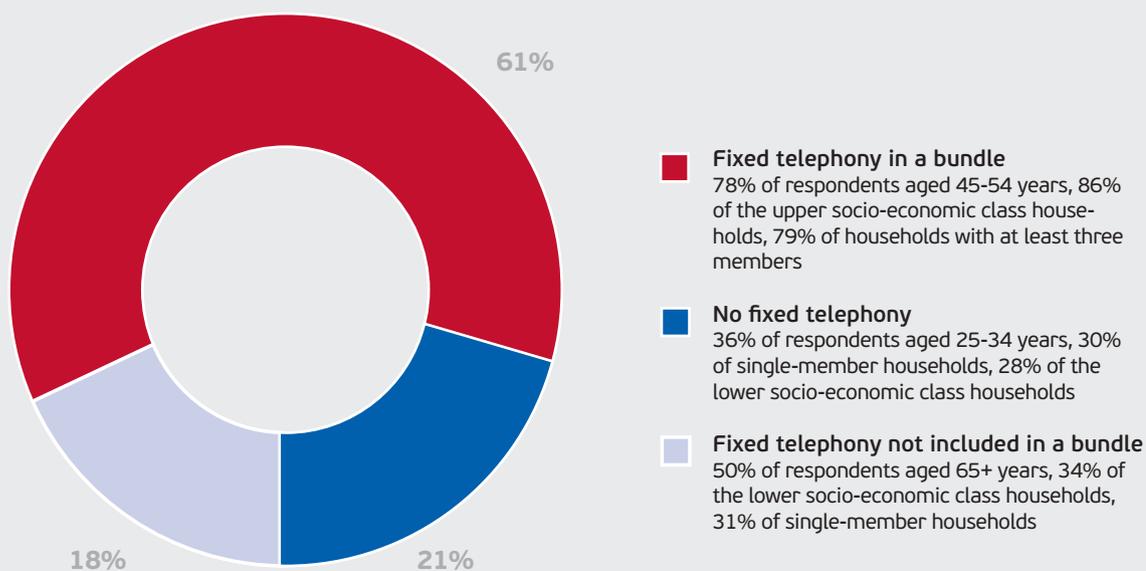
Question: Do you currently have a fixed phone, i.e. a fixed telephony connection in your household?



Base: Total sample

Chart 2

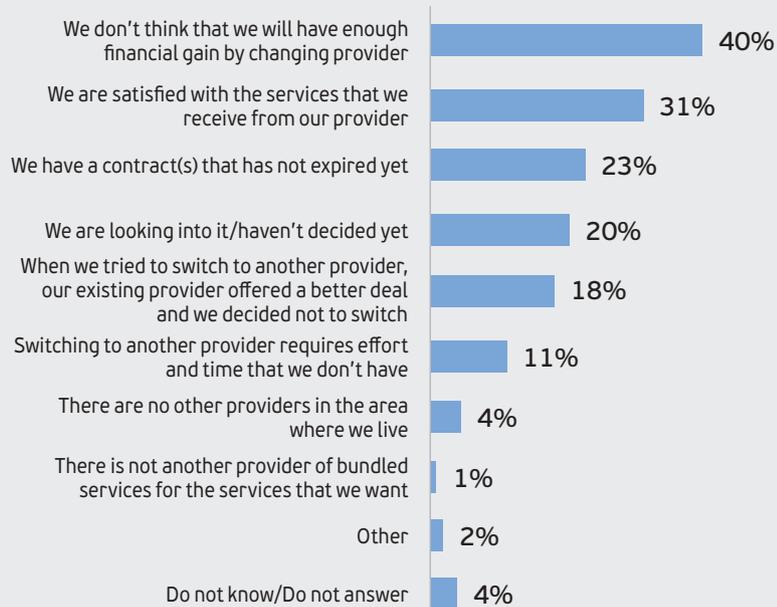
Segmentation of households based on the purchase of fixed telephony in combination with other services*



*As a bundled offer and/or with a discount and/or as a special offer. The recording of bundles focused on fixed telephony bundled with other services (broadband internet connection ADSL/VDSL or via datacard, pay-TV services and mobile telephony connection of the owner of the fixed telephony connection) and was implemented using two consecutive questions for the possession of the services and the possession as a bundle.

Chart 3

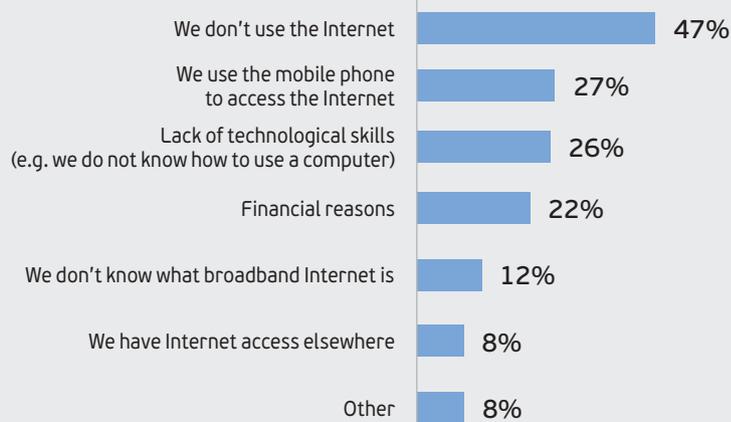
Question: Has your household considered changing the provider used for receiving the services (that you have mentioned) as a bundle /bundled offer? Which of the following applies?



Multiple answers, list

Chart 4

Question: Why does your household not have a broadband Internet connection?



Multiple answers, list

skills (Chart 4). Furthermore, some respondents claimed financials reasons for not having broadband internet connection in their household. It is noted that the percentage of households

without a broadband Internet connection increases significantly among respondents aged 65+ years (64%), as well as among households of the lower socio-economic class (63%).

Pay-TV

During the research period, one out of six households has a pay-TV service (penetration rate of 15%) and nine in ten pay-TV users have purchased this service as part of a bundle. The penetration increases significantly among respondents aged 35-54 (19%), in the upper middle/upper socio-economic classes (24%), as well as in households of four members and more (25%). Chart 5 illustrates the main reasons that 85% of the surveyed households does not have a pay-TV service.

Mobile telephony

The penetration of mobile telephony reaches 93% of households, while at the individuals level it is estimated at 91%. 66% of mobile phone owners uses a smartphone, with the respective percentage for those aged under 64 years old reaching 80%. Seven out of ten smartphone users, connect to the Internet daily through their device.

As shown in Chart 6, 73% of households has both fixed and mobile telephony connections, 21% has only mobile phone connection(s) and 7% has only fixed phone connection. As regards to the demo-

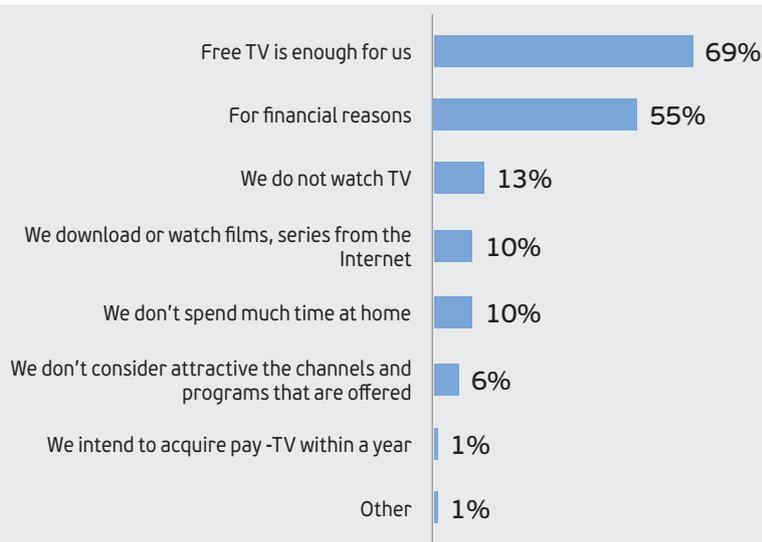
graphic profile of households:

- 76% of respondents up to 64 years old and 88% of the upper socio-economic class households have both fixed and mobile phone connections,
- 24% of respondents up to 64 years old and 28% of the lower socio-economic class households have only mobile phone connection(s),
- 1% of respondents up to 64 years old and 1% of the upper socio-economic class households have only fixed phone connection.

The most important factor in selecting mobile telephony provider (based on the answers of 1,820 respondents) is prices and/or special offers with 85%. The quality and reliability of telephone services (such as, for example the quality of calls/sound and the network coverage) come next with 62%, followed by the use of the same provider by friends and/or family with 43%. Also, good customer service and effective technical support were mentioned by 29% of the respondents, as well as the variety/availability of programs that meet the respondent's needs. Chart 7 presents in detail the results for all factors with regards to mobile provider selection.

Chart 5

Question: Why does your household not have a pay-TV service?



Multiple answers, list

Chart 6: Segmentation of households based on the possession of fixed and/or mobile phone connections

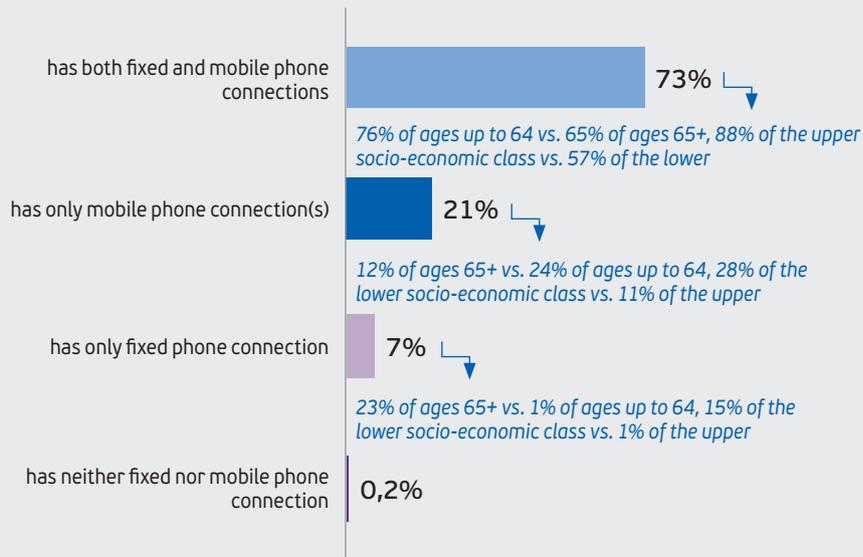
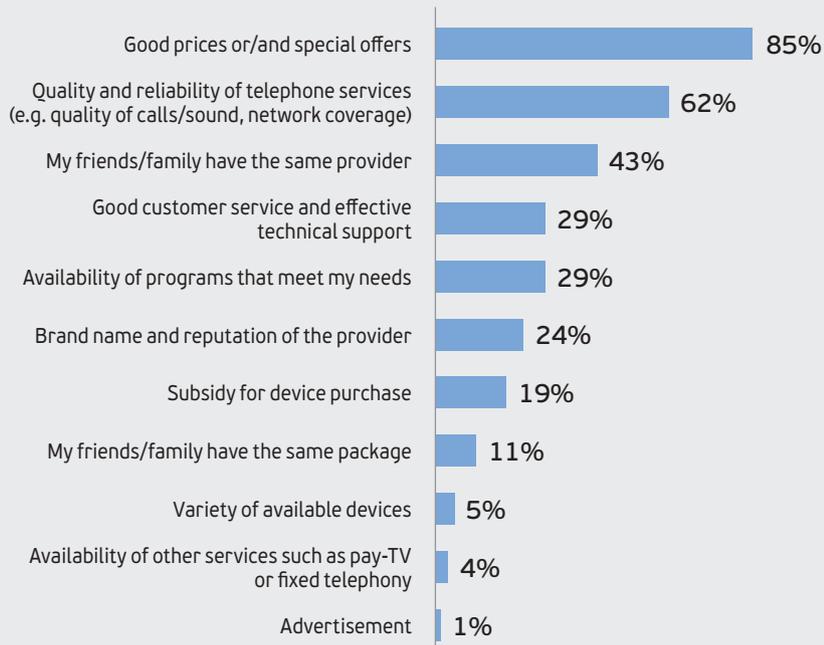


Chart 7

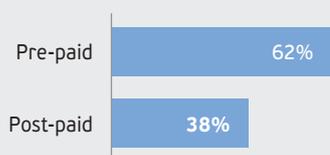
Question: Which of the following factors do you consider most important when selecting mobile telephony provider?



Up to four answers-list

Regarding the type of connection, 62% of respondents uses a pre-paid connection and 38% a post-paid connection (Chart 8).

Chart 8: Type of connection



Household devices and OTT communications services

75% of households uses at least one computing device (i.e. desktop computer, laptop, tablet and/or smartphone) at home. In addition, the proportion of households that has and uses a TV (traditional or smart TV), amounts to 86%.

The most popular devices used at home by the respondents or any other family member, are

mainly the mobile phone at 93%, followed by the traditional TV (i.e. TV without direct internet connection) at 77%, the laptop at 47%, the tablet at 31%, the desktop computer at 29%, the smart TV at 12% and the gaming consoles at 9%. Only 3% of the households does not have any of the above (Chart 9). 46% of the respondents uses at least on a weekly basis internet applications for messages and/or calls/videocalls (Chart 10).

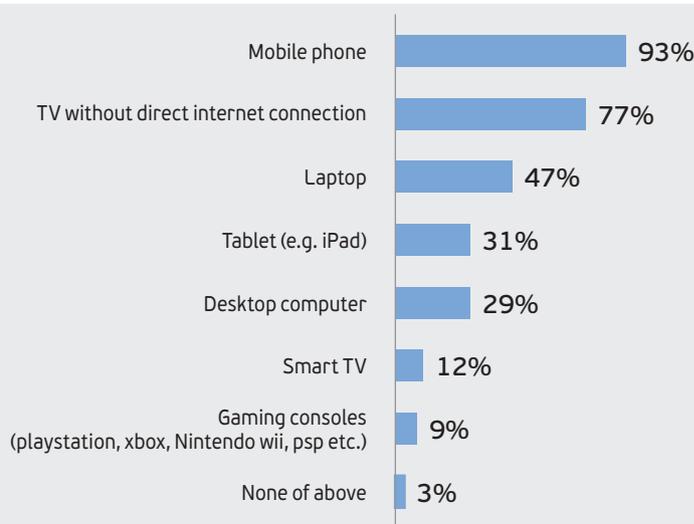
Technology is used daily by all ages, with differences however in usage between age groups (Table 1).

In terms of the applications used for sending/receiving messages, 81% of the 1,053 users said that they use Facebook Messenger almost daily. Viber comes next with 68%, followed by Skype with 25%, WhatsApp with 12% and Snapchat with 4% (Chart 11).

The same applications are used almost daily for making or receiving calls/videocalls. In a total of 925 users, 51% uses Fb Messenger, 50% Viber, 27% Skype, 9% WhatsApp and 3% Facetime.

Chart 9

Question: Which of the following devices does your household have and which are used at home by you or any other member of the household?



Multiple answers, list

Chart 10

Question: How often do you personally do each of the following either inside or outside the house, using any device either personal or not?

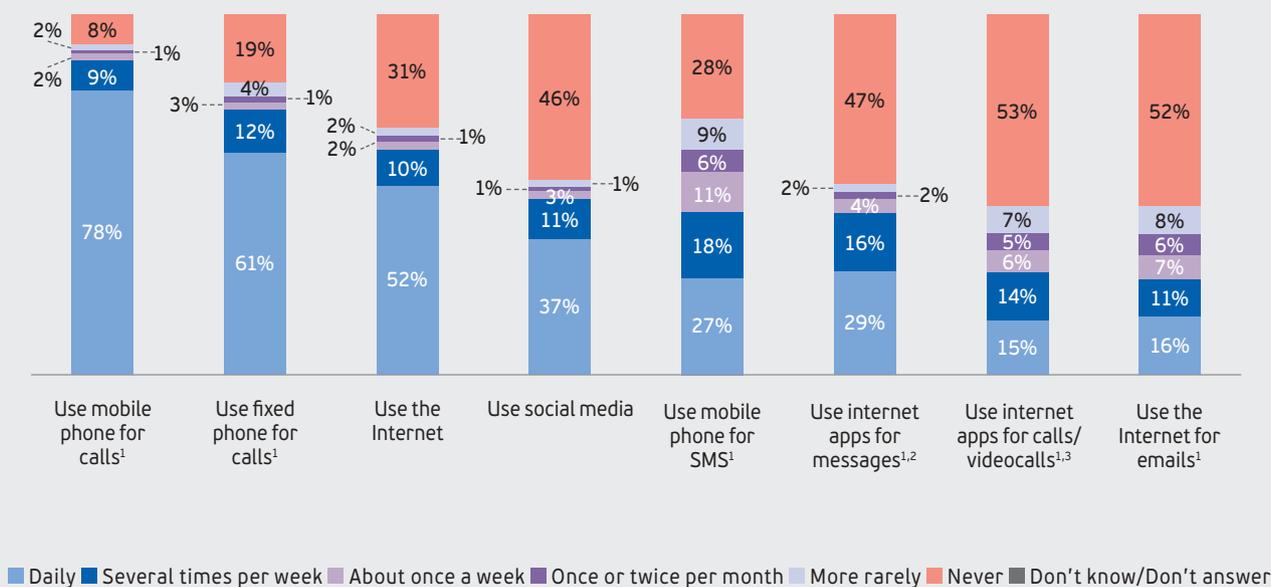


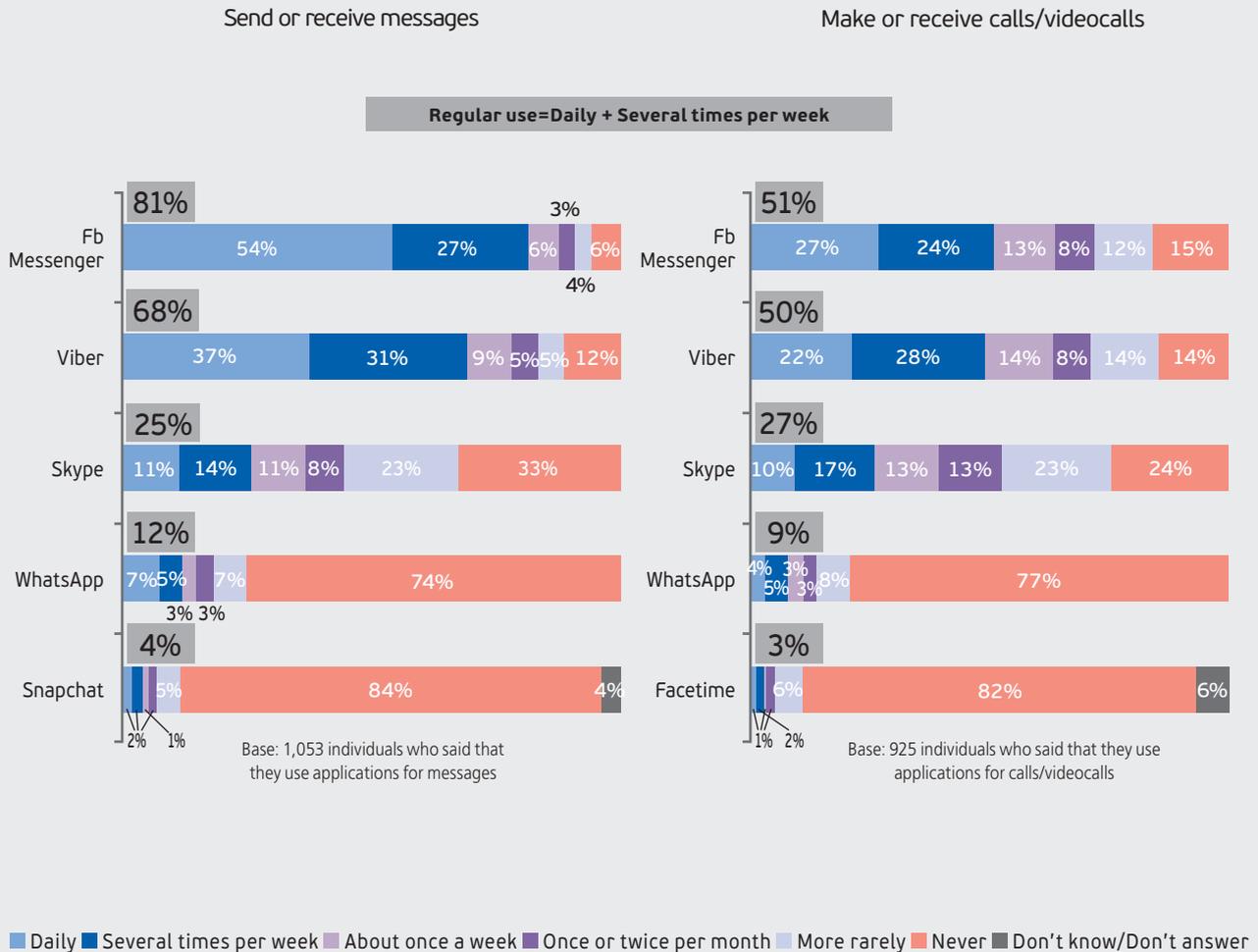
Table 1: Top 3 daily activities

Ages	Activities		
18-34 years	Use mobile phone for calls (93%)	Use social media (67%)	Use internet apps for messages (56%)
35-54 years	Use mobile phone for calls (94%)	Use fixed phone for calls (61%)	Use social media (49%)
55+ years	Use fixed phone for calls (73%)	Use mobile phone for calls (57%)	Use mobile phone for SMS (12%)

1. Making/sending or receiving.
 2. Such as Facebook Messenger, Skype, Viber, WhatsApp, Snapchat.
 3. Such as Facebook Messenger, Skype, Viber, WhatsApp.

Chart 11

Question: How often do you use an application for:
 a) sending or receiving messages b) making or receiving calls/videocalls





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