1.1 Overview

Orange is one of the world's leading telecommunications operators with revenues of 41 billion euros and 155,000 employees worldwide (including 96,000 in France) at December 31, 2016. With operations in 29 countries, the Group served 263 million customers at December 31, 2016. Orange is also a leading provider of telecommunication services to multinational companies, under the brand Orange Business Services. In March 2015, the Group presented its new strategic plan, *Essentials2020*, which focuses on its customers' expectations to ensure that they experience the best of the digital world and the power of its very high-speed broadband networks.

Orange has been listed since 1997 on Euronext Paris (symbol: ORA) and on the New York Stock Exchange (symbol: ORAN).

History

Orange, formerly France Télécom, is France's incumbent telecommunications operator. The Group has its origins in the Ministry for Mail, Telegraphs and Telephone, later to become the General Directorate of Telecommunications, which in 1990 was accorded the status of independent public entity and, on January 1, 1991, renamed France Télécom. On December 31, 1996, France Télécom became a *Société anonyme* (limited company). In October 1997, France Télécom shares were listed on the Paris and New York stock exchanges, allowing the French government the disposal of 25% of its shares to the public and Group employees. Subsequently, the public sector gradually reduced its holding to 53%. The law of December 31, 2003 authorized the transfer of the Company to the private sector and between 2004 and 2008 the public sector sold a further 26% of the capital, and then again 4% in 2014 and 2015. At December 31, 2016, the French State retained 22.95% of the share capital, held either directly or jointly with Bpifrance Participations.

France Télécom's area of activity and its regulatory and competitive environment have undergone significant changes since the 1990s. In a context of increased deregulation and competition, between 1999 and 2002, the Group pursued a strategy of developing new services and accelerated its international growth with a number of strategic investments. These included, in particular, acquiring the mobile operator Orange and the Orange brand, which had been created in 1994, and taking a controlling stake in Poland's incumbent operator, Telekomunikacja Polska.

In 2002, France Télécom started a large-scale refinancing plan for its debt to reinforce its balance sheet, as well as an operational improvements program, the success of which has allowed the Group to develop a global integrated-operator strategy by anticipating changes in the telecommunications industry.

Since 2005, the Group has expanded strategically in Spain by acquiring the mobile operator *Amena*, then in 2015 the fixed-line operator Jazztel. Accounting for over 12% of consolidated revenues in 2016, Spain is the Group's second largest country.

In parallel, the Group streamlined its asset portfolio by selling off non-strategic subsidiaries and holdings.

Over the last ten years, the Group has pursued a policy of selective, value-creating acquisitions by concentrating on the markets in which it is already present.

Mainly targeting the emerging markets of Africa and the Middle-East where the Group is historically present (in particular Cameroon, Ivory Coast, Guinea, Jordan, Mali and Senegal), this strategy was implemented through the acquisition of Mobinil in Egypt (2010) and of Médi Télécom in Morocco (2015) and more recently by the acquisition of a number of African operators (in Liberia, Burkina Faso, Sierra Leone and the Democratic Republic of the Congo) (2016).

It also resulted in the joint venture with Deutsche Telekom that combined UK activities under the EE brand (2010) followed by the disposal of EE in 2016, as well as the disposal of Orange Suisse (2012), Orange Dominicana (2014), Orange Armenia (2015) and Telkom Kenya (2016).

As part of its strategy, the Group is also developing its mobile financial services activities, in particular payment services, and in 2016 took over the Groupama Banque, which has become Orange Bank.

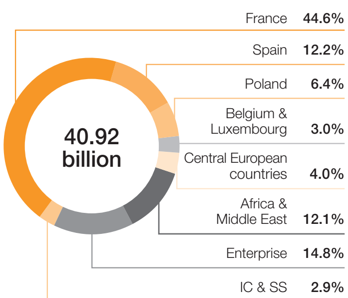
In 2006, Orange became the Group's single brand for Internet, television and mobile services in most countries where the Group operates, in particular in Spain where all activities have been combined into a single entity operating under the Orange brand. This single brand policy continued with the adoption of the Orange brand by Telekomunikacja Polska in 2013, then by Mobinil in Egypt, Mobistar in Belgium and Méditel in Morocco in 2016. Enterprise services in the world are offered under the brand Orange Business Services.

In 2013, the Company adopted the corporate name Orange.

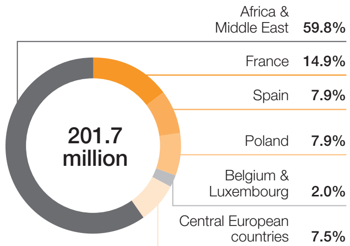
For more information on Orange's strategy, see Section 2.3 *The Orange group strategy*.

Activities in 2016

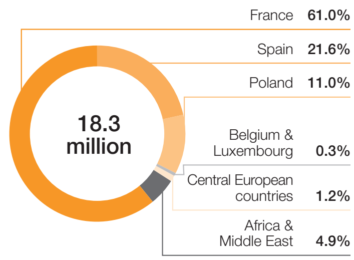
Revenues (in euros)



Mobiles customers



Broadband Internet Customers



The Orange group had 262.8 million customers in the world at the end of 2016, of which 201.7 million mobile customers (excluding MVNO) and 18.3 million fixed broadband customers, including 3.3 million fiber optic customers (a 75% growth).

In France, the number of mobile customers stood at 30 million of which 26.5 million contract customers and 11.3 million 4G customers. *SIM-only* offers continued their rapid expansion and the growth of convergence offers was sustained with 7.8 million Open customers and 3.3 million *Sosh* customers at the end of 2016. The fixed broadband customer base stood at 11.2 million accesses including 57% of retail customers with convergence offers and 1.45 million fiber accesses, an increase of +51% over one year.

In Europe, the number of mobile customers stood at 51 million, of which 33.6 million contract customers, an increase of 6.9% over one year, and accounted for 65.9% of the total mobile customer base. The fixed broadband customer base stood at 6.2 million customers as at December 31, 2016 of which 1.8 million fiber customers.

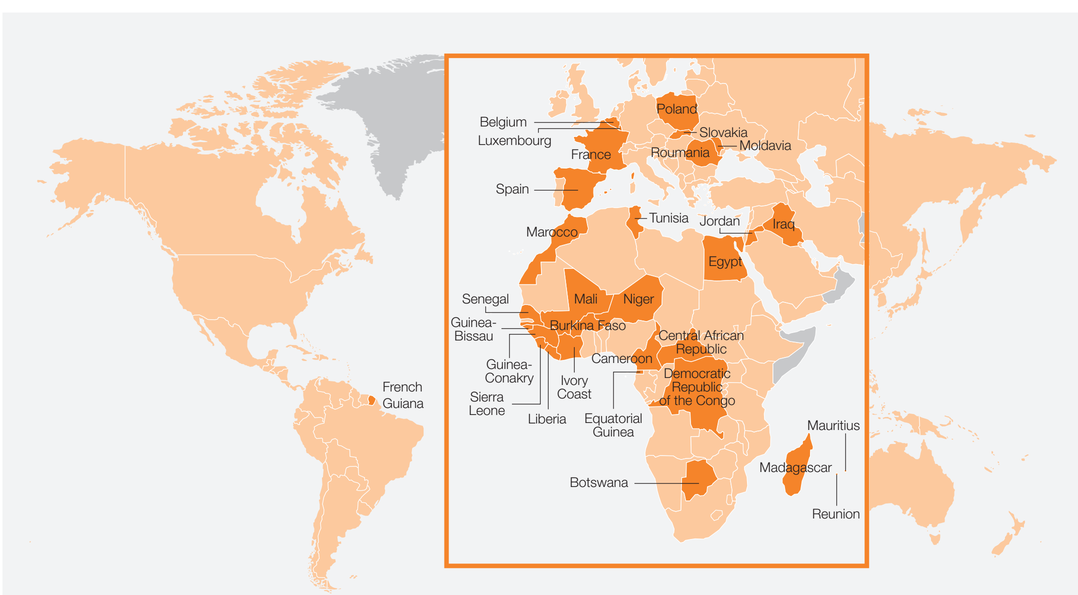
In Spain, Orange had 15.9 million mobile customers, of which 12.7 million contract customers and 7.9 million 4G customers, and 3.9 million fixed broadband customers, of which 1.6 million for fiber optic. Convergence offers accounted for 84.5% of the fixed broadband retail customer base. In Poland, Orange had 16 million mobile customers, of which 9.5 million contract customers and 4.3 million 4G users, and 2 million fixed broadband customers. In Belgium and Luxembourg, Orange had 4 million mobile customers, of which 3.2 million contract customers. In Romania, Slovakia and Moldova, Orange had 15.1 million mobile customers, of which 8.2 million contract customers and 3.2 million 4G customers.

Mobile services in Africa and the Middle-East amounted to a total of 120.7 million customers as at December 31, 2016, an increase of +9.5% (10.4 million new customers) and the Orange Money application had 28.9 million customers, compared with 16.4 million in 2015.

Revenues of the Orange group stood at 40.918 billion euros in 2016, or an increase of 0.6% on a comparable basis after the stabilization observed in 2015, and net income at 3.263 billion euros, an increase of +10.3% compared with 2015.

Investments amounted to 6.971 billion euros in 2016, an increase of 3% on a comparable basis. The Group's investment strategy remains focused on the fiber optic rollout, the extension of 4G mobile coverage, and the improvement of customer experience.

Group footprint in 2016



1.2 Selected financial information

The selected financial information presented below relating to the years ending December 31, 2012, 2013, 2014, 2015 and 2016 is extracted from the consolidated financial statements audited by Ernst & Young Audit and Deloitte et Associés for fiscal years 2012 to 2014 and by Ernst & Young Audit and KPMG SA for fiscal years 2015 and 2016.

The selected financial information relating to the years ended December 31, 2016, 2015 and 2014 must be read together with the Group's consolidated financial statements and Management Report for those years.

1.2.1 Consolidated income statement

Amounts in accordance with IFRS (in millions of euros, except for earnings per share data)	**2016**	**2015**	**2014**	**2013**	**2012**
Revenues, net	40,918	40,236	39,445	40,981	43,515
Operating income	4,077	4,742	4,571	5,333	4,180
Finance costs, net	(2,097)	(1,583)	(1,638)	(1,750)	(1,728)
Consolidated net income of continuing operations	1,010	2,510	1,360	2,178	1,221
Consolidated net income of discontinued operations	2,253	448	(135)	(45)	(117)
Net income (attributable to owners of the parent company)	2,935	2,652	925	1,873	820
Consolidated net income of continuing operations attributable to owners of the parent company					
Earnings per share (undiluted) [1]	0.19	0.76	0.36	0.73	0.36
Earnings per share (diluted) [1]	0.19	0.75	0.36	0.73	0.35
Consolidated net income of discontinued operations attributable to owners of the parent company					
Earnings per share (undiluted) [1]	0.85	0.17	(0.05)	(0.02)	(0.05)
Earnings per share (diluted) [1]	0.85	0.17	(0.05)	(0.02)	(0.04)
Net income attributable to owners of the parent company					
Earnings per share (undiluted) [1]	1.04	0.93	0.31	0.71	0.31
Earnings per share (diluted) [1]	1.04	0.92	0.31	0.71	0.31
Dividend per share for the fiscal year	0.60 [2]	0.60	0.60	0.80	0.78

(1) Earnings per share calculated on a comparable basis.
(2) Subject to the approval of the Ordinary Shareholders' Meeting.

1.2.2 Consolidated statement of financial position

Amounts in accordance with IFRS (in millions of euros)	**2016**	**2015**	**2014**	**2013**	**2012**
Intangible assets [1]	41,758	41,398	36,595	36,732	37,591
Property, plant and equipment, net	25,912	25,123	23,314	23,157	23,662
Total assets	94,668	91,430	88,404	85,833	89,980
Net financial debt [2]	24,444	26,552	26,090	30,726	30,545
Equity attributable to the owners of the parent company	30,688	30,907	29,559	24,349	24,306

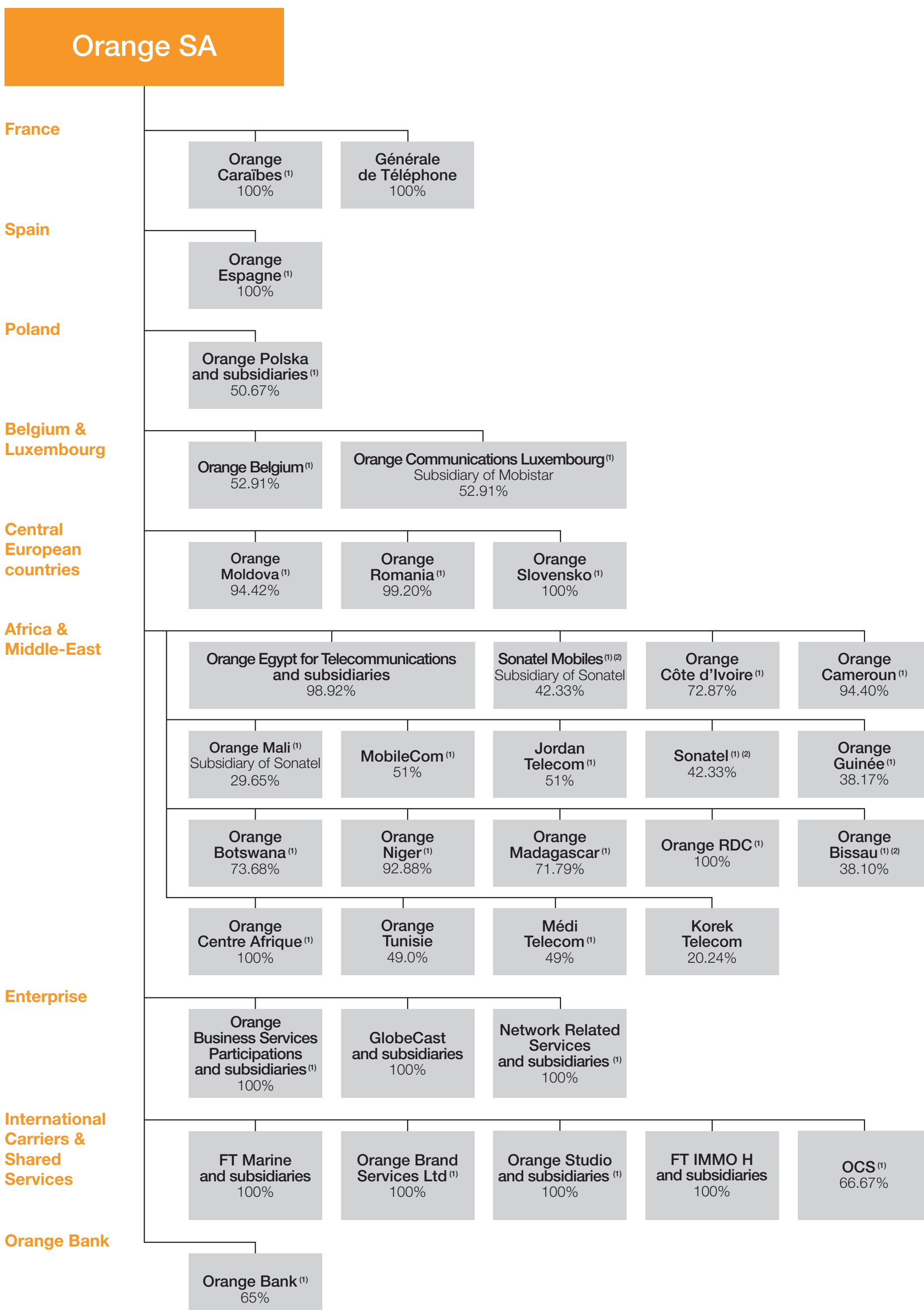
(1) Includes goodwill and other intangible assets.
(2) The components of net financial debt are described in Note 11.3 to the consolidated financial statements.

1.2.3 Consolidated statement of cash flows

Amounts in accordance with IFRS (in millions of euros)	**2016**	**2015**	**2014**	**2013**	**2012**
Net cash provided by operating activities	8,750	9,527	8,802	7,259	10,016
Net cash used in investing activities	(4,879)	(9,406)	(6,352)	(6,044)	(4,710)
Purchase of property, plant and equipment and intangible assets	(8,492)	(7,771)	(6,111)	(6,117)	(6,763)
Net cash used in financing activities	(1,883)	(3,924)	(154)	(3,537)	(5,072)
Cash and cash equivalents – closing balance	6,355	4,469	6,758	5,934	8,321

1.3 Organizational chart

In accordance with Regulation No. 2016-09 of December 2, 2016 of the French Accounting Standards Authority (*Autorité des Normes Comptables françaises*), the complete list of companies included in the scope of consolidation, companies excluded from the scope of consolidation and the non-consolidated investment securities can be found on the orange.com website under the heading Group/Investors/Regulated information. The chart below shows the main operating subsidiaries and investments of Orange SA as of December 31, 2016.



(1) Company operating under the Orange brand.
(2) Orange controls the Strategy Committee, which makes recommendations to the Board of Directors.

Business environment, strategy and risk factors

2

This chapter contains forward-looking statements, particularly in Section 2.3 *The Orange group strategy*. These forward-looking statements are subject to numerous risks and uncertainties that could cause actual results to differ materially from the results anticipated in the forward-looking statements. The most significant risks are detailed in Section 2.4 *Risk factors*. Please also consult the information under the heading *Forward-looking statements* at the start of this document.

2.1 The world information and communication technologies market

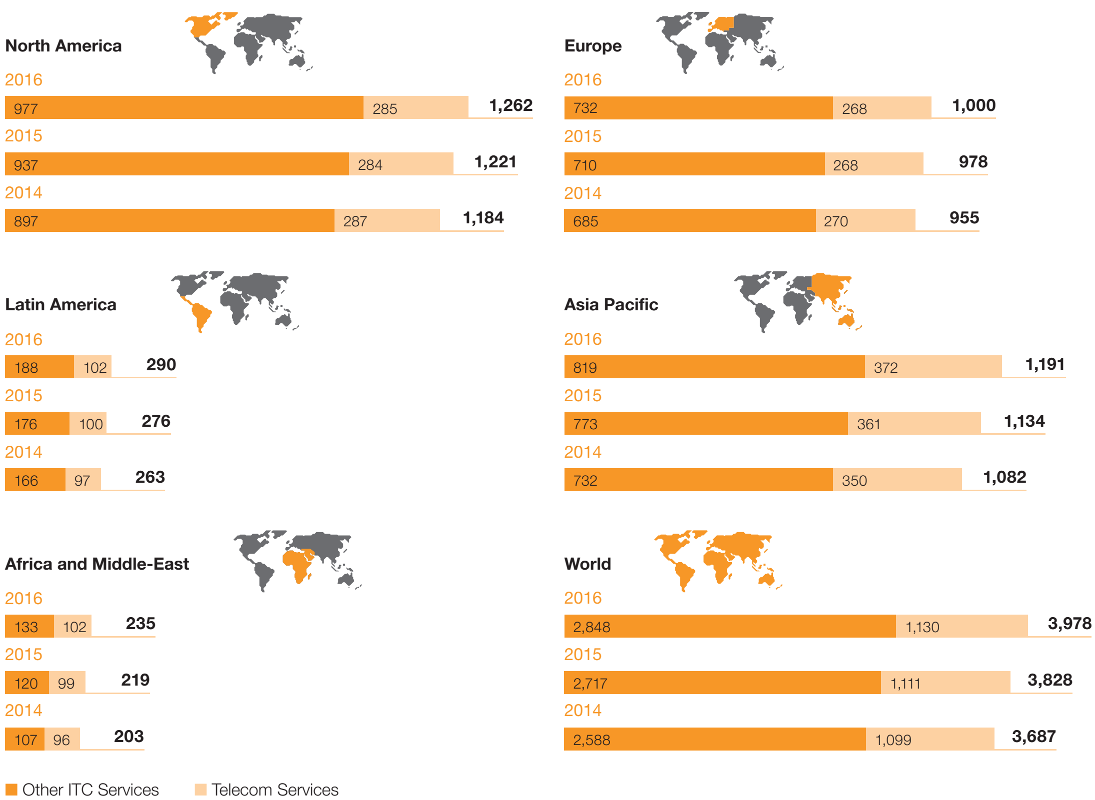
2016 was marked by continued global growth in the information and communication technologies (ICT) industry, which mainly includes the sectors of computing, audiovisual, equipment, Internet and telecommunications. Following the recovery witnessed in 2014, and in 2015, ICT revenues continued to grow in 2016 at a rate of +3.9% (+0.1 point compared with 2015), to reach 3,978 billion euros worldwide.

The ICT market remains an essential component of economic growth, and represents an important source of value creation through the distribution of new services and new uses.

Revenues of telecom services, which amounted to 1,130 billion euros at the end of 2016, grew at a slightly higher rate of +1.7%, albeit at a slower rate than that of ICT services as a whole (+3.9%).

Market growth by region

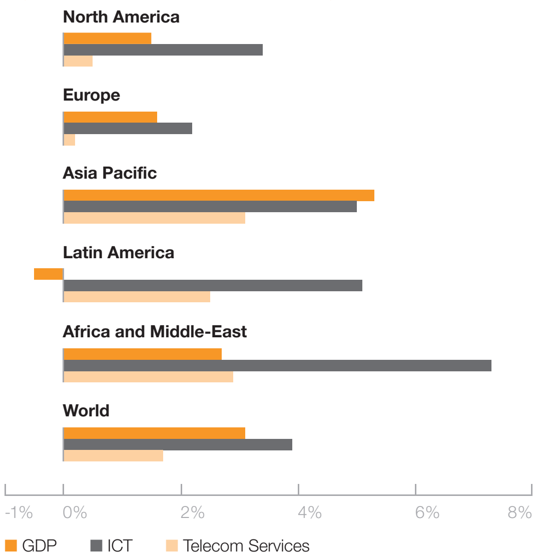
Figure 1: Geographical breakdown of global ICT revenues (in billions of euros)



Source: Idate.

The ICT market grew in 2016 at different speeds depending on the geographical area: +3.4% for North America, +2.2% for Europe, +5.0% for Asia Pacific and +7.3% for Africa & Middle-East. The Africa & Middle-East region continues to offer the best growth prospects for the ICT market. Emerging countries as a whole, which account for just over one third of the world market, contributed more than half of its growth in value (source: Idate).

Figure 2: 2016/2015 Growth rate by region



Source: Idate and FMI.

Africa & Middle-East

In 2016, the growth of the ICT market remained high at +7.3%, while the continent's economic growth was virtually stable at +2.7% (compared with +2.5% in 2015). The potential of this region in which the Orange group is very present remains strong, both in terms of equipment and access infrastructure. Telecom services, which account for 43% of the ICT market, grew by +2.9%, above the world market as a whole, but lower compared with 2013 and 2014, and now growing at a lower rate than the Asia Pacific region. The share of revenues of telecom services of the world market, which totaled 102 billion euros, or 9%, remains among the weakest compared with the other regions of the world.

South America

In spite of the advanced maturity of services, the dynamics of the development of equipment and uses remains strong. The ICT market is growing at a higher rate compared with 2016, at +5.1%. Telecom services represent 36% of the ICT market with a growth rate of +2.5% in 2016. Revenues of telecom services reached 102 billion euros, representing 9% of the world market.

Asia Pacific

This region, which includes both advanced economies and emerging countries, posted high GDP growth rates, particularly in China (+6.6%). Growth of the ICT market, valued at 1,191 billion euros in 2016, stabilized at +5%. Revenues of telecom services reached 372 billion euros in 2016, a growth of +3.1%, and represent 33% of the world market, the largest share of all regions worldwide. In this region, telecom services still represent almost a third of ICT revenues, in spite of growth remaining unchanged at +3.1% in 2015 and in 2016.

Europe

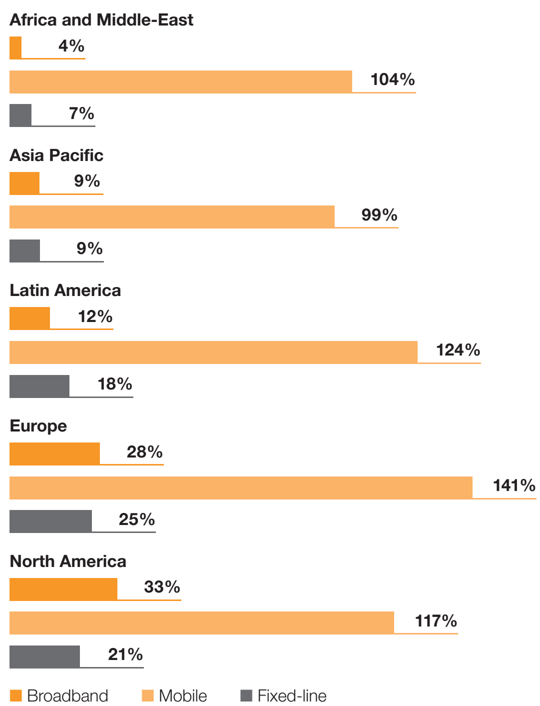
In 2016, revenues of European telecom services began to grow again, with an increase of +0.2% compared with 2015, after five years of decline from 2010 to 2015 (-1.9% in 2014 and -0.6% in 2015). Europe remains the least dynamic region of the world in terms of growth, and its weight in the world telecoms market now only represents 24%, behind Asia Pacific and North America (source: Idate).

North America

In 2016, the ICT market witnessed a slight growth, from +3.1% to +3.4%, in a context where North American GDP growth declined markedly, from +2.5% in 2015 to +1.5% in 2016. The region saw renewed growth in telecom services, with the market, which fell -1% in 2015, growing by 0.5% in 2016.

In 2016, revenues of telecom services reached 285 billion euros, representing 25% of the world market.

Figure 3: Mobile and fixed broadband Internet penetration rate by geographic region in 2016 (in % of the population)



Source: Idate.

Key trends and changes

The slowdown in the growth of telecommunications services, with three consecutive years around 1% (compared with 3% in 2012), is due to the slowdown in the mobile phone market. The development of very high-speed fixed broadband and mobile and the high penetration of smartphones worldwide, lead to a growing demand for bandwidth. Data traffic should therefore double between 2016 and 2019. The momentum of the ICT sector is now driven mainly by Internet services which contributed two-thirds of growth in 2016 compared with 12% for telecom services (Source: Idate).

Convergence of services and market consolidation

Convergence, which allows operators with both fixed and mobile network infrastructures to compete against operators with only fixed or mobile infrastructures, continues to grow, particularly in Europe. This convergence has led to the development of so-called “quadruplay” offers (voice, Internet, television, mobile), as well as the growing use of WiFi in mobile networks. As regards cable operators, they also include WiFi in their offers to thwart quadruplay offers from telecoms operators and, in the United States, they are showing a growing interest for mobile operators.

In Europe, the consolidation trend, which in 2014-2015 gave rise to mergers between telecoms operators, and addressed the needs for convergence or for the reduction of the number of mobile operators, slowed down. In 2016, in Italy, Illiad positioned itself in mobile services via an agreement signed with Hutchison and Vimpelcom, while in Spain Masmovil acquired 100% of Yoigo, thus creating the 4th convergent operator after Telefónica, Orange Spain and Vodafone. In the United Kingdom, the European Commission, concerned about adverse effects on competition, did not allow the merger between Three (Hutchison group) and O2 (Telefónica group).

However, cable operators continued their acquisitions, in particular Liberty Global and Altice.

As evidenced by some recent trends, the convergence of telecoms and content operators is a feature specific to North American and UK markets. In the USA, AT&T is thus planning to acquire the media group Time Warner, which owns the television chains HBO and CNN (transaction subject to approval by the authorities). In the United Kingdom, BT has acquired football rights to counter Sky, a satellite TV package.

In Europe, the rise in the amounts payable for rights of access to contents is leading operators to get organized and take action to make convergence a success and offer their customers the best audiovisual contents. Orange in Spain has acquired the broadcasting rights of La Liga’s most important football matches in the country. In France, SFR has announced a new organizational structure bringing together all the group’s media activities (press, radio, TV and sport).

Verizon, which was trying to acquire Yahoo to make it number 3 of the digital advertising market, may desist following data piracy issues.

Network development and growth in telecommunication uses worldwide

In Africa & Middle – East, Internet access networks are developing mainly via the deployment of mobile networks, whereas in Europe investments in networks are concentrated in very high-speed broadband access, with the development of fixed-line offers on fiber referred to as FTTH (Fiber-to-the-Home) and the deployment of 4G mobile networks. In parallel, operators are developing their networks to make them more agile and simpler to manage (with “virtualization”) and more open (with API). Usage is exploding under the combined effect of the deployment of new networks, the increase in capacity of existing networks and the growth in the penetration rate of increasingly sophisticated mobile handsets (smartphones). The explosion in usage is mainly driven by video accessible via a multitude of screens (computers, smartphones, tablets, readers, connected TVs, connected watches). Furthermore, the development of low power wide area (LPWA) network technologies will lead to an increase in the number of connected objects.

Consumer and company expectations

Digital technologies continue to permeate all areas of daily life: family, home, well-being, entertainment, work, and money. Indeed, an increasing number of fields are being affected by connected objects: domotics (home automation), the automobile sector, health, energy, well-being, and are likely to be integrated in all industries and services over time. The emergence of artificial intelligence and of virtual and augmented reality should lead to significant developments in consumer services (Apple’s and Amazon’s personal voice assistants, 3D content at 360°) as well as processes in companies.

The big Internet players generate revenue through data monetization (collected and analyzed thanks to Big Data techniques). In this context, consumers have strong expectations on the quality and reliability of the communication networks, but also on the protection of their personal data and on having a relationship of trust with their operator.

Digitization (IoT, Big Data) allows companies to improve their performance by knowing their customers better and by improving the management of their internal processes. Furthermore, in the face of the increased threats of cyber-attacks, cyber-security needs are increasing. Businesses therefore need to be assisted in this double aspect of their transformation process.

Surge in messaging platforms

2016 witnessed a surge in mobile messaging platforms, which are positioning themselves in the digital ecosystem to capture the bulk of value with the development of conversational commerce. For example, WeChat (of the Chinese group, *Tencent*) which in four years has gone from a simple messaging application to a range of integrated services, including payment, has become the benchmark model in this field. Thanks to a layer of artificial intelligence, WeChat allows the user to establish relations directly with a brand and to purchase all types of services without leaving the messaging system. Based on this model, Facebook is also trying to combine the entire user experience under a single application. Hence, Facebook opened its bot store in April 2016, allowing Messenger users to chat with robots (bots) designed by brands or services. Consumers can thus ask for information directly, by chatting with the brands, or make purchases through the addition of a payment function. The telecoms industry has joined up with Google, under the GSMA Association, to speed up the availability of Rich Communications Services (RCS), and thus offer an open messaging service, globally interoperable on all Android devices, which also allows conversational commerce.

2.2 Regulations

In all countries in which it operates, the Orange group must comply with various regulatory obligations governing the provision of its products and services, primarily relating to obtaining and renewing telecommunication licenses, as well as to oversight by authorities seeking to maintain effective competition in the electronic communications markets. Orange also faces regulatory constraints in some countries as a result of its historically dominant position in the fixed telecommunications market. For information concerning risks linked to the regulations of the electronic communications sector, see Section 2.4.2 *Legal risks*.

2.2.1 European Union

The regulatory environment of the electronic communications sector within the member states of the European Union in which the Orange group operates conforms to a requirement of harmonization arising from the obligation for National Regulatory Authorities to implement at a national level the regulatory framework defined at the level of the European Union, even if the regulatory environment is marked by certain discrepancies.

This common regulatory framework is presented below with a detailed description for each major country in which the Orange group operates.

2.2.1.1 Legal and regulatory framework

The general EU legal framework for electronic communications consists of five main directives deriving from the 2002 *Telecom Package*:

- *Framework Directive* 2002/21/EC of March 7, 2002, on a common regulatory framework for electronic communications networks and services;
- *Authorization Directive* 2002/20/EC of March 7, 2002, on the authorization of electronic communications networks and services;
- *Access Directive* 2002/19/EC of March 7, 2002, on access to, and interconnection of, electronic communications networks and associated facilities;
- *Universal Service Directive* 2002/22/EC of March 7, 2002, on universal service and users' rights relating to electronic communications networks and services;
- *Directive on Privacy and electronic communications* 2002/58/EC of July 12, 2002, concerning the processing of personal data and the protection of privacy in the electronic communications sector.

All five directives were reviewed in 2009 (1), with changes fully implemented by EU member states, and were subsequently placed under the oversight of the Body of European Regulators for Electronic Communications (BEREC) (2).

On September 14, 2016, the Commission presented its draft review of the European regulatory framework, in the form of a European Code of Electronic Communications, along with new connectivity policy objectives for Europe up to 2025, a draft Regulation for WiFi access in public places and a 5G action plan. Following the legislative process which the Commission expects to complete before the end of 2017, this Code must be implemented in each member state and be applicable by 2019.

On October 9, 2014, the European Commission approved a new recommendation (2014/710/EC) identifying four relevant markets for product and service susceptible to *ex ante* regulation, compared to seven in its previous recommendation made in 2007:

- M 1: wholesale call termination on individual public telephone networks provided at a fixed location;
- M 2: wholesale voice call termination on individual mobile networks;
- M 3:
  - M 3a: wholesale local access provided at a fixed location,
  - M 3b: wholesale central access provided at a fixed location for mass-market products;
- M 4: wholesale high-quality access provided at a fixed location.

This regulatory framework has been fleshed out with a number of additional texts.

Roaming

Regulation No. 531/2012 of June 13, 2012 by the European Parliament and Council regarding roaming on public mobile communication networks within the Union (called Roaming III) has been amended by Regulation No. 2015/2120 *Telecoms Single Market* (called "TSM") approved on November 25, 2015 which aims in particular to ban surcharges for international roaming within the European Union by June 15, 2017 (see Section 2.2.1.2). These texts:

- introduce, for the wholesale market, a regulated right of access to European roaming services for MVNOs and resellers;
- extend the sliding cap on roaming rates to the data retail market until April 2016;
- provide, in the context of reasonable usage, alignment of international roaming retail prices with national prices for intra-European communications from June 15, 2017 (subject to a wholesale market revision). A transition period from April 30, 2016 allows a surcharge to be applied to the national prices equal to the wholesale market caps;
- introduces, in the retail market, a structural solution allowing the domestic service to be dissociated from the international roaming service;
- expands, for customers using their cell phones outside the EU, pricing transparency requirements and bill shock prevention measures for European operators.

(1) Directive 2009/140/EC of the European Parliament and Council of November 25, 2009 amending the Framework, Access and Authorization Directives and Directive 2009/136/EC of November 25, 2009 amending the Universal Service and Privacy and Electronic Communications Directives.
(2) Regulation (EC) No. 1211/2009 of the European Parliament and Council of November 25, 2009 establishing BEREC.

Price caps (in euros excl. VAT)		Roaming II regulation July 1, 2011	July 1, 2012	July 1, 2013	Roaming III regulation July 1, 2014	Amended Roaming III regulation April 30, 2016
Voice	Sent (retail)	€0.35	€0.29	€0.24	€0.19	RL@H +
	Received (retail)	€0.11	€0.08	€0.07	€0.05	RL@H +
	Wholesale	€0.18	€0.14	€0.10	€0.05	€0.05
SMS	Sent (retail)	€0.11	€0.09	€0.08	€0.06	RL@H +
	Wholesale	€0.04	€0.03	€0.02	€0.02	€0.02
Data	Retail		€0.70	€0.45	€0.20	RL@H +
	Wholesale	€0.50	€0.25	€0.15	€0.05	€0.05

Voice: price per minute excluding VAT/SMS: price per SMS excluding VAT/data: price per MB excluding VAT.
RL@H +: domestic prices + wholesale price cap.

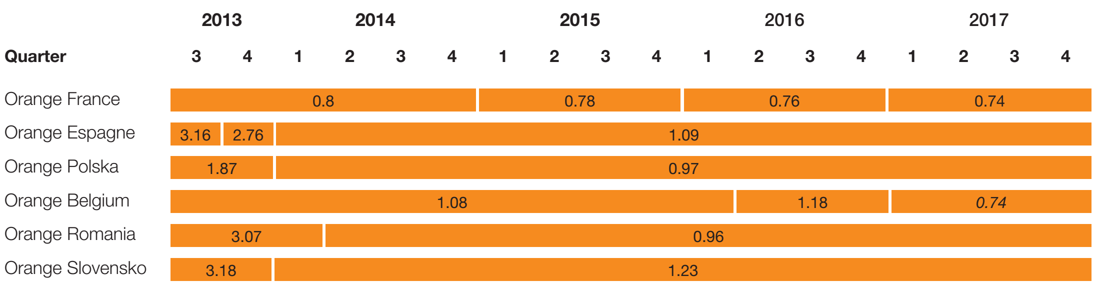
Call termination rates

On May 7, 2009, the European Commission adopted a recommendation regulating fixed-line and mobile voice call termination rates in the EU (2009/396/EC).

The Commission recommends that national authorities should apply the following principles:

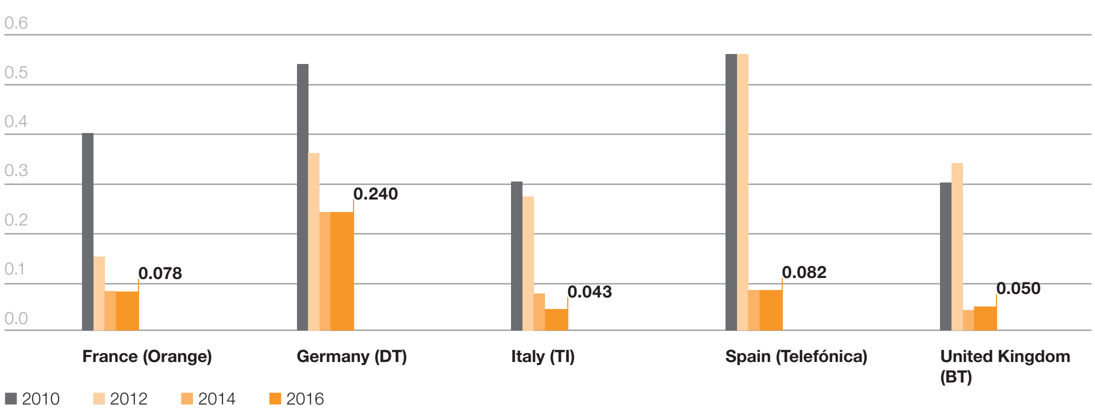
- symmetry in each country between the various operators' fixed voice call termination rates and also between their mobile call termination rates, with the option of allowing a four-year transitional asymmetry on fixed or mobile call termination rates to benefit a new entrant;
- call termination rates geared towards the avoidable cost of this service for an efficient operator (i.e. about 1euro cent per minute for voice MTRs and a lower rate for voice FTRs).

Change in mobile voice call termination rates (in euro cents per minute)



Source: Cullen International – December 2016.
Currency exchange rates at 12/31/2016 for the whole period. Italics figures are issued from draft decision.

Change in fixed voice call termination rates (in euro cents per minute) (1)



Source: Cullen International – December 2016.
Figures are December tariffs at local level. Currency exchange rates at 12/31/2016 for the whole period.

(1) Methodology for fixed-line call termination benchmarking: Average price per minute (in euro cents); at local level, i.e. at the lowest interconnection point (the equivalent the of ICAA in France); during "peak" minutes only (as off-peak periods are not consistent from one operator to another).

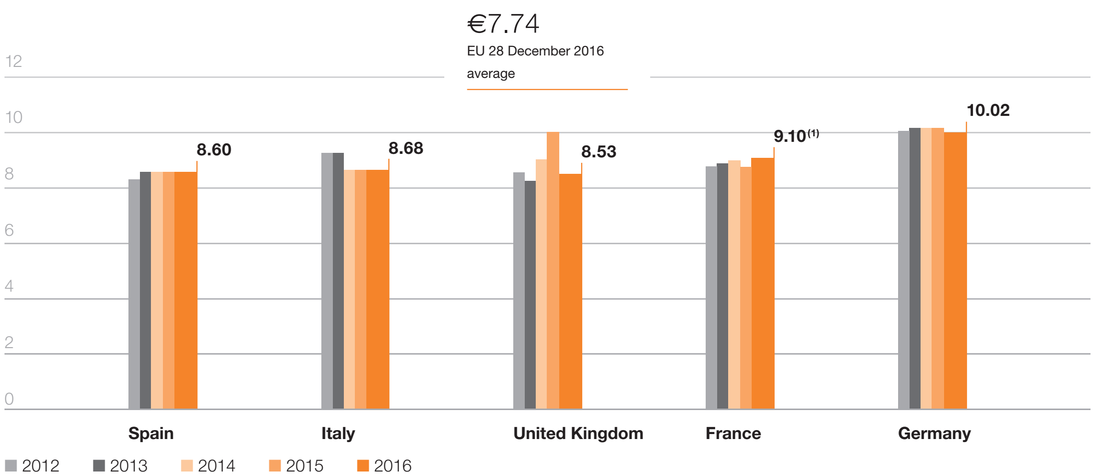
Access to fixed-line infrastructure

Recommendation "on non-discrimination obligations and consistent costing methodologies to promote competition and enhance the broadband investment environment"

The recommendation adopted by the European Commission on September 11, 2013, seeks to:

- strengthen rules on non-discrimination to provide equivalent access on new networks, publication of performance indicators and the application of technical replicability tests;
- stabilize prices, at constant currency, for use of the copper network around the current average access price within the EU (8 to 10 euros at current rates excluding tax); and
- allow greater flexibility in determining very high-speed broadband wholesale prices to the extent that National Regulatory Authorities are allowed not to impose a cost-orientation obligation when strengthened non-discrimination rules are in place and competition between platforms (copper, cable, mobile) is effective.

Full unbundling – European benchmark data (recurrent monthly charge excluding commissioning costs)



Source: Cullen International – December 2016.
(1) Figures are December tariffs – France, tariff of €9.45 as of 01/01/2017.
Currency exchange rates at 12/31/2016 for the whole period.

2.2.1.2 Significant events in 2016 and the start of 2017

	Roaming
April 2016	Entry into force of the RL@H + surcharge transition period
June 2016	Draft regulation on wholesale roaming prices
December 2016	Implementing act on reasonable usage rules for intra-European roaming
February 2017	Compromise on wholesale market regulation
	Spectrum
December 2016	Use of the 700 MHz band for very high-speed mobile broadband
	Net neutrality
August 2016	Publication of BEREC's guidelines for a consistent interpretation of the Open Internet part of the Regulation on the European Single Market for Electronic Communications
	Framework Review
September 2016	Publication of the draft European Code of Electronic Communications, and the accompanying texts (Gigabit Society, 5G Plan, WiFi Regulation, BEREC Regulation)
	Protecting Personal Data
April 2016	Adoption by the European Parliament of a General Data Protection Regulation
July 2016	Statement of compliance with the European Commission *privacy shield*
January 2017	Draft regulation modifying the e-privacy directive

Amendment of the Roaming III regulation

The political objective of the Telecoms Single Market Regulation dated November 25, 2015, which amended the *Roaming III* regulation, is to end the surcharges applicable to roaming for intra-European calls; it takes into account the serious technical difficulties that must be resolved to ensure that this key measure for Europe does not have negative consequences on the price of domestic mobile services or on network investments.

Under this regulation, a transitional period from April 30, 2016 to June 14, 2017, allows, for all price plans, intra-European roaming calls to be charged at the domestic price, plus a maximum surcharge corresponding to the regulated wholesale price caps currently applicable. The cost of incoming roaming calls is capped at the weighted average regulated call termination rates in Europe (1.08 euro cents). A "RL@H + surcharge" model is allowed for all pricing plans.

After this transition period, surcharges applicable to intra-European roaming calls must be stopped according to technical procedures defined by:

- an implementing act on reasonable usage rules for intra-European roaming adopted on December 15, 2016;
- a regulation on wholesale roaming prices that should be adopted during the first half of 2017.

On February 1, 2017, the European Parliament and the European Council, under the aegis of the Commission, reached a Compromise on the wholesale price caps to apply from June 15, 2017: 3.2 euro cents per minute of voice, 1 euro cent for SMS and a sliding scale of 7.7 euro cents in June 2017 to 2.5 euro cents in January 2022 for a GB of data. Furthermore, it is expected that operators may provide offers without roaming. The regulation must formally be approved by the European Council and voted on by the European Parliament before becoming effective.

		Roaming III regulation	Amended Roaming III regulation							
Price caps (in euros excl. VAT)		July 1, 2014	04/30/2016	06/15/2017 (1)	01/01/2018 (1)	01/01/2019 (1)	01/01/2020 (1)	01/01/2021 (1)	01/01/2022 (1)
Voice	Sent (retail)	€0.19	RL@H +	RL@H	RL@H	RL@H	RL@H	RL@H	RL@H
	Received (retail)	€0.05	RL@H +	RL@H	RL@H	RL@H	RL@H	RL@H	RL@H
	Wholesale	€0.05	€0.05	€0.032	€0.032	€0.032	€0.032	€0.032	€0.032
SMS	Sent (retail)	€0.06	RL@H +	RL@H	RL@H	RL@H	RL@H	RL@H	RL@H
	Wholesale	€0.02	€0.02	€0.01	€0.01	€0.01	€0.01	€0.01	€0.01
Data	Retail	€0.20	RL@H +	RL@H	RL@H	RL@H	RL@H	RL@H	RL@H
	Wholesale	€0.05/MB	€0.05/MB	€7.7/GB	€6.0/GB	€4.5/GB	€3.5/GB	€3.0/GB	€2.5/GB

Voice: price per minute/SMS: price per SMS/data: price per MB, or by GB from 2017.
RL@H +: domestic prices + wholesale price cap/RL@H: domestic prices.
(1) Caps in the process of being adopted.

Net neutrality

The European regulation on single market for telecommunications of November 25, 2015 established the rules applicable since April 30, 2016 throughout Europe to preserve the Open Internet. BEREC published the guiding principles in August 2016 for a consistent interpretation of these provisions.

The text authorizes reasonable technical management and some pricing flexibility for Internet access traffic, the offer by operators of optimized services at the same time as Internet access, and strengthened transparency to users.

Framework Review

In September 2016, the European Commission presented its proposals for a new regulatory framework, merging four directives from the *Telecom Package* into one *European Electronic Communications Code* (EECC) in the form of a single directive. This Code redirects the objectives of the framework towards investment, and sets "very high capacity" connectivity as an explicit objective of the regulation.

The Commission set three connectivity strategic objectives for 2025, complementary to the objectives already defined for 2020:

- all the main socioeconomic drivers, such as schools, universities, research centers and transport centers, all the public service providers such as hospitals and government ministries, and companies which rely on digital technologies, should have access to very high-speed broadband connectivity enabling users to download 1 gigabyte of data per second (upload and download speeds);
- all European households, rural or urban, should have access to connectivity offering a download speed of at least 100 Mbits/s, upgradeable to 1 Gbits/s;
- all urban areas as well as motorways and railways should have continuous 5G coverage. As an intermediate objective, 5G should be commercially available in at least one major city in each member state of the EU by 2020.

This new code therefore aims to facilitate the operational and economic conditions to encourage market players to invest in very high-speed broadband, in particular through a deregulation of the FTTH networks open to co-investment, and regulations adapted to local competitive conditions.

It proposes a minimum mobile license period of 25 years and an allocation based on projects of the national regulators, but according to procedures safeguarded by the BEREC validation mechanisms and those of the Commission.

It seeks identical regulation for all interpersonal communications services interconnected to the telephone network, regardless of the provider.

The draft was discussed in the European Parliament and the European Council, and the Commission expects adoption before the end of 2017. It must then be transposed into national law in the member states.

Use of the 700 MHz band

On December 14, 2016, the European Parliament, the European Council and the European Commission agreed the principle of liberalizing the 700 MHz band for mobile broadband by June 30, 2020 at the latest. Member states will have to justify their request to delay for a maximum period of two years. The decision is expected in the spring of 2017.

Protecting Personal Data

Regulation 2016/679 of the European Parliament and of the Council dated April 27, 2016 on the protection of physical persons regarding the processing of personal data and the free movement of such data, repeals directive 95/46/EC (general regulation on data protection). The new rules strengthen and harmonize within the EU existing rights on the protection and the control of personal data; they will apply as of May 2018.

The 2002/58/EC *Privacy and electronic communications* directive, specific to the electronic communications sector will also be updated to remain consistent with the inter-sector directive. A draft regulation was published for this purpose in January 2017.

Following the European Court of Justice's invalidation of Decision 2000/520/EC, known as "Safe Harbour", the European Commission and the US authorities published a new framework agreement for transatlantic data exchange. Thus, on July 12, 2016, the European Commission issued an adequacy decision aimed at recognizing in the EU-US Privacy Shield, a level of protection essentially equivalent to European requirements. This agreement is intended to ensure that the personal data of European citizens enjoy the same protections as in Europe when they are processed in the United States.

2.2.2 France

2.2.2.1 Legal and regulatory framework

Legal framework

The electronic communications sector is primarily governed by the French Postal and Electronic Communications Code (CPCE) as well as legal provisions relating to e-commerce, the information society, consumer protection and personal data protection.

The French government transposed the *European Telecom Package*, as amended in 2009, into national law via the Ministerial Order of August 24, 2011 and the Decree of March 12, 2012, implementing regulations.

The audiovisual communication services produced or distributed by the Orange group come under the specific regulations governing this sector and are governed by the amended law of September 30, 1986.

Regulatory Authorities

The Postal and Electronic Communications Regulatory Authority (Arcep) is an independent administrative body created by the law of July 26, 1996 and acts as the French regulator for these sectors nationwide. The Arcep's main missions in electronic communications are to set regulations (general or specific obligations) for operators within its jurisdiction. It has powers to sanction non-compliant operators and can rule on disputes between operators over technical and pricing conditions for network access and interconnection. The Arcep also allocates spectrum and numbering resources. Finally, it determines the size of contributions to fund the universal service obligation and oversees the mechanisms for delivering this funding.

The French Competition Authority is an independent government authority responsible for ensuring open market competition and compliance with public economic policy. It has jurisdiction over all business segments, including the electronic communications sector. It has sanction powers for anti-competitive practices, as well as consultative powers. It is also responsible for overseeing mergers and acquisitions.

The ANFr (*Agence nationale des fréquences* – French national agency for frequencies) is responsible for planning, managing and controlling the usage of radio frequencies and for coordinating the establishment of certain radio transmission facilities. The frequency spectrum is covered by 11 controlling authorities: government ministries, Arcep and the French Broadcasting Authority (CSA). The Arcep and the CSA are in turn responsible for allotting to users the frequencies they control.

The CSA (*Conseil Supérieur de l'Audiovisuel*) is an independent administrative body created by the law of January 17, 1989, tasked with protecting freedom of audiovisual communication by means of any electronic communications technology as regards radio and television in accordance with the law of September 30, 1986.

2.2.2.2 Regulation of mobile telephony

Main blocks assigned in the mobile services spectrum in metropolitan France (700 MHz, 800 MHz, 900 MHz, 1,800 MHz, 2.1 GHz and 2.6 GHz)

700 MHz	– Authorizations were given to Orange and Free in December 2015 for 10 MHz duplex each, and to Bouygues Telecom and SFR for 5 MHz duplex each for a period of 20 years.
800 MHz	– Authorizations were given to Bouygues Telecom, Orange and SFR in January 2012 for 10 MHz duplex each for a period of 20 years. – Free Mobile has roaming access rights on the SFR network in the "priority development zone" (ZDP), covering the least populous areas of the country (18% of the population and just under two thirds of mainland France).
900 MHz	– Renewal of the licenses given to Orange and SFR in March 2006 for 10 MHz duplex each, and to Bouygues Telecom in 2009 for 9.8 MHz duplex for a period of 15 years; authorization given to Free in 2010 for 5 MHz duplex for a period of 20 years. – 2G and 3G operators were authorized to reuse the 900 MHz band for 3G in February 2008. – 5 MHz duplex were sold back to Free Mobile by Orange and SFR on January 1, 2013 for high-density areas, and by Bouygues Telecom in July 2011 for the remaining parts of the country.
1,800 MHz	– The authorizations currently in force for Orange and SFR are for 20 MHz duplex each until March 2021, and for 20 MHz also for Bouygues Telecom until December 2024. – These authorizations are technologically neutral – i.e. option to operate 4G in the band – since October 2013 for Bouygues Telecom and since May 2016 for Orange and SFR. – Authorization given to Free for its *very high-speed mobile broadband* network in December 2014 for 5 MHz duplex, and for an additional 10 MHz duplex from May 2016, i.e. for a total of 15 MHz duplex until October 2031.
2.1 GHz	– Authorizations given to Orange and SFR in July 2001, and to Bouygues Telecom in December 2002 for 14.8 MHz duplex each for a period of 20 years. – Authorization given to Orange and SFR in June 2010 and to Free in January 2010 for 5 MHz duplex each for a period of 20 years.
2.6 GHz	– Authorizations given in 2011 for 4G services to Orange and Free Mobile for 20 MHz duplex each, and to Bouygues Telecom and SFR for 15 MHz duplex each, for a period of 20 years.

Deployment obligations of 3G operators in continental France

To date, Arcep considered the operators to have respected their 3G deployment obligations in continental France regarding the schedules specified in their authorizations.

At the end of December 2016, Orange's 3G coverage was 99.6% of the population and 95.7% of the territory.

Deployment obligations of 4G operators in continental France

	01/17/2017	10/11/2019	01/17/2022	10/11/2023	01/17/2024	01/17/2027	End-2030
Regional rail network (coverage in each region)						60% (700 MHz)	80% (700 MHz)
Regional rail network (coverage at the national level)			60% (700 MHz)			80% (700 MHz)	90% (700 MHz)
Priority highways						100% (800 MHz)	100% (700 MHz)
Town centers in the "white area" program (1% of the population and 3,800 town centers)						100% (700 MHz)	
Inside the priority deployment area (18% of the population and 63% of the territory)	40% (800 MHz)		90% (800 MHz) 50% (700 MHz)			92% (700 MHz)	97.7% (700 MHz)
In each county (*département*)					90% (800 MHz)	95% (800 MHz) 90% (700 mHz)	95% (700 MHz)
Throughout the metropolitan territory		60% (2.6 GHz)		75% (2.6 GHz)	98% (800 MHz)	99.6% (800 MHz) 98% (700 MHz)	99.6% (700 MHz)

Source: Arcep.

At the end of December 2016, Orange's 4G coverage was 87.6% of the population and 51.5% of the territory.

Analysis of the wholesale mobile call termination markets (4th round)

Mobile voice call termination (TR)

On December 9, 2014, Arcep issued decision No. 2014-1485 concerning the analysis of the wholesale fixed-line and mobile call termination markets for 2014-2017. It set the following price ceilings for mobile voice call termination:

	Market analysis – 3rd round (March 2011 and July 2012 decisions)[1]						Market analysis – 4th round (December 2014 decision)			
(cent€/min)	Jan. 11 - June 11	July 11 - Dec. 11	Jan. 12 - June 12	July 12[2] - Dec. 12	Jan. 13 - June 13	July 13 - Dec. 13	Jan. 14 - Dec. 14	Jan. 15 - Dec. 15	Jan. 16 - Dec. 16	Jan. 17 - Dec. 17
Orange France	3.00	2.00	1.50	1.00	0.80	0.80	0.80	0.78	0.76	0.74
SFR	3.00	2.00	1.50	1.00	0.80	0.80	0.80	0.78	0.76	0.74
Bouygues Télécom	3.40	2.00	1.50	1.00	0.80	0.80	0.80	0.78	0.76	0.74
Free Mobile, full MVNOs			2.40	1.6[2]	1.1[2]	0.80	0.80	0.78	0.76	0.74
Asymmetry	13%	0%	0%	60%	38%	0%	0%	0%	0%	0%

(1) For Free Mobile and Full MVNO's Lycamobile and Oméa Telecom, decision of July 27,2012 with effect as of Aug 1, 2012 – maximum price for 1H 2012.
(2) Excluding E1 connection.

The Arcep began the preparatory work for its 5th round of market analysis covering 2018/2020 through a consultation on its cost model in December 2016.

SMS TR

On January 29, 2015, the Arcep put the SMS call termination market, previously regulated, under surveillance.

Significant events in 2016 and the start of 2017

	Spectrum
May 2016	Authorization given to all operators to use the 1,800 MHz band for 4G Allocation of 10 MHz duplex in the 1,800 MHz band to Free following their return by Orange and SFR
November 2016	Overseas territories: allocation of the 800 MHz and 2.6 GHz spectrum not yet allocated, and the spectrum still available in the 900 MHz, 1,800 MHz and 2.1 GHz bands
	Mobile coverage
February 2016	Agreement between operators on the *3G RAN sharing* program for coverage of white areas
May-June 2016	Publication by the Arcep of the guidelines for mobile network sharing Statement of compliance with the national roaming contract between Free and Orange
June 2016	Launch of the *Orange Territoires Connectés* program, committing Orange beyond its regulatory obligations regarding 4G coverage
July 2016	Penalty decision against Orange in relation to the coverage of 2G white areas

Spectrum

1,800 MHz Band

In July 2015, the Arcep authorized Orange and SFR to use the 1,800 MHz band for 4G from May 25, 2016 after the return of spectrum. Orange and SFR keep 20 MHz duplex in the band and Free was allocated an additional 10 MHz.

The Arcep had allocated 5 MHz duplex to Free Mobile in the 1,800 MHz band by its decision of December 16, 2014 following the return of spectrum by Bouygues Telecom. The Arcep decision of September 2015 brought this allocation to 15 MHz from May 2016: this is the 15 MHz duplex reserved for Free Mobile in the target allocation plan for the 1,800 MHz band by May 2016. These 15 MHz duplex are technology neutral.

Allocation of spectrum in overseas territories

Following the call for applications launched in February 2016 for the allocation of 800 MHz, 900 MHz, 1.8 GHz, 2.1 GHz and 2.6 GHz spectrum in the overseas territories (five areas defined by the Arcep: Guadeloupe and Martinique form a single area, Guyana, Reunion, Mayotte and the islands Saint-Martin and Saint-Barthélemy), at the end of a beauty contest procedure, the Arcep nominated four winners in each of the five geographical areas concerned; Orange is the best offer in four of the five areas. The spectrum usage authorizations were delivered on November 24, 2016:

Guadeloupe – Martinique	St Barthélemy – St Martin	Guyana	Reunion	Mayotte
Orange Caraïbe	Orange Caraïbe	Orange Caraïbe	Orange	Telco OI
Free Mobile	Free Mobile	Outremer Telecom	SRR	SRR
Outremer Telecom	Digicel AFG	Digicel AFG	Telco OI	Orange
Digicel AFG	Dauphin Telecom	Free Mobile	ZEOP Mobile	BJT Partners

Therefore, following this request for applications, Orange Caraïbe has the following total quantities of MHz duplex spectrum: 10 MHz in 800 MHz, 20 MHz in 1,800 MHz and 20 MHz in 2,600 MHz in each area.

In the 900 MHz band, the quantity differs according to the area: 12.4 MHz in Guadeloupe-Martinique, 10 MHz in Guyana, 5.6 in the Northern islands.

In the 2,100 MHz band: 14.8 MHz in Guadeloupe-Martinique and Guyana, 14.8 MHz in the Northern islands.

Orange has the following total spectrum quantities in Reunion and Mayotte: 10 MHz in 800 MHz, 20 MHz in 1,800 MHz, 14.8 MHz in 2,100 MHz and 20 MHz in 2,600 MHz.

Only the quantity in the 900 MHz band differs: 12.4 MHz in Reunion and 10 MHz in Mayotte.

Orange launched 4G in all these territories on December 1, 2016.

Mobile coverage

By decision No. 2016-1015 dated July 28, 2016, the Arcep fined Orange 27,000 euros for failure to comply with the January 1, 2016 deadline concerning coverage of five municipalities in the 2G "white areas" program out of the eight to be covered as part of the formal Arcep notice at the end of July 2015; Orange had responsibility to cover more than 1,100 municipalities in this program as the leading operator.

As part of the Macron Act of August 6, 2015, measures have been taken to improve mobile telephony coverage for all non-covered town centers by the end of 2016. This involves finalizing the "white area" 2G program and supplementing it with the coverage of additional town centers, which may be deployed in 3G. Furthermore the existing 3G shared network program (*3G RAN sharing*) in these same areas must be finalized by mid-2017, based on an agreement between the four operators and approved by the Arcep in February 2016. Beyond the town centers, some areas of economic interest that are not currently covered may be the subject of a request by the relevant regional authority for financial aid from the government at a local bureau, which the government will organize.

By decision No. 2016-1678 dated December 6, 2016, approved by decree dated January 11, 2017, the Arcep requires the operators to publish more detailed mobile coverage maps, in order for the first published open data maps to be effective during the summer of 2017. Initially, these maps target voice/SMS services, with work continuing to ultimately produce data services maps.

Beyond the 4G coverage obligations set by the licenses, in June 2016 Orange launched *Orange Territoires Connectés* to accelerate fixed and mobile broadband and very high-speed broadband coverage in rural areas of France. Orange is particularly committed to ensuring that 5 million additional people benefit from Orange 4G in rural areas by June 2017, bringing the total Orange 4G coverage to 68% of the population in these areas by mid-2017 (since 2015, Orange 4G mobile coverage in rural areas has grown from 30% to 42% of the population). This program enables Orange to fulfill its obligations in terms of covering the priority deployment area as specified under the 4G license, three years earlier than expected.

Pursuant to the law for economic growth, activity and equal opportunities, published on August 7, 2015, which granted new powers in the field to the Arcep, the latter published, in May 2016, its guidelines relating to mobile network sharing, which emphasize that roaming, so long as it is transitory or limited in scope, can have beneficial effects and can be justified in terms of the regulatory objectives; and that network sharing can be relevant in the least dense part of France and acceptable, subject to the negative impacts, namely on competition, being offset by positive impacts, in particular an improvement of mobile service coverage and quality. In a press release dated June 30, 2016, the Arcep indicated that the roaming contract between Orange and Free and the network sharing contract between SFR and Bouygues met its guidelines.

2.2.2.3 Regulation of fixed-line telephony, broadband and very high-speed broadband Internet

Since July 2008, except for retail offers for fixed-line telephony under universal service, all of Orange's regulatory obligations concerning retail fixed-line telephony (access and communication) on the consumer and business markets have been lifted. *Ex ante* asymmetrical regulation of Orange's fixed services relates to retail offers under the universal service and wholesale offers that are regulated to ensure effective competition in the retail markets (call origination and termination, Wholesale Line Rental, unbundling, access to civil engineering infrastructure, bitstream, passive access to final segments of the FTTH network and capacity services).

Orange's obligations regarding cost accounting and accounting separation in the fixed-line business

The Arcep's decision No. 06-1007 of December 7, 2006 sets forth Orange's obligations as to cost accounting and accounting separation in the wholesale and retail businesses. When retail activities make use of wholesale network services that are subject to accounting separation, these resources are recognized in regulatory accounts at the wholesale offers price. These obligations were first implemented in 2007 in respect of FY2006. They were deemed compliant by the Arcep and have been renewed every year since then.

Analysis of the relevant markets for broadband and very high-speed fixed broadband, fixed-line telephony and fixed-line voice call termination (4th round)

Analysis of the fixed broadband and very high-speed fixed broadband markets mid-2014 to mid-2017

On June 26, 2014, the Arcep issued three analysis decisions on the fixed broadband and very high-speed fixed broadband markets for mid-2014 to mid-2017:

- decision No. 2014-0733 concerning analysis of the relevant wholesale local access market at a fixed location (market 4);
- decision No. 2014-0734 concerning analysis of the relevant wholesale central access market for mass-market products (market 5);
- decision No. 2014-0735 concerning analysis of the relevant Wholesale high-quality access market at a fixed location (market 6).

The scopes for these three decisions were defined to comply with changes made by the European Commission recommendation of October 9, 2014 on the relevant markets subject to *ex ante* regulation, in order to make a distinction between wholesale "generalist" offers aimed at the consumer and wholesale offers targeting business needs. In this enterprise segment, Arcep decision No. 2014-0735 provided for the lifting of the pricing obligations on Orange (copper and fiber) in some competitive geographical areas from January 1, 2015.

Arcep launched a new round of analysis of the generalist and enterprise fixed broadband and very high-speed fixed broadband markets for which it published an assessment document and outlook in July 2016, and a public consultation on its draft decisions on the market analysis in February 2017, with a view to their approval in the autumn of 2017.

Analysis of relevant fixed-line telephony markets in 2014-2017

On September 30, 2014, the Arcep issued decision No. 2014-1102 on analysis of the relevant markets for fixed-line telephony in 2014-2017. It prolonged the obligation imposed on Orange to provide Wholesale Line Rental (WLR) at cost-based prices. The decision introduced a gradual relaxation of the pricing obligations imposed on Orange for straight carrier selection offers. Lastly, the decision lifted the asymmetrical regulation imposed on Orange in the call origination market for calls to value-added service (VAS) numbers, in favor of the symmetrical framework established by Arcep decision No. 2007-0213.

Analysis of the wholesale markets for fixed-line voice call termination in 2014-2017: cut in call termination prices

On December 9, 2014, Arcep issued decision No. 2014-1485 concerning analysis of the wholesale fixed-line or mobile call termination markets for 2014-2017. It set the following price ceilings for fixed-line call termination:

Caps (in euro cents/min)	Call termination rates	Variation
January 1, 2013	0.08	(46.6)%
January 1, 2015	0.079	(1.25)%
January 1, 2016	0.078	(1.26)%
January 1, 2017	0.077	(1.28)%

Regulation of fixed-line electronic communications service offers

Rate changes for wholesale offers subject to cost orientation (unbundling, analog and digital Wholesale Line Rental, and call origination)

Following the Arcep decisions of February 16, 2016 regarding 2016 and 2017:

- No. 2016-0206 on the rates framework for copper local loop access;
- No. 2016-0208 on the rates framework for wholesale access to telephony services and related call origination;
- No. 2016-0207 on the rates framework for the wholesale central access for mass-market products by Orange.

The following rates apply:

		2014 rates	2015 rates	2016 rates	2017 rates
Unbundling	Total	€9.02	€9.05 (1)	€9.10	€9.45
	Partial	€1.64	€1.77	€1.77	€1.77
Wholesale line rental	Analog WLR	€12.19	€12.32	€12.32	€12.32
	Digital WLR	€18.35	€18.57	€18.57	€18.57
Bitstream	DSL access	€4.39	€4.79	€4.79	€4.79
	Naked DSL access	€12.41	€12.53	€12.63	€12.93

(1) Rate adjusted to €8.78 from August 1, 2015.

Regulation of fiber optic networks

Regulatory framework governing very high-speed broadband wholesale offers:

- asymmetric regulation of access to civil engineering infrastructure which allows alternative operators to deploy their horizontal networks on Orange's infrastructure: non-discriminatory access at a rate that reflects costs;
- principle that the terminating segments of FTTH networks are mutualized between operators;
- symmetrical regulation of access to the terminating segment of FTTH networks: same obligations to offer passive access to the terminating segment of FTTH networks on reasonable and non-discriminatory terms apply to all operators cabling buildings anywhere in France. This access must be made available from a sharing point in a reasonable location (Arcep decision No. 2009-1106 of December 22, 2009, completed by decisions No. 2010-1312 of December 14, 2010 and No. 2015-0776 of July 2, 2015). Charges must be reasonable and compatible with the principles of efficiency, relevance, objectivity and non-discrimination.

National Digital Agency

On February 4, 2015, a decree was published in the French Official Journal on the creation of a national service: the National Digital Agency, which takes over three responsibilities: steering and implementation of the "France Very High-Speed Broadband Program", coordinating and leading the various initiatives of "French Tech", and overseeing the dissemination of digital tools and the development of their use. It has to coordinate with several other institutions, including the *Caisse des dépôts*, *BPI France*, the National Digital Council, the Arcep and other state services involved in digital development.

The France Very High-Speed Broadband Program aims to have 100% of the French population eligible for very high speed broadband by 2022, with an interim target of covering half the population and companies by 2017. FTTH is seen as the main way of achieving this, although other technologies are also expected to contribute (transitory upgrades of the copper network, satellite, LTE). The European Commission assessed the France Very High-Speed Broadband Program and decided in November 2016 to raise no objections. This plan, estimated at a total of 20 billion euros of private and public investment to meet the 2022 target, is therefore compliant with EU State aid rules. It breaks down into three parts: an investment of €6 billion to €7 billion by private operators who expect to use their own capital to deliver FTTH to 57% of French homes by 2022. Between €13 billion and €14 billion to cover the remaining 43% of French homes, will be financed through networks managed by local public authorities (RIP):

- half of these homes were deemed sufficiently profitable for the coverage to be financed through a co-investment between the local the authorities and the operators;
- the other half involves the coverage of the most rural areas, the cost of which will be equally split between the French State and the local authorities.

On January 31, 2017, the Court of Auditors published a first assessment of the deployment of very high-speed fixed broadband networks in France. It revised upwards the investment necessary to reach these objectives, notably by supplementing its scope, and foresees very high-speed broadband coverage of the entire French population by 2030. It advocates broader implementation of transitory upgrades of the copper network, enabling significant improvements of current speeds in the shorter term.

Significant events in 2016 and the start of 2017

	Deployment of fiber optic networks
April 2016	Ordinance implementing the European directive to reduce the deployment cost of broadband electronic communication networks
June 2016	Arcep consultation on changes in the pricing of wholesale offers using the copper local loop
	Enterprise market
June 2016	Arcep consultations on access to very high-speed broadband fiber optic networks with improved quality of service
	Analysis of the broadband and very high-speed broadband markets
February 2017	Draft decisions related to the 4th round of market analyzes on the generalist and high quality broadband and very high-speed broadband markets
	Miscellaneous
February 2016	Arcep decisions on wholesale rates on fixed-line access 2016/2017 (see above)
June 2016	Draft requests for applications related to the next appointment of the operator in charge of the fixed-line telephony user system
October 2016	Enactment of the law for a digital republic establishing the principle of Net Neutrality

Deployment of fiber optic networks

As part of the debate on the transition from copper to fiber optic and to extend the 2015 "Champsaur report" aimed at specifying the conditions and the timing for the extinction of copper, the Arcep launched a consultation in June 2016 to define the concept of "fibrous areas" and the appropriateness of a relaxation of the pricing obligation applicable to Orange's copper local loop (unbundling price) in such areas.

Ordinance No. 2016-526 of April 28, 2016 implements in French law directive 2014/61/EU of the European Parliament and of the Council of May 15, 2014 relating to measures aimed at reducing the deployment cost of broadband electronic communication networks. It introduces a right for the operators to access existing civil engineering infrastructure – electronic communications, transport, energy and water – to deploy their very high-speed broadband networks.

Enterprise market

The Arcep launched two public consultations in June 2016 regarding the Enterprise market:

- a draft guidelines document on the fixed electronic communications services markets for enterprise customers;
- and a draft recommendation on access to very high-speed fiber optic networks with an improved quality of service or on the use of supernumerary fibers, in which the Arcep favors the emergence of passive wholesale offers enabling the usages covered by the shared optical local loop to be expanded and, in particular, to meet the specific needs of enterprises.

4th round of analysis of the broadband and very high-speed broadband markets

In July 2016, the Arcep undertook the triennial review of the broadband and very high-speed broadband markets, by submitting for public consultation a document in which it presented an assessment of broadband and very high-speed broadband regulation in France in the generalist and enterprise markets, and proposed some options for change for 2017-2020.

It also submitted for consultation, in February 2017, its draft decisions on the analyzes of the broadband and very high-speed fixed broadband market:

- market 3a: market for wholesale local access provided at a fixed location: unbundling on the copper local loop, access to civil engineering infrastructure, passive access to the FTTH local loop or bitstream with delivery to the optical connection node, passive FTTH offer with quality of service;
- market 3b: market for wholesale central access provided at a fixed location for mass-market products; regional copper bitstream or FTTH;
- market 4: market for wholesale high-quality access provided at a fixed location: partial termination access LPT, SDSL bitstream, FTTO, FTTE, FTTH wholesale offers.

These draft decisions led to the conclusion that it would be advisable to extend the majority of the obligations currently imposed on Orange, which would remain the only dominant player in the different markets.

They foresee the possibility of imposing new obligations on Orange in the generalist FTTH market, and confirm that the regulation of enhanced quality of service offers (Enterprise access market) must change.

In February 2017, the Arcep also published a draft decision related to updating Orange's offer to access civil engineering infrastructure from 2018.

Universal telephony service

On June 27, 2016, the DGE (Directorate General for Enterprise) published two draft calls for applications (connection and service) submitted to public consultation until August 31, 2016, in relation to the next appointment of the operator in charge of the fixed-line telephony user system until 2019. The call for applications for the "connection" component was published in the French Official Journal on January 11, 2017. Orange was a candidate.

Net Neutrality

Following the adoption of the European open Internet regulation on November 25, 2015 and the publication of BEREC's guidelines on August 30, 2016, law No. 2016-1321 for a Digital Republic, enacted on October 7, 2016, enshrines the principle of net neutrality in the national legal framework and grants the Arcep an investigative and sanctioning power to ensure compliance.

2.2.3 Spain

2.2.3.1 Legal and regulatory system

Legal framework

The 2009 *Telecom Package* was implemented into Spanish law by Royal Decree No. 726/2011 on universal service provision in May 2011 and Royal Decree No. 13/2012 of March 31, 2012.

The telecommunications sector is also covered by law No. 15/2007 of July 3, 2007 relating to the implementation of competition rules.

Law No. 34/2002 of July 11, 2002 relating to the information society and electronic commerce specifies the obligations and limits of responsibility applicable to service providers in the information society.

The regulatory framework applicable to data protection in Spain is based around law No. 15/1999 of December 13, 1999, relating to personal data protection and order No. 999/1999 relating to security measures. In the field of intellectual property rights protection, law No. 23/2006 of July 7, 2006 amends law No. 1/1996 of April 12, 1996 and transposes European directive 2001/29/EC relating to the harmonization of certain aspects of copyright and related rights in the information society.

Regulatory Authorities

- The regulatory authorities for the different sectors of the economy, including telecommunications and the regulator for competition issues, have been brought together under a new cross-industry entity, the National Commission for Markets and Competition (*Comisión Nacional de los Mercados y la Competencia*, CNMC), set up by law No. 3/2013 of June 4, 2013.
- Since November 4, 2016, a new ministry of energy, tourism and the Digital Agenda (MINETAD) was created, taking over the responsibilities of the former industry ministry. MINETAD is responsible for managing authorizations, spectrum allocations, telephone numbering, universal service cost approvals, quality of service, and disputes between consumers and non-dominant operators.

2.2.3.2 Regulation of mobile telephony

Mobile voice call termination rates

Concluding its 3rd round of market analysis of the wholesale mobile call termination market (market 7/2007), the CMT issued a decision ES/2012/1291 on May 10, 2012 proposing a gradual decrease of mobile call termination caps, reaching rate symmetry in July 2013. The adopted caps are as follows:

(in euro cents/min)	04/16/2012 – 10/15/2012	10/16/2012 – 02/29/2013	03/01/2013 – 06/30/2013	From July 2013
Movistar, Vodafone, and Orange	3.42	3.16	2.76	1.09
Yoigo	4.07	3.36	2.86	1.09

Spectrum

In May 2011, the Spanish authorities allocated a 5 MHz duplex block in the 900 MHz spectrum to Orange Spain. The license, granted under the principle of technological neutrality, is valid until December 2030.

In July 2011, the Spanish authorities auctioned the 800 MHz, 900 MHz and 2.6 GHz frequency bands. In July 2013, Orange Spain's license for the 900 MHz band was extended from 2025 to 2030 and its 1,800 MHz license from 2023 to 2030.

In March 2016, through regional auctions, Orange obtained a bloc of 2x10 MHz in the 2.6 GHz band and a bloc of 20 MHz in the 3.5 GHz band.

Following these allocations, the Spanish spectrum is distributed as follows (national licenses):

	800 MHz	900 MHz	1,800 MHz	2.1 GHz		2.6 GHz		3.5 GHz
				FDD	TDD	FDD	TDD	FDD
Orange	2*10 MHz	2*10 MHz	2*20 MHz	2*15 MHz	5 MHz	2*20 MHz	10 MHz	2*20 MHz
Vodafone	2*10 MHz	2*10 MHz	2*20 MHz	2*15 MHz	5 MHz	2*20 MHz	20 MHz	
Telefónica	2*10 MHz	2*10 MHz	2*20 MHz	2*15 MHz	5 MHz	2*20 MHz		
Yoigo			2*15 MHz	2*15 MHz	5 MHz			

The schedule of the allocation of 700 MHz spectrum for telecom operators has not yet been announced.

Significant events in 2016 and the start of 2017

January 2016	Proposal to increase the spectrum cap per telecom operator
March 2016	Allocation to Orange Spain of a regional spectrum bloc of 2×10 MHz in the 2.6 GHz band and a 20 MHz bloc in the 3.5 GHz band
July 2016	Initialization of the 4th round of market analysis of the mobile call termination market

Spectrum cap per operator

The cumulative spectrum cap set by the CNMC since 2011 at 185 MHz per operator, with a limit of 135 MHz in the high spectrum bands (1,800 MHz, 2,100 MHz, 2.6 GHz and 3.5 GHz) and 50 MHz in the lower bands (< 1 GHz) was modified on January 14, 2016 by the INF/DTSA/026/15 decision. The CNMC thus set a new cap of 210 MHz in the highest bands, with the obligation for the holder of the spectrum to offer wholesale access under "reasonable conditions".

Spectrum allocation

Following the auctions closed on March 21, 2016, Orange Spain acquired all the regional spectrum proposed in the 2.6 GHz band (with the exception of Madrid and Melilla bought by Telefónica), for 28 million euros. This spectrum enables Orange Spain to ensure 4G coverage over a large part of Spain. Orange Spain has also acquired spectrum (national license) in the 3.5 GHz band (valid until 2030) for 5G for 20 million euros.

Initialization of the 4th round of market analysis of the mobile call termination market (market 2/2014)

In July 2016, the CNMC launched a consultation on the mobile call termination cost setting method, in order to undertake a new round of analysis of this market.

2.2.3.3 Regulation of fixed-line telephony, broadband and very high-speed broadband Internet

Wholesale broadband markets (markets 4 and 5/2007)

By its decisions of July 18, 2013, revising the rates for access to Telefónica's local loop, of January 30, 2014, revising the rates of the wholesale services GigADSL, ADSL IP and NEBA and January 18, 2017, revising the rates for the capacity component of the NEBA offer, the CNMC confirmed the following rates:

	Rates in 2017 (per month and per access)
Unbundling offer	
Full unbundling	€8.60
Partial unbundling	€1.30
Bitstream offers	
Neba FTTH	€19.93
Neba DSL	€6.48
Naked DSL premium	€8.60
Aggregation offer (per Mbit/s)	€4.79 (1)
GigADSL and IP-ADSL (regional offer) at 10 Mbits/s	€10.20
IP-ADSL (national offer) at 10 Mbits/s	€13.60

(1) €5.14 from 2018.

Since April 2014, the GigADSL and ADSL IP offers, replaced by NEBA, ceased to be regulated in areas of Spain where NEBA is available.

Continuing the decommissioning of the copper network

The CNMC approved Telefónica's first requests to decommission two distribution frames in its copper network in October 2014. Under the terms of the regulator's decision on the analysis of the wholesale network infrastructure, market 4/2007, issued in 2009 and supplemented by the CNMC's decision of October 2014, Telefónica is obliged to continue offering the option of unbundling for five years after filing a request to decommission an exchange with the CNMC. This period falls to just one year if there are no unbundled operators in the distribution frame concerned. Up to now, Telefónica has announced the withdrawal of 89 distribution frames, including 15 distribution frames hosting operators using the unbundling offer and 74 distribution frames hosting operators using the bitstream offer. At the end of 2016, 17 distribution frames supplying bitstream services had already been closed.

Significant events in 2016 and the start of 2017

February 2016	Adoption of the 3rd round of analysis of the markets 3a and 3b/2014 and 4/2014 imposing geographical remedies
December 2016	Revision of the reference offer – NEBA
	Revision of the local NEBA reference offer
	3rd round of market analysis of fixed-line telephony call origination

Wholesale broadband access markets third round of the analysis of markets 3a and 3b/2014 and 4/2014

The CNMC adopted its third cycle of the analysis of the markets 3a and 3b/2014 and 4/2014 on February 25, 2016. It decided:

- for market 3a:
  - to retain the copper network unbundling obligations introduced in the previous 2009 market analysis and to retain access to Telefónica civil engineering infrastructure,
  - to not impose *ex ante* asymmetrical obligations on Telefónica for the fiber network in 66 cities considered effectively competitive, representing 35% of the Spanish population, given that a Virtual Unbundled Local Access (VULA) offer must be made available for the rest of Spain;
- for market 3b:
  - to progressively lift the *ex ante* obligations in that part of Spain deemed competitive, and covering 58% of the existing broadband lines; and in the rest of Spain deemed non-competitive, to maintain an access obligation to Telefónica's network, with the NEBA-copper offer, without limitation on bandwidth, and charged on a cost-based basis,
  - and to retain the *ex ante* obligations with a bitstream offer on the fiber network for part of Spain deemed non-competitive. This obligation is temporary for the part deemed competitive;
- and for market 4:
  - to retain, throughout Spain, the NEBA-business offer obligation, charged on a cost-based basis for copper and meeting the economic replicability test for fiber.

Revision of the NEBA reference offer

On January 18, 2017, the CNMC approved the new fiber optic wholesale offer (OFE/DTSA/005/16) – NEBA – which contains technical access conditions to Telefónica's fiber optic network except in 66 Spanish municipalities deemed competitive. Furthermore, the CNMC approved a significant reduction in wholesale transfer prices from 7.98 to 4.79 euros (5.14 euros from 2018) per Mbit/s per month.

Proposal related to the NEBA LOCAL (VULA) reference offer

On December 16, 2016, the European Commission accepted the principle of Telefónica's new "local NEBA" reference offer. It is a substitute to physical fiber access outside the 66 municipalities deemed competitive. Local NEBA will initially be offered with a profile containing the highest bandwidth (300 Mb/s), under technical conditions defined in the reference offer. The "local NEBA" prices will be established later, following approval of the economic replicability test methodology (notification expected in June 2017).

Third round of market analysis of fixed-line telephony call origination (market 2/2007).

On December 16, 2016, the EC approved the CNMC decision related to the third round of market analysis of fixed-line telephony call origination. This maintains the *ex ante* obligations already imposed on Telefónica in terms of non-discrimination, accounting separation and transparency, as well as the obligation to provide a wholesale subscription offer at cost-based prices (the offer of a pure carrier selection is eliminated) and access to call origination through an IP interconnection. It removes the prohibition on customer win-back practices and the obligation to provide a double transit call origination offer, as the retail market is considered to be sufficiently competitive.

2.2.4 Poland

2.2.4.1 Legal and regulatory system

Legal framework

Orange Polska's businesses are governed by the law of July 16, 2004 on telecommunications, transposing the 2002 *European Telecom Package* concerning electronic communications into Polish law, and by the law of February 16, 2007 concerning competition and consumer protection. The law of December 2012, transposing EU directives issued in 2009, came into force on January 21, 2013.

The law of May 7, 2010, on developing telecommunication networks and services, provides access to telecommunications and other technical infrastructures funded by public funds.

As regards e-commerce, the law of July 18, 2002 that governs provision of electronic services transposes European Directive 2000/31/EC concerning electronic commerce into national law and defines electronic service supplier obligations.

The applicable framework concerning personal data protection is defined by the law of August 29, 1997 concerning personal data protection, as amended in 2002. The 2004 Telecommunications Act also defines certain rules applicable to personal data protection and storage.

Regulatory Authorities

The Ministry of Digitization, created in November 2015, is responsible for telecommunications.

The Office of Electronic Communications (UKE) is responsible, in particular, for telecommunications regulation and frequency management, as well as certain functions related to broadcasting services.

The Office of Competition and Consumer Protection (UOKiK) is responsible for the application of competition law, merger control and consumer protection.

Digital Poland

The government's action plan to meet the targets of its digital strategy in Poland was passed in January 2014. The plan is budgeted at 2.7 billion euros and aims to ensure that all households have at least 30 Mbps Internet access by 2020. Nearly half of the funds are allocated to broadband network construction projects, and the rest to the development of digital services, particularly in government ministries. The Polish government will contribute 409.4 million euros.

2.2.4.2 Regulation of mobile telephony

Mobile call termination rates

The UKE published seven decisions on December 14, 2012, ruling that Orange Polska, T-Mobile, Polkomtel, P4, CenterNet, Mobyland and Aero2 each had a dominant position in the mobile call termination market for the mobile numbers open to interconnection on their network (market analysis – 3rd round). It also set symmetrical mobile voice call termination rates for all operators from January 1, 2013, and termination rates based on pure long run incremental costs as from July 1, 2013.

Date	From July 1, 2013 (pure LRIC)
Zlotys/min	0.0429
Euro cents/min	0.973

Exchange rate as at 12/31/2016: 1 euro = 4.41 PLN.

Spectrum

In 2011, the UKE issued three decisions that introduce technological neutrality in the 900 MHz, 1,800 MHz, and 2,100 MHz frequency bands.

Spectrum awarded is distributed as follows:

	800 MHz (1)	900 MHz	1,800 MHz	2.1 GHz		2.6 GHz
Orange Polska	10 MHz duplex	7 MHz duplex	10 MHz duplex	15 MHz duplex	5 MHz	15 MHz duplex
T-Mobile Polska	10 MHz duplex	9 MHz duplex	20 MHz duplex	15 MHz duplex	5 MHz	15 MHz duplex
Polkomtel + Sferia + Aero2 (Cyfrowy Polsat Group)	10 MHz duplex	14 MHz duplex	30 MHz duplex	15 MHz duplex	5 MHz	20 MHz duplex + 50 MHz TDD
Play (P4)	5 MHz duplex	5 MHz duplex	15 MHz duplex	15 MHz duplex	5 MHz	20 MHz duplex

(1) A bloc of 5 MHz duplex in the 800 MHz band has been allocated to NetNet in the auctions, but this operator refused this allocation, and these 5 MHz have been re-allocated to T-Mobile Polska.

In 2016, Polkomtel acquired 100% of the Midas Group, an aggregator of the Aero2, Mobyland, and Centernet operators and holding a controlling stake in Sferia. Polkomtel is itself held by the satellite pay TV company Cyfrowy Polsat. Consequently, Polkomtel controls directly or indirectly nearly a third of the mobile spectrum below 1 GHz and nearly 2/5 of the entire spectrum.

Following the political agreement between the Council and the European Parliament reached in the presence of the Commission on December 14, 2016, the 700 MHz spectrum band should be dedicated to mobile networks in all member states from 2020. The UKE undertook a coordination exercise with neighboring countries and has already signed an agreement with Ukraine and Sweden.

Significant events in 2016 and the start of 2017

October 2016	Spectrum allocation in the 800 MHz and 2.6 GHz bands following an auction process
December 2016	Extension of the network sharing agreement between Orange Polska and T-Mobile Polska to LTE
January 2017	Renewal of Orange's license in the 450 MHz band Decision on the deregulation of SMS call termination rates

Allocation of 800 MHz and 2.6 GHz spectrum

At the end of an auction process in October 2015, five blocks of 5 MHz duplex in the 800 MHz band and 14 blocks of 5 MHz duplex in the 2.6 GHz band were allocated for a period of 15 years. The new entrant NetNet withdrew after being allocated a 5 MHz duplex bloc in the 800 MHz band, which was re-allocated to T-Mobile Polska and the licenses were allocated by the UKE decisions of January 26, 2016. Orange was allocated 10 MHz duplex in the 800 MHz band and 15 MHz duplex in the 2.6 GHz band for a total of PLN 3,168 million.

The licenses in the 800 MHz band include coverage obligations in "white areas" at the town level, leading to coverage of 62% of the Polish population in four years.

On September 29, 2016, the European Commission formally notified the Polish Government that it should comply with Union rules regarding the auction process, contesting in particular the non-binding nature of the offers submitted in the auctions and the allocation in 2015, outside of the auction process, of the 800 MHz band to the mobile operator SFERIA. The procedure is still ongoing.

Network sharing

In 2016, the Competition Authority UOKiK and the European Commission continued their impact study in relation to the infrastructure and spectrum sharing agreements in Poland. On January 15, 2016, UOKiK announced that it had finalized its preliminary analysis of the cooperation frameworks between operators, including the wholesale access offers, joint usage and spectrum and infrastructure sharing, and it had shared this analysis with the European Competition Authorities. The analysis of the competition authorities is still under way.

In December 2016, Orange Polska and T-Mobile Polska announced their network sharing agreement within "NetWorkS!" had been extended to LTE, without sharing spectrum.

Renewal of Orange Polska's license in the 450 MHz band

Considering UKE conditions set in its decision of 13th of January 2017, Orange Polska did not apply for the renewal of its 5 MHz bloc in CDMA technology license.

Deregulation of SMS call termination rates

In the framework of its second round of market analysis of SMS call termination rates, the UKE showed no evidence of any market power of the operators or MVNO and consequently notified the European Commission of its decision to deregulate this market, thus aligning it with the large majority of European countries. On September 20, 2016, the European Commission approved the UKE's analysis according to which the SMS market was completely competitive and should be deregulated. The final decision on deregulation was published on January 31, 2017.

2.2.4.3 Regulation of fixed-line telephony, broadband and very high-speed broadband Internet

All of Orange Polska's regulatory obligations concerning retail fixed-line telephony (access and communication) in the consumer and business markets have been lifted. Thus, *ex ante* regulation of Orange Polska's fixed services, for the areas defined as non-competitive, relates to wholesale offers that are regulated to ensure effective competition in the retail markets (call origination and termination, Wholesale Line Rental, unbundling, bitstream).

Orange Polska's obligations regarding cost accounting and accounting separation in the fixed-line business

The UKE decision No. DHRT-WORK-6090-1/14 (66) of April 10, 2015 describes the obligations imposed on Orange Polska regarding cost-accounting and accounting separation in wholesale and retail business. When retail activities make use of wholesale network services that are subject to accounting separation, these resources are recognized in regulatory accounts at the wholesale offers price.

Analysis of the wholesale broadband access market (market 5/2007)

On October 7, 2014, the UKE adopted its decision on the market for wholesale broadband access (market analysis – 3rd round). The decision excludes 76 Polish municipalities, covering 24% of the population, from *ex ante* regulation and removes all of Orange Polska's regulatory obligations in respect of this market in these municipalities. In these deregulated areas, Orange Poland offers its wholesale services on a commercial basis. Everywhere else, Orange Poland's obligations are maintained (on access, non-discrimination, transparency, accounting separation and cost-based pricing).

Analysis of the wholesale broadband access market (market 4/2007)

In its June 2, 2014 decisions on market 4, as part of the second round of market analysis, regarding copper and fiber, the UKE retained Orange Polska's obligations (on access, non discrimination, transparency, accounting separation and cost-based pricing).

The 3rd round of analysis of market 3a/2014 is ongoing (see *significant events*).

Reference offer for fixed-line markets

This reference offer applies to all wholesale fixed services: call origination and termination, Wholesale Line Rental, partial and full unbundling and bitstream access.

On July 3, 2014 the UKE authorized a new version of the integrated reference offer, where the monthly price of full unbundling is left at 22 zlotys.

Fixed-line call termination rates

Since the UKE's decision of September 22, 2009, following its second round of market analysis, call termination rates must be based on cost, with no further details given. The UKE reserves the right, however, to control rates by benchmarking or a retail minus formula and has indicated it intends to move towards symmetry in 2014. The UKE thus systematically imposes a fixed-line call termination rate of 0.0273 zlotys on alternative operators, corresponding to Orange Polska's call termination rate at local level.

For an efficient generic operator on a New Generation Network (NGN), the European Commission recommendation of May 7, 2009 requires National Regulatory Authorities to set the fixed-line call termination rates based on pure long-run incremental costs. The UKE is preparing a draft decision applying this recommendation.

Universal service

Expiry of Orange Polska's universal service obligation

In 2006, the UKE imposed universal service obligations on Orange Polska until May 9, 2011. Since then, the UKE has taken no further steps to appoint a new universal service provider. On May 5, 2014, the UKE published a report that removed universal service obligations in Poland.

Compensation

For the whole period when it was responsible for universal service (November 2006 to May 2011), Orange Polska estimated its cost amounted to 1.1 billion zlotys while only 137 million zlotys were allotted in compensation by the UKE. Orange Polska has therefore appealed to have the UKE decisions reexamined.

In March 2014, the UKE designated which operators would bear the cost of providing a universal service in 2006. Other decisions should follow for the years 2007-2011.

Significant events in 2016 and the start of 2017

August 2016	Notification to the European Commission of the draft decision related to the 3rd round of analysis of market 3a
September 2016	Withdrawal of the draft decision on the analysis of market 3a

3rd round of analysis of market 3a/2014

After consultation, the UKE notified the Commission in August 2016 of its draft analysis of market 3a/2014, then withdrew it on September 21, 2016. A new draft is expected in 2017 which will include markets 3a and 3b at the same time.

Implementation of the directive on reducing the cost of deployment of broadband networks

In the context of the implementation of the directive on measures to reduce the cost of deploying broadband electronic communications networks, the government issued a draft law on January 18, 2016, including an accelerated procedure for the installation of mobile base stations and access to alternative infrastructures. This law came into force on June 9, 2016.

2.2.5 Other EU countries where the Orange group operates

2.2.5.1 Belgium

Mobile voice call terminations

Mobistar's mobile call termination rate is currently 1.18 euro cents/min.

In September 2015, the regulator submitted to the EC its draft decision for the third round of market analysis, in which it proposed a reduction in the call termination rate to 0.74 euro cents/min. The decision may be adopted and applied during the first half of 2017.

Spectrum allocation

In Belgium the spectrum is currently allocated as follows:

Operator	800 MHz	900 MHz	1,800 MHz	2 GHz	2.6 GHz
Proximus	10 MHz duplex	12 MHz duplex	25 MHz duplex	15 MHz duplex + 5 MHz	20 MHz duplex
BUCD					45 MHz
Telenet (Base)	10 MHz duplex	10 MHz duplex	25 MHz duplex	15 MHz duplex + 5 MHz	15 MHz duplex
Orange Belgium	10 MHz duplex	12 MHz duplex	25 MHz duplex	15 MHz duplex + 5 MHz	20 MHz duplex

Source: Cullen International.

Allocation of spectrum in the 700 MHz band: work between the regions and the federal government is underway to comply with the date set by the European Commission to free up this band for mobile traffic by 2020.

Cable wholesale broadband markets

The regulatory framework for access to the cable operators' networks is governed by two decisions of the conference of electronic communications sector regulators (CRC) of July 1, 2011 and December 11, 2013. Under this framework, cable operators have to provide wholesale access offers to their network priced on a retail minus model. On February 19, 2016, the CRC published the decision revising cable network access prices downwards, and separating the rates of the wholesale offers applicable i) during and ii) after the launch phase of commercial offers by the alternative operator.

In June 2016, the regulator began a new round of analysis of the wholesale broadband market and TV distribution, with a qualitative questionnaire. The draft decision is expected in the first half of 2017.

2.2.5.2 Romania

Mobile voice call terminations

On February 1, 2014, the Romanian regulatory authority (ANCOM) issued a decision on call termination rates charged by mobile operators. ANCOM introduced a new calculation method that cut mobile call termination rates from 3.07 euro cents/min to 0.96 euro cents/min. These rates came into force on April 1, 2014.

Spectrum allocation

In Romania, the spectrum is allocated as follows:

	800 MHz	900 MHz	1,800 MHz	2.1 GHz	2.6 GHz
Telemobil (OTE)				5 MHz duplex + 5 MHz	
Vodafone Romania	10 MHz duplex	10 MHz duplex	30 MHz duplex	5 MHz duplex + 5 MHz	15 MHz duplex
Orange Romania	10 MHz duplex	10 MHz duplex	20 MHz duplex	15 MHz duplex + 5 MHz	20 MHz duplex
Cosmote Romania (OTE)	5 MHz duplex	10 MHz duplex	25 MHz duplex	15 MHz duplex + 5 MHz	10 MHz duplex
RCS&RDS		5 MHz duplex		15 MHz duplex + 5 MHz	
2K Telecom					30 MHz duplex

Source: Cullen International.

Wholesale broadband markets

In the context of its second round of analysis of the 3a and 3b markets, completed in November 2015, ANCOM considered the retail broadband market to be effectively competitive and that, as a consequence, no obligation should be imposed on the two wholesale markets. The EC accepted the Romanian regulator's proposals without comment. The final decision was published in the Romanian Official Journal of December 29, 2015. RomTelecom's obligations as part of the wholesale market for infrastructure access have been lifted one year after the publication of the decision.

2.2.5.3 Slovakia

Mobile voice call terminations

On July 29, 2013, the Regulatory Authority TUSR issued a decision on call termination rates charged by the three mobile operators, and fixed it at a maximum of 1.226 euro cents/min. The fourth-largest mobile operator, Swan also applies this termination rate since it began operating in October 2015.

In the framework of its 4th round of market analysis, the TUSR notified its draft decision to the European Commission on November 18, 2016, in which the mobile call termination rates are 0.749 euro cents/minute for all operators. On December 15, 2016, the European Commission has not commented on the market analysis itself.

Spectrum allocation

In Slovakia, the spectrum is allocated as follows:

	800 MHz	900 MHz	1,800 MHz	2.1 GHz	2.6 GHz
Slovak Telekom (Deutsche Telekom)	10 MHz duplex	10 MHz duplex	15 MHz duplex	20 MHz duplex + 5 MHz	40 MHz duplex
Orange	10 MHz duplex	10 MHz duplex	20 MHz duplex	20 MHz duplex + 5 MHz	30 MHz duplex
O2	10 MHz duplex	10 MHz duplex	20 MHz duplex	20 MHz duplex + 5 MHz	
Swan			15 MHz duplex		

Source: Cullen International.

Wholesale broadband and very high-speed fixed broadband markets

The Slovak regulator completed its 3rd round of analysis of the market 3a, 3b and 4/2014 markets. It notified its draft decisions to the European Commission on August 19, 2016, which has not commented on.

The regulator proposes to ease regulation:

- in market 3a, by excluding unbundling of the sub-local loop, while maintaining unbundling in the copper loop, and by limiting the regulatory obligations of NGA offers to the economic replicability test and to a technical equivalence of inputs;
- in market 3b, by imposing a replicability test of 2P offers and multicast IPTV wholesale access offers, instead of regulated prices.

The regulator's decision on market 4 was adopted on November 7, 2016: it removes the sectoral regulatory obligations on market 4, due to its competitive characteristics.

2.2.6 Other non-EU countries where the Orange group operates

Because the Orange group's retail market operations outside the EU primarily involve those of mobile operators, the main regulatory issues it faces in these countries are mobile voice call termination rates and spectrum access.

The following table gives the national mobile call termination rate for each country concerned:

Mobile voice call termination in the MEA region (euro cents/min)

Morocco	1.289
Tunisia	0.632
Egypt	1.058
Jordan	1.656
Mali	2.408
Senegal	1.372
Niger	1.905
Bissau	0.403
Guinea	2.060
Ivory Coast	3.658
Cameroon	3.962
Democratic Republic of the Congo	3.073
Central African Republic	5.334
Botswana	2.447
Madagascar	3.550
Mauritius	1.525
Burkina Faso	3.048
Sierra Leone	4.518

Source: Orange, based on data from national regulators. Exchange rate as at 12/31/2016.

The following table gives the license renewal date as well as the type of license for each country concerned:

Renewal of licenses in the MEA region

	Expiration date of the current license	License Type
Botswana	April 2022	2G – 3G
Botswana	August 2025	4G
Burkina Faso	April 2020	2G and Fixed
Burkina Faso	September 2022	3G
Cameroon	January 2030	2G – 3G – 4G
Ivory Coast	April 2032	Global (1) (including 4G)
Guinea-Conakry	January 2022	2G
Guinea-Conakry	January 2022	3G
Guinea-Bissau	January 2027	2G
Guinea-Bissau	July 2026	3G – 4G
Equatorial Guinea	May 2019	Global (1) (excluding 4G)
Egypt	October 2022	2G – 3G
Iraq	August 2022	2G – 3G
Jordan	May 2019	2G – 3G
Jordan	September 2030	4G
Jordan	May 2024	Fixed
Liberia	July 2030	Global (1) (including 4G)
Madagascar	April 2025	2G – 3G – 4G
Mali	July 2017	2G – 3G
Morocco	August 2024	2G
Morocco	December 2031	3G
Morocco	April 2035	4G
Morocco	April 2036	Fixed
Mauritius	November 2018	2G – 3G – 4G
Mauritius	November 2025	Fixed
Niger	December 2022	Global (1) (4G)
Senegal	July 2017	Global (1) (excluding 4G)
Sierra Leone	July 2031	2G – 3G
Central African Republic	May 2027	Global (1) (exluding 4G)
Democratic Republic of the Congo	October 2031	2G – 3G
Tunisia	July 2024	Global (1) (excluding 4G)

Source: Orange, based on data from national regulators.
(1) Global: refers to the type of license that allows an operator to offer both fixed-line and mobile services through all of the available technologies (depending on the country, the Global license does not include 4G technology).

2.3 The Orange Group strategy

Launched in 2015, the new strategic plan, *Essentials2020*, focuses on Orange's ambition for 2020 to provide its customers with an incomparable service experience by being ever-present to connect every individual to what is essential to them. This involves providing exemplary basic services, quality and reliable access, customer connections at any time and from anywhere, as well as even more personalized options for services and offers.

Orange serves every kind of customer: those who focus above all else on price and those who have a particularly high-level of service expectation, whether private individuals, very small companies or multinationals. The Group can rely on a series of key strengths for the mission that it has set out. With its brand and its 155,000 employees, the Group is present in Europe, Africa and the Middle-East on the residential market, and everywhere in the world on the Enterprise market. Orange's ambition breaks down into five main drivers:

1. offering richer connectivity;
2. reinventing the customer relationship;
3. building a people-oriented and digital employer model;
4. accompanying the transformation of business customers;
5. diversifying by capitalizing on its assets.

Moreover, the strategic plan will be achieved within the framework of a company that is efficient, responsible and digitally proficient.

1. Offering enriched connectivity

The multiplication of screens, the generalization of video on the Internet and customers' growing need for online services and content has led to an explosion in usage and in mobile data traffic. Moreover, the digital revolution has created new customer expectations and has changed their behavior, making connectivity even more important. Offering an efficient network to all customers is no longer enough; services must now be tailored to each individual consumer and to each moment.

Orange would like to offer richer connectivity to all its customers, whether retail or business. In order to realize this ambition, the Group will make a series of targeted investments in its networks between 2015 and 2018, of approximately 17 billion euros. Clear priority is given to investments in very high-speed broadband, in order to respond to the explosion in traffic and meet customer expectations. These will allow Orange to develop broadband services, whether fixed or mobile, as well as convergence packages in Europe. Due to this priority, investments should remain at a sustained level beyond 2018.

The investments will be made in particular in the following fields:

Development of very high-speed fixed broadband and of convergence

Very high-speed fixed broadband will be developed in Europe through an ambitious fiber optics (FTTH) deployment project. Orange is working pragmatically and appropriately according to the particular resources and situations in each country: acquisition (Spain), rollout of a fiber optic network (France, Poland), use of cable when already present (Belgium), partnership (Romania). Orange's objective in France is to catch up and quickly surpass the geographic reach of cable, in order to be able to offer very high-speed broadband services to the greatest number of people. FFTH is a source of value creation for the Group, through the recovery of market share, customer loyalty and the improvement of the average revenue per user (ARPU). This approach also allows Orange to better serve business customers throughout Europe. The number of fiber consumers of the Orange group was 3.3 million at the end of 2016; within a year, it had doubled in Spain, increased five-fold in Poland and by 1.5 times in France. The number of connectible homes reached 6.9 million in France at the end of 2016 and 9.6 million in Spain, a country where the Group has become the second fixed broadband operator and is targeting 14 million connectable homes by the end of 2019. This extension will also help strengthen the fixed-mobile convergence strategy in Spain, where it represented 84% of the very high-speed fixed broadband customer base at the end of 2016. In Poland, Orange Polska continued the deployment of its FTTH network with over 1.5 million households connectable at the end of 2016, with the objective of connecting 3.4 million homes by 2018. In Belgium, Orange launched its first convergent and very high-speed broadband cable television offers in 2016. At the end of 2016, Orange had thus established itself as the leader in convergence in Europe with 9.2 million retail convergent subscribers.

Development of very high-speed mobile broadband

The Group aims to develop very high-speed mobile broadband in all of the geographic areas where it operates. In Europe, the number of 4G customers of Orange reached 28 million at the end of 2016, or a growth of 58% over one year (this growth is based on the extension of broadband coverage, with the goal of covering more than 95% of Europe with 4G by 2018, both when traveling and within buildings, by relying on the quality of the spectrum portfolio). In Africa and in the Middle-East, Orange's total mobile customer base reached 121 million customers at the end of 2016. The Group continues to invest significantly in territorial coverage, with a particular emphasis on the continued deployment of broadband networks: today, 10 countries of the region have access to the 4G network. In 2016, Orange also obtained new 4G spectrum in Senegal, Tunisia and Egypt.

Continuation of network modernization

In anticipation of the future needs of its customers, the Group is upgrading its networks to make them more agile and automatically adaptable. Orange is thus continuing to drive the transition of its networks towards all-IP, the Cloud and the virtualization of networking functions, with the goal of being able to make them programmable in real time and dynamically, based on the evolution of traffic and needs. The Group is also preparing for the introduction of 5G, adapted to the new uses of mobile Internet and the Internet of Things. These changes will also allow the Group to reduce the cost structure of its networks, as well as their CO_2 emissions. For more information, see Section 3.2.1 *Network*.

An enriched content experience

The quality of the Group's networks, particularly in very high-speed broadband, allows it to support the development of uses and respond to customer demands by offering a multi-screen experience. The development of uses is also based on access to quality content. In this area, the Group's content strategy consists in strengthening its role as a distributor by focusing on content aggregation: choosing, highlighting, packaging and offering attractive content meeting customer expectations in a simple and fluid manner. For example, OCS is now directly distributed via the Internet as Over-The-Top content (OTT) and Orange has launched a new fiber range which includes the best family TV channels, offered by CANAL+. For more information, see Section 3.1.9.2 *Shared Services – Content*.

Orange's new *Livebox*, previewed on March 16, 2016 at the Hello Show and officially launched on May 19 in France, meets the expectations expressed by customers and their changing uses, by the strong connectivity offered on all their screens and in all rooms in the house.

As part of the *Essentials2020* plan, Orange's objective is to achieve a three-fold increase (in comparison with 2014) in the average data speeds of its customers on its fixed and mobile networks by 2018.

2. Reinventing the customer relationship

The relationship with the customer is a key success factor, thanks to the direct link with the end-customer, especially when facing competition from OTT platforms. The Group aims therefore to have an impeccable relationship with its customers, thanks in particular to:

- the power of the Orange brand;
- the simplification of customer journey by limiting the number of steps and intermediaries;
- the improvement of the customer experience.

Brand identity

Orange has a strong brand and decided, as part of the *Essentials2020* strategic plan, to transform its visual identity to better reflect its desire to be more attentive to its customers. Three new countries adopted the Orange brand in 2016: Egypt, Belgium and Morocco. For more information, see section 3.4.2 *The Orange brand*.

Unified customer journey

With the rise of the Internet and of smartphones, the mobile phone has become the entry point for sales and services, leading the Group to optimize the interconnection of its physical sales areas and reconsider their role. Customers want more autonomy, speed and availability at all times via their smartphone which then becomes the entry point to the customer space *Orange et Moi* where customers can manage, from their smartphone, their Internet and mobile contracts, easily contact Orange and solve a malfunction. At the end of 2016, this application had almost 13 million active users. It is available in all countries where the Group operates. Furthermore, in April 2016, Orange announced the acquisition of a stake in *Africa Internet Group* which operates a total ten e-commerce platforms in 23 African countries used by over 50,000 local and international companies.

Physical stores can then concentrate on more sophisticated tasks such as advising customers on more complex operations. The previous logic of proximity, valid for physical stores, gives way to a logic of excellence of service, provided in larger and more welcoming stores that are organized by theme: home, family, work, well-being, entertainment. The *Smart Stores* are thus part of a single digital-physical journey. At the end of 2016, Orange had 157 Smart Stores, of which 144 were located in Europe including the Opéra megastore in Paris.

The improvement of the customer experience

New customer relations management tools allow services to be better targeted based on customer uses. The purpose of these tools is to reconstruct the history of a customer's relationship with Orange, regardless of their contact points, in order to better know the customer and propose customized solutions that correspond to his or her needs and expectations.

To meet the need for a simpler customer experience and our customers' needs for autonomy and responsiveness, Orange's objective is to achieve 50% of its customer interactions via the digital channel in Europe by 2018.

3. Building a company model that is both digital and caring

Orange wants to be a company to which all its employees, men and women, are proud to belong. In order to measure employee satisfaction, and deliver business performance, Orange has introduced an employee satisfaction plan with a bi-annual survey in France and annually outside of France.

A recognized policy of developing human resources

Orange's ambition to build a people-oriented and digital employer model has already materialized, thanks to the *Top Employer* certification it received in 29 countries from the *Top Employers Institute*. This certification awards actions implemented in each of these countries in the areas of professional growth, training and skills development. In 2016, the Group obtained the world certification *Top Employer* Global 2016 for the first time.

Development of collective agility and support to employees with the digital transformation

The use of digital tools by Orange employees will help develop skills and cross-fertilization between business activities, encourage engagement within the Group and contribute to the quality of the work environment.

In 2016, Orange stated its undertaking to be a "digital and human employer" as a fundamental element of its *Essentials2020* strategic plan. In 2016, Orange signed the first agreement on the support of the digital transformation, the aim of which is to support employees so that each and every one them can be part of this approach and find their place within it.

Fostering individual commitment

The granting of more than 5% of Orange's capital to employees helps encourage their commitment and participation in the company's life. It is Orange's ambition to continue to develop this shareholding. Thus, in 2016, 11.2 million shares were subscribed by 45,000 employees as part of the offer reserved for employees, *Orange Ambition 2016*.

Orange also launched, in April 2016, an international *Cube* challenge, the main objective of which was to allow every Group employee to better adopt its strategy and participate in a collective, digital, and unifying initiative, around the Orange culture.

Convinced that a positive customer experience is founded on a quality employee experience, the Group aims to have 90% of its employees recommend Orange as an employer by the end of the *Essentials2020* strategic plan.

4. Accompanying the transformation of business customers

The digital transformation opportunities, efficiency and growth, are profoundly transforming the activities, organization, tools (customer and employee relations) and the processes of businesses. In this context, Orange is positioned as a trusted partner to support companies in their digital transformation. To this end, the Group is attentive to the needs and specifics of each of its customers' industries, business lines and processes, and security constraints, from SMEs to multinationals. The Group will focus on four key areas, in addition to its traditional role as a supplier of connectivity wherever it is present:

- providing digital work solutions to allow employees to become more mobile, more connected and more collaborative. Orange thus intends to become a leader in the integration of mobile solutions into work stations;
- improving business line processes, particularly through applications and connected objects, which provide companies with new possibilities;
- supplying multinationals with private and hybrid Cloud solutions, an area in which Orange wants to be the leader in France. Cloud services are an essential tool to bring agility and flexibility to companies (virtualization, systems integration, business applications, API, building blocks for connected objects, Big Data and analytics);
- security solutions for the protection of all areas of companies' vital activities, an increasingly important challenge today: infrastructures, a company's strategic data and interactions with its customers (website, order taking and customer management tools).

2016 saw an expansion in cyber security activities (marked by a 17% growth in revenues in 2016) with the acquisition of Lexsi, as well as Cloud services (+17% growth in revenues in 2016) with the acquisition of Log'in consultants (activity dedicated to integration services in relation to the virtualization of the workstation of the Log'in International group). Furthermore, 2016 was marked by the international launch of the *Easy Go Network*, a service offering multinationals looking for more intelligent and more flexible networks solutions for the virtualization of network functions. For more information, see Section 3.1.8 *Enterprise*.

As part of its *Essentials2020* plan, Orange's objective is to increase the share of IT services in the Orange Business Services revenue mix by 10 percentage points by 2020.

5. Diversifying by capitalizing on its assets

Orange focuses on two areas where it can capitalize on its assets and gain legitimacy in its customers' eyes in order to develop new sources of growth: connected objects and mobile financial services.

Connected objects and mobile financial services have fundamentally transformed customers' daily life, and Orange believes it can provide a real value-added service to customers in these areas. These services require enhanced connectivity and offer numerous synergies with the Group's main assets: customer relationships, digital expertise, both physical and digital distribution power, capacity for innovation, brand strength (building confidence and trust with clients), networks and international presence. The Group has set the goal to surpass one billion euros in revenues in these new growth drivers by 2018.

Connected objects

The Group wants to be present across the entire value chain of connected objects:

- the distribution of connected objects;
- the supply of value-added services around those objects, particularly in the health and wellness field or in the connected home field;
- the management of data from these connected objects, in particular using *Datavenue*, its open intermediation platform.

2016 was marked by two Group initiatives in this area:

- the launch of *Datavenue* at the international level, in order to complete the Group's position in the IoT value chain and add value to the data collected via connected objects;
- the continued gradual deployment of the ultra-narrowband network in the Internet of connected objects, using the *LoRa* (Long Range) technology, already available in 18 urban areas in France. The Group also joined the Board of *LoRa* Alliance®, which today has over 300 member companies, to contribute to the global success of the LoRaWAN™ protocol.

Mobile financial services

The growth prospects for mobile financial services are significant, not only in Europe but also in Africa, where the mobile penetration rate is much higher than the percentage of people with bank accounts in most concerned countries, and where customers want to make an increasing number of payments on the go, in a simple and fluid manner using smartphones.

In 2016, Orange continued its development in several areas:

- in financial services with the development of Orange Money in Africa, leader of the digital financial service which, in 2016, witnessed a growth in revenues of 58.5% compared with the previous year. In Africa and in the Middle-East, Orange already has close to 29 million users of money transfer and payment services with a volume of transactions of more than one billion euros per month;
- in contactless mobile payment using NFC technology in Europe and the contactless payment application *Orange Cash*, launched in Spain and rolled out widely in France, including on iPhone;
- in the mobile banking, which offers significant growth prospects, and where the Group concentrated its efforts. In 2016, Orange acquired a 65% interest in Groupama Banque, a subsidiary of Groupama that was then renamed Orange Bank. The subsidiary

common to these two groups will launch in France at the beginning of 2017 a 100% mobile banking offer which will be marketed under the double brand Orange and Groupama in their respective physical distribution networks, and directly on smartphones.

Through Orange Bank, Orange and Groupama will offer most banking services such as current account management, payment, savings, credit and insurance. The goal of these two operators is to eventually attract over 2 million customers in France.

A digital, efficient and responsible company

The Group wants to meet its objectives in respect of CSR performance by being an ethical company, respectful of the ecosystem and the environment in which it operates.

Open innovation

To develop its new services, Orange continues to focus on innovation, by complementing its own resources through an *Open innovation* approach. Orange supports 236 start-ups worldwide through its *Open innovation* programs and its objective is to increase this figure to 500 by 2020. For more information, see Sections 3.3.2 *Open innovation* and 3.3.3 *Capital investment*.

Corporate responsibility

In order to respond to the social and environmental challenges related to the ever-greater number of devices (smartphones, tablets, connected objects), as well as to the multiplication of energy-consuming uses by consumers, Orange has committed to two priorities: a 50% reduction in its CO_2 emissions per customer use by 2020 (compared to 2006), and to promote the integration of the circular economy within its organization and its processes. In 2016, CO_2 emissions per customer use had been reduced by 48% since 2006.

For the 2016 Shareholders' Meeting, Orange published for the first time an Integrated Annual Report inviting shareholders as well as the public to read the societal aspects of its strategy. Its objective is to show how Orange, a digital, efficient and responsible company, ensures that its corporate project is a long term one in order to position itself at the service of its customers and create value for society as a whole while using digital technology to achieve faster progress for all.

Operational effectiveness

Orange continues to improve its operational effectiveness through the implementation of its *Explore2020* program. Since 2015, Orange has achieved gross savings of 1.7 billion euros, in line with its goal of reaching 3 billion euros of savings between 2015 and 2018.

Ambitions

Orange's strategy, in terms of its core activities and new business areas, aims to generate new growth while maintaining a healthy financial position. Concerning operations, the Group will track several major indicators to assess the implementation of the *Essentials2020* plan presented in March 2015.

The first two global summary indicators reflect the core ambition of *Essentials2020* concerning Orange customers' digital experience:

- a leadership indicator in terms of customer recommendations (the *Net Promoter Score* or NPS). This global indicator encompasses all of the strategic plan's drivers. Orange wants to become number 1 in NPS for three out of four customers by 2018;
- an indicator that measures the power of the Orange brand: the *Brand Power Index*. Orange is aiming for continuous improvement in this indicator across its markets from now until 2018, through the Group's improvement of the digital experience of customers and its new brand identity.

Beyond this, Orange has one ambition per driver:

- for the first driver on richer connectivity, Orange has set an objective of tripling the average data speeds of its customers on its fixed and mobile networks by 2018 compared to 2014;
- for the second driver on the customer relationship, Orange is aiming for 50% digitization of interactions with its customers by 2018;
- for the third driver on the people-oriented and digital employer model, Orange has chosen an indicator identical to that chosen for its customers, based on recommendation. Orange is aiming for 9 employees out of 10 to recommend Orange as an employer by 2018;
- for the fourth driver on the Enterprise market, Orange has chosen to measure the success of the transformation of its Enterprise business model towards IT services. The Group aims to raise the share of IT and integration services in the Orange Business Services revenue mix by 10 points by 2020;
- for the last driver, the selected indicator will measure the success of diversification into new services, with connected objects and mobile finance services. The objective is for these new services to contribute more than one billion euros to the Group's revenues in 2018.

Financial objectives

As regards the financial component, see section 4.5 *Outlook*, and 4.6 *Dividend distribution policy*.

2.4 Risk factors

In addition to the information contained in the present Registration Document, investors should carefully consider the risks outlined below before deciding whether to invest. The Company's view at the date of this Registration Document is that these risks could have a material negative impact on the business, financial position or profits of Orange and/or its subsidiaries. In addition, other risks and uncertainties, as yet unidentified or, as of the date of this Registration Document, not currently considered to be material by Orange, could have similar negative impacts. Investors could lose all or part of their investment if these risks materialize.

The risks described in this chapter concern:

- risks relating to Orange's business activities (see Section 2.4.1);
- risks of a legal nature (see Section 2.4.2);
- financial risks (see Section 2.4.3).

In each section, risk factors are presented in diminishing order of importance, as determined by the Company at the date of filing the current Registration Document. Orange may change its view of their relative importance at any time, particularly if new external or internal facts come to light.

Several other sections of this Registration Document also discuss risks in some detail:

- for risks related to Orange's general strategy, see Section 2.3 *The Orange group's strategy*;
- for risks relating to regulations and regulatory pressure, see Section 2.2 *Regulations* and Note 16 *Litigation* to the consolidated financial statements (Section 4.1);
- for risks relating to litigation involving the Group, also see Notes 9 *Taxes* and 16 *Litigation* to the consolidated financial statements, as well as Section 4.4 *Recent events*, where applicable;
- for risks relating to the vulnerability of the technical infrastructure and environmental risks, see Section 5.6.2 *Environmental information*;
- for financial risks, see:
  - Notes 7, 8 and 10 to the consolidated financial statements for asset impairments,
  - Note 11.8 to the consolidated financial statements for derivatives,
  - Note 12 *Information on market risks and fair value of financial assets and liabilities* to the consolidated financial statements for the management of interest rate risk, currency risk, liquidity risk, covenants, credit risk and counterparty risk, and equity market risk. The policies for managing interest rate, foreign exchange and liquidity risks are set by the Treasury and Financing Committee. See Section 5.2.3.3 *Executive Committee and Group governance committees*;
- for the insurance plan, see Section 5.4.7 *Insurance*;
- more generally, risk management policies throughout the Orange group are discussed in the Chairman's Report on governance and internal control. See Section 5.4 *Activity and risk management framework*.

2.4.1 Operational risks

Operational risks mainly include risks related to the telecommunications sector, risks related to strategy and the economic environment and risks relating to human resources.

The rapid growth in broadband use (fixed or mobile) and the emergence of new network access technologies allow global players in the Internet sector the opportunity to establish a direct link with telecommunications operators' customers, thus depriving the latter, including Orange, of a share of their revenues and margins. If this phenomenon intensifies, it could seriously impair the financial position and outlook of the operators.

The increased use of networks for value-added services has led to the emergence of new powerful players, the *Over-The-Top* providers (OTT). Competition with these players to control customer relations is growing and could erode the operators' market position. This direct relationship with customers is a source of value for operators and to lose part or all of it to new entrants could affect revenues, margins, the financial position and outlook of telecommunications operators like Orange.

In response, Orange has adopted a strategy aimed at making significant investments to increase the capacity of its transport and aggregation networks and to set itself apart based on the quality of the very high-speed broadband service offered, and supplying more innovative and attractive communication services.

There is, however, no guarantee that this strategy, and particularly the innovative nature of certain investments, will be sufficient to offset the pressure from new entrants. If the profitability of these investments could not be secured, the financial position and outlook of Orange could be affected.

The Group included in its *Essentials2020* plan the development of mobile financial services, concretized in 2016 by obtaining approvals for electronic money in Africa and by making an equity investment in Groupama Banque, then in the first half of 2017 through the launch of Orange Bank. These activities are likely to generate specific new risks or increase the impact of current risks.

The development of activities in the field of mobile financial services exposes the Group to new risks, inherent to this sector, such as money laundering, terrorist financing and non-compliance with economic sanction programs. In addition, the risks of fraud, cyber-attack, loss, unauthorized disclosure or communication of customer data and interruption to services (see below) could be particularly acute in the field of banking services.

Furthermore, entities of the Group having the status of a regulated financial institution could face a risk of non-compliance with banking regulations.

Lastly, the strengthened internal control system, required for activities within the field of financial services, which is currently put in place, may prove to be insufficient.

These risks are even higher since the Group's regulated financial institutions should experience an important transformation in the growth of their offers and activities, and an expansion of their customer base, in the coming years.

If these risks materialize, they could have a material impact on the Group's financial position, completion of its strategy and image.

Orange may face risks linked to customer data, notably for their disclosure to third parties or inappropriate modification. Its liability may also be triggered or its reputation damaged by its Internet access and hosting provider activities.

Orange's activities may trigger the loss, disclosure, unauthorized communication to third parties or inappropriate modification of the data of its customers or the general public, particularly their banking details, which are stored on its infrastructure or carried by its networks.

These losses could arise (i) from the implementation of new services or new applications, for example those relating to billing and customer relationship management, (ii) from the development of new activities in the field of connected objects, (iii) from malicious acts (such as cyber attacks) particularly aimed at personal data, or (iv) possible negligence within Orange or the Group's outsourcing partners.

Liability proceedings against Orange are possible in a lot of countries through legislation that has reinforced operators' obligations, and is becoming more stringent.

Moreover, Orange may in some countries be obliged to disclose personal data to third parties under legislation that would fail to offer the same protection as France, which could damage the Company's reputation and brand.

If they materialize, these risks could have a considerable impact on the Group's reputation and a high impact on its liability, including criminal liability, and hence have an adverse impact on the Group's future results.

Much of Orange's revenues is earned in mature markets where intense competition among operators to offer attractive prices and convergent offers could erode its profitability or market share.

The main markets in which Orange operates are mature or even saturated. In these conditions, Orange faces extremely tough competition, mainly on prices but also on the capacity to deliver convergent offers (fixed, mobile and very high-speed broadband), particularly with the recent emergence of cable operators such as SFR-Numericable in France.

In response, Orange has chosen to make significant investments in terms of innovation and continues to implement a transformation and fixed cost reduction policy. It has also decided to adjust its asset portfolio through acquisitions (such as those completed in 2016 in four African countries) or disposals. Orange has also committed to developing new activities such as mobile financial services and connected objects. Lastly, Orange actively participated in the attempt in early 2016 to consolidate the market in France.

Faced with this competition, if Orange is unable to successfully implement its strategy, it could suffer a loss of market share and/or shrinking margins. This situation could also occur in the event of a consolidation not involving the Group in a market where it operates.

For more information on competition, see Chapter 3 *Overview of the Group's business*.

Orange is exposed to the risk of an interruption of its networks and services following cyber-attacks, sabotage, outages or human errors affecting critical hardware or software, malfunctioning of network equipment, failure of a key supplier or network saturation.

Damage or interruptions to the service provided to customers may occur following cyber attacks (on networks and IT systems), outages (hardware or software), human errors or sabotage of critical hardware or software, failure of a critical supplier, or unsufficient network capacity to meet the growing usage needs, or during the implementation of new applications or software.

Among these risks of interruption, telecommunications operators are especially exposed to malicious actions and cyber attacks because of the vital nature of telecommunications in the functioning of the economy. Despite the steps taken by Orange to protect its network, the growing frequency of such attacks increases the risk of an interruption to its services.

As a result of the rationalization of the network based on the implementation of all-IP technologies, the increase in the size of the service platforms and the relocation of equipment into fewer buildings, such service interruptions may in the future affect a greater number of customers and more than one country simultaneously.

Although difficult to quantify, the impact of such events could seriously damage the Group's reputation, trigger its liability and result in a reduction of traffic and hence revenues, affecting its profits and outlook. If they were to occur on a nationwide or multinational scale, they might also create a crisis potentially affecting the security of the countries concerned.

The technical infrastructure belonging to telecommunications operators is vulnerable to damage or interruptions caused by natural disasters, fires, wars, acts of terrorism, intentional damage, malicious acts, or other similar events.

A natural disaster or other unforeseen incidents affecting Orange's installations could cause significant damage generating high repair costs. In most cases, Orange has no insurance for damage to its lines and must assume the full cost of the repairs itself. Furthermore, the damage caused by such major disasters may have more long-term consequences resulting in significant expense for Orange and which would harm its image, results and outlook. In addition, weather phenomena associated with climate change may grow in frequency and increase the severity of disasters and of the damage caused.

The scope of Orange activities and the interconnection of the networks mean that the Group is exposed to the risk of numerous frauds, which could reduce revenues and margins and damage its image.

As all operators, Orange is subject to various fraud issues which can affect the Company or its customers. Moreover, with technologies and networks becoming increasingly complex and the acceleration of implementation of new services or new applications relating notably to billing and customer relationship management, new types of fraud which are more difficult to detect or combat could also develop. In all these cases, Orange's revenues, margins, quality of service and reputation could be affected.

The Group could have a skills shortage in its activities due to numerous employee retirements or changing needs in the coming years.

The high number of employee retirements or early retirements that will occur by 2020 due to Orange's demography in France, as well as the need for new skills in the Group's growth areas, could affect Orange's ability to renew its skills base, which could affect the Group's ability to carry out its projects and development strategy. In these circumstances, Orange's results and outlook could be affected.

In the context of consolidation in the European telecommunications sector, Orange is likely to make significant acquisitions that could lead to integration risks.

After the acquisition of Jazztel in 2015, the Group participated in negotiations aimed at consolidating the market in France, which did not come to fruition. Nevertheless, if Orange should make other significant acquisitions as the sector continues to consolidate, it could face a risk of integrating newly acquired entities or businesses, which could have a material impact on its margins and profits.

Orange is relying on sources of growth in the countries where the Group has invested. Investments already made may fail to bring the expected returns and may generate unexpected commitments, and the Group could be faced with increased country risk, including from corruption. The Group's results, outlook and image could be impacted.

The Group's growth partly depends on its activities in geographical areas undergoing rapid economic development. Orange has thus invested in telecommunications companies located in the Middle East and in Africa. Political instability or changes in the economic, legal or social landscape in these geographical areas may call into question the outlook on profitability expected when these investments were made. International economic sanctions imposed on these countries could also have an impact on the value of these investments.

In addition, these geographical areas can pose difficulties or specific risks related to internal controls or non-compliance with applicable laws and regulations, such as anti-corruption rules. Despite the Group's drive to strengthen its anti-corruption policy, corruption cases could occur, which could have an adverse impact, particularly on the Group's image.

Other geographical areas where the Group operates, including central and eastern European countries, are also exposed to risks of geopolitical instability and non-compliance with applicable laws and regulations, which could threaten the outlook on profitability held when these investments were made.

If the expected growth in revenues from these various geographical areas is not achieved or if Orange is not able to render them profitable, the Group's financial position and results could be affected.

Telecommunications operators such as Orange may be affected by possible adverse health effects from exposure to electromagnetic fields from telecommunications equipment.

Following concerns raised in many countries regarding the possible health risks linked to exposure to electromagnetic fields from telecommunications equipment, public authorities have in general approved binding regulations and health authorities have issued various usage precautions.

The perception of a risk by the public could lead to a decrease in the number of customers and in their usage, lower consumption per customer, an increase in lawsuits, particularly against the presence of mobile antennas, and a hardening of regulations, with, as a consequence, a reduction in coverage areas, deterioration of service quality and an increase in network roll-out costs.

Although a consensus exists among health experts and health authorities including the World Health Organization (WHO) that thus far found no health risks from exposure to electromagnetic fields below the limits recommended by the specialist international commission (ICNIRP) have been established, Orange cannot predict the conclusions of future scientific research or studies by international organizations and scientific committees called upon to examine these issues. If an adverse health effect should one day be scientifically established, this would have a material impact on Orange's business, its brand and the income and financial position of the Group.

For further information, see Section 5.6.3.7 *Health and safety of customers*.

The Group markets its products and services mainly under the Orange brand. The strategy of diversification into new businesses and geographic expansion to new territories is conducted under a single brand policy which is a major asset of the Group today.

To this end, Orange has chosen growth drivers which are not necessarily in its core business, such as digital banking, or even using its business as a telecommunications operator in emerging countries where the political-financial context may be volatile. In this context, the Group pays close attention to preserving the value of the brand despite the operating risks which could adversely affect the Company's image, in particular in the mature mobile telephony sector.

If a severe financial crisis were to take place in the future, its impact on the business could depress consumption and materially affect Orange's results.

If a financial or economic crisis struck global markets, the macroeconomic situation could deteriorate, depressing household spending and business activity, which could materially affect Orange's revenues and results.

For further information on the impact of the economic situation on the Orange group, see also financial risks in Section 2.4.3 below.

Orange faces various internal and external human risk factors which could have a material impact on the Group's image, operations, and results.

Orange's promise to be a people-oriented and digital employer, inscribed in the *Essentials2020* strategic plan, could be affected by various human factors related to psycho-social risks, to personal safety, or to tensions in certain countries or areas. If they materialize, these risks could slow the roll-out of the Group's strategy and have a material impact on the Group's image, operations and results.

2.4.2 Legal risks

Orange operates in highly regulated markets, where its flexibility to manage its business is limited. Orange's business activities and results could be materially affected by legislative, regulatory or government policy changes.

In most countries in which it operates, Orange must comply with various regulatory obligations governing the provision of its products and services, primarily relating to obtaining and renewing telecommunication licenses, as well as to oversight by authorities seeking to maintain effective competition in the electronic communications markets. Furthermore, Orange faces regulatory constraints in some countries as a result of its historically dominant position in the fixed telecommunications market.

Orange's business activities and operating income may be materially adversely affected by legislative, regulatory or government policy changes, and in particular by decisions taken by regulatory or competition authorities in connection with:

- amendment or renewal on unfavorable conditions, or even withdrawal, of fixed-line or mobile operator licenses;
- conditions governing network access (primarily those in connection with roaming or infrastructure sharing);
- service rates;
- the introduction of new taxes or increases to existing taxes for telecommunications companies;
- consumerism legislation;
- merger policy;
- regulations affecting operators of competing sectors, such as cable;
- regulations governing data security;
- regulation of banking and financial activities and any similar regulations requiring compliance such as laws and rules on economic sanctions.

Such decisions could materially affect the Group's revenues and results.

For further information on risks related to regulations, see Section 2.2 *Regulations*.

Orange is continually involved in legal proceedings and disputes with regulatory authorities, competitors, government agencies or other parties. The outcome of such proceedings is generally uncertain and could have a material impact on its results or financial position.

Orange believes that, on a general basis and in all countries in which it is present, it complies with all the specific regulations in force, as well the conditions governing its operator licenses. However, the Company is not able to predict the decisions of oversight and legal authorities who are regularly asked to rule on such issues. Should Orange be ordered by the relevant authorities in a country in which it operates, to pay damages or a fine or suspend certain of its activities, due to non-compliance with an applicable regulation, the Group's financial position and results could be adversely affected.

In addition, Orange – particularly in France and Poland – is frequently involved in legal proceedings with its competitors and with the regulatory authorities due to its dominant position in certain markets and the complaints filed against Orange may be very substantial. In the past, fines of several tens of millions of euros and even several hundreds of millions of euros were imposed on the Group for concerted practices or for abuse of a dominant position, such as the 350 million euro fine imposed on December 17, 2015, by the French Competition Authority for illicitly stifling competition in the "enterprise" market since the 2000s. Finally, the Group may be the object of substantial commercial lawsuits with potentially very significant penalties. The outcome of lawsuits is inherently unpredictable.

In the case of proceedings involving European Competition Authorities, the maximum fine provided for by law is 10% of the consolidated revenues of the company at fault (or the group to which it belongs, as the case may be).

The main proceedings involving Orange are detailed in Notes 9 *Taxes* and 16 *Litigation* to the consolidated financial statements. Developments in or the results of some or all of the ongoing proceedings could have a material adverse impact on Orange's results or financial position.

The profitability of certain investments and Orange's strategy in certain countries could be affected by disagreements with its partners in companies that it does not control.

Orange operates some of its businesses through companies that it does not control. Articles of incorporation or agreements which govern some of these activities require that some major decisions, such as the approval of business plans or the timing and amount of dividends, need approval from the different partners. Should Orange and its partners disagree regarding these decisions, the profitability of these investments, their contribution to Orange's results and the strategy pursued by Orange in the countries in which these companies are located, could be adversely affected.

2.4.3 Financial risks

Liquidity risk

Orange's results and outlook could be affected if the terms of access to capital markets become difficult.

The tightening of prudential rules for the financial sector resulting from the "Basel III" and "Solvency II" regulations which seek to strengthen the capital held by banks and insurance companies, respectively, will constrain companies from increasing the share of their financing from the bond markets. Incidentally, the Quantitative Easing policy of the European Central Bank (ECB) increased the liquidity of these markets.

Orange finances itself mainly through the bond markets. A cessation of the unconventional policy of the ECB or an unfavorable development in the macroeconomic situation could restrict or make significantly more expensive Orange's access to its usual sources of financing through an increase in the margins applied to its borrowings.

Any inability to access the financial markets and/or obtain financing on reasonable terms could have a material adverse effect on Orange. The Group could, in particular, be required to allocate a significant portion of its available cash to service or pay off debt, to the detriment of investment or compensation for shareholders. In all cases, Orange's results, cash flows and, more generally, financial position and flexibility may be adversely affected.

See Note 12.3 *Liquidity risk management* to the consolidated financial statements, which sets out, in particular, different financing sources available to Orange, the maturity of its debt and changes to its credit rating, as well as Note 12.4 *Management of covenants*, which contains information on the limited commitments of the Orange group in relation to financial ratios and in the event of default or material adverse change.

Interest rate risk

Orange's business activities could be affected by interest rate fluctuations.

In the normal course of its business, Orange obtains most of its funding from capital markets (particularly the bond market) and a small part from bank loans.

Since most of its current debt is at a fixed rate, Orange has limited exposure to increases in market interest rates. Of course the Group is still exposed to interest rate increases for future financing.

To limit exposure to interest rate fluctuations, Orange from time to time makes use of financial instruments (derivatives) but cannot guarantee that these transactions will completely limit its exposure or that suitable financial instruments will be available at reasonable prices. In the event that Orange cannot use financial instruments or if its financial instrument strategy proves ineffective, cash flows and earnings may be adversely affected.

In addition, the costs of hedging against interest rate fluctuations could, generally, increase in line with market liquidity, banks' positions, and, more broadly, the macroeconomic situation (or how it is perceived by investors).

The management of interest rate risk and an analysis of the sensitivity of the Group's position to changes in interest rates are set out in Note 12.1 *Interest rate risk management* to the consolidated financial statements.

Credit-rating risks

If Orange's credit rating by the agencies is downgraded or placed under surveillance, or its outlook is revised by rating agencies, its borrowing costs could increase and in certain circumstances the Company's access to the capital it needs could be limited.

Orange's credit rating is partly based on factors over which it has no control, namely conditions affecting the telecommunications industry in general or conditions affecting certain countries or regions in which it operates, and can be changed at any time by the rating agencies.

The Group's financial rating and its outlook were downgraded in 2012, 2013 and 2014. This rating may be revised again at any time in light of evolving economic circumstances, or following a downturn in the Company's results or performance or simply due to a change in rating agencies' perceptions of these factors, which would have a material adverse effect on its results and financial position.

Risk of asset impairment

Orange has booked substantial amounts of goodwill following its acquisitions. Under accounting standards, impairment losses have in the past and may again in the future be recorded against goodwill and other assets in Orange's accounts, including those of Orange SA, which could reduce its ability to pay dividends. Orange's results and financial position could also be affected by a downturn in equity markets in the event that it carries out an equity transaction involving some of its subsidiaries.

At December 31, 2016, the gross value of goodwill recognized by Orange following completed acquisitions and disposals was 32.7 billion euros, not including the goodwill of associates and joint ventures.

The value in use of the businesses, which comprise most of the recoverable amounts and which support the book values of long-term assets including goodwill (and investment securities in the statutory financial statements) is sensitive to the valuation methods and the assumptions used in the models. It is also sensitive to any change in the business environment that is different to the assumptions used. Orange recognizes assets as impaired if events or circumstances occur that involve material adverse changes of a permanent nature affecting the economic environment or the assumptions and targets used at the time of the acquisition.

Over the past five years, Orange recognized significant impairment losses in respect of its interests in Poland, Egypt, Romania and Belgium, in particular. At December 31, 2016, the cumulative amount of goodwill impairment was 5.5 billion euros, not including the goodwill impairment of associates and joint ventures.

New events or adverse circumstances could conduct Orange to review the present value of its assets and to recognize further substantial impairment that could have an adverse effect on its results.

In addition, in the case of disposals or listings on a stock exchange, the value of certain subsidiaries could be affected by changes in the stock and debt markets.

For further information on goodwill and recoverable amounts (particularly key assumptions and sensitivity), see Note 7 *Goodwill* to the consolidated financial statements and Section 4.3.2.2 *From Group adjusted EBITDA to operating income*.

Credit risk and/or counterparty risk on financial transactions

The insolvency or deterioration in the financial position of a bank or other institution with which Orange has a financial agreement may have a material adverse effect on the Company and its financial position.

In the normal course of its business, Orange uses derivatives to manage exchange rate and interest rate risks, with financial institutions as counterparties. cash collateral is lodged with all bank counterparties with which the derivatives are contracted. Nevertheless, a residual credit risk may remain if one or more of these counterparties default on their commitments.

Moreover, Orange may in future have difficulties using its 6 billion euro undrawn syndicated credit facility, whose main maturity date is 2021, if several of the banks with which the Company has agreements were to face liquidity problems or could no longer meet their obligations.

Finally, its cash management investments expose Orange to counterparty risk if the financial institutions where it has invested should go bankrupt. See Note 12.5 *Credit risk and counterparty risk management* to the consolidated financial statements.

The international banking system is such that financial institutions are interdependent. As a result, the collapse of a single institution (or even rumors regarding the financial position of one of them) may increase the risk for the other institutions, which would increase exposure to counterparty risk for Orange. Orange's positioning in regulated activities in the banking sector focuses this risk on certain Group entities.

For customer-related credit and counterparty risk, see Note 12.5 and Note 4.3 *Trade receivables* to the consolidated financial statements.

Foreign exchange risk

Orange's results and cash position are exposed to exchange rate fluctuations.

In general, currency markets remained highly volatile during 2016 and at the start of 2017, increasing uncertainty over exchange rate fluctuations.

The main currencies in which Orange is exposed to a major foreign exchange risk are the Polish zloty, the Egyptian pound, the US dollar and the British pound sterling. Intra-period variations in the average exchange rate of a particular currency could significantly affect the revenues and expenses denominated in that currency, which would significantly affect Orange's results, as happened, for example, with the near 50% devaluation of the Egyptian pound in November 2016. In addition to the main currencies, Orange operates in other monetary zones, including certain emerging countries (African countries). A fall in the currencies of these countries would have an adverse effect on the Group's consolidated revenues and results. Based on 2016 data, the theoretical impact of a 10% rise against the euro in the main currencies in which the Group's subsidiaries operate would have cut consolidated revenues by 867 million euros (-2%) and reported EBITDA by 195 million euros (-2%).

Finally, as a result of focusing its development strategy on emerging countries, the share of Group business exposed to foreign exchange risk could rise in the future.

When preparing the Group's consolidated financial statements, the assets and liabilities of foreign subsidiaries are translated into euros at the fiscal year closing rate. This translation could have a negative impact on the consolidated balance sheet, assets and liabilities and equity, for potentially significant amounts, as well as on net income in the event of disposal of these subsidiaries.

Orange manages the foreign exchange risk on commercial transactions (stemming from operations) and financial transactions (stemming from financial debt) in the manner set out in Note 12.2 to the consolidated financial statements.

Notably, Orange makes use of derivatives to hedge its exposure to foreign exchange risk but cannot guarantee that suitable hedging instruments will be available at reasonable prices.

To the extent that Orange has not used hedging instruments to hedge part of this risk, its cash flows and results could be affected.

See Notes 11.8 *Derivative (excluding Orange Bank)* to the consolidated financial statements.

3. Overview of the Group's business

3

This chapter contains forward-looking statements about Orange, particularly in Section 3.1 *Overview of Business*. These forward-looking statements are subject to numerous risks and uncertainties that could cause actual results to differ materially from the results anticipated in the forward-looking statements. The most significant risks are detailed in Section 2.4 *Risk factors*. Please also consult the information under the heading *Forward-looking statements* at the start of this document.

3.1 Overview of business

The Group's business is presented in the Registration Document under the following operating segments: France, Spain, Poland, Belgium & Luxembourg, Central European countries, Africa & Middle-East, Enterprise, International Carriers & Shared Services, Orange Bank. Unless otherwise indicated, the market shares indicated in this chapter correspond to market shares in terms of volume.

3.1.1 France

3.1.1.1 The Telecom Services Market

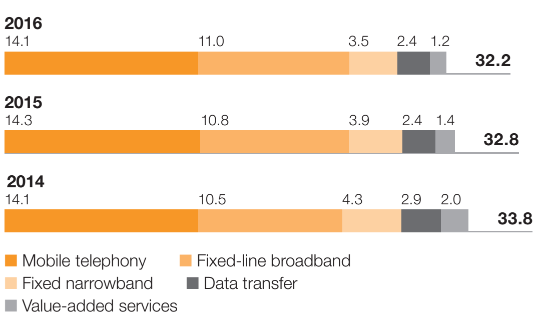
Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	66.7	66.4	66.1
Households (in millions)	29.1	28.9	28.7
GDP growth (in %)	+1.1%	+1.2%	+0.6%
GDP per capita (in PPP dollars)	42,384	41,475	40,703

Source: IMF October 2016 – INSEE.

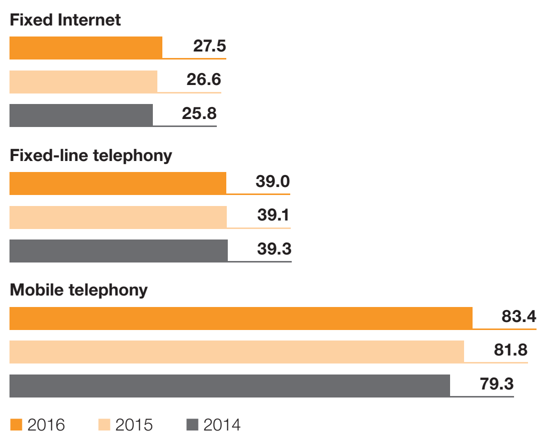
In 2016, the French economy grew positively by 1.1% and comparably to 2015.

Revenues from telecom services (in billions of euros)



Source: Arcep (year-on-year cumulative to Q3 of each year).

Number of customers (in millions)



Source: Arcep (Survey of Q3 of each year).

Telecommunications operators' revenues totaled 32.2 billion euros over 12 months, at the end of the third quarter of 2016, down by 1.6% in one year (source: Arcep, Q3 2016). While fixed-line telephony revenues continued their downward trend as a result of the steady decline in line numbers, fixed broadband revenues continued their growth due to the increasing number of accesses. The decline in revenues from mobile services, which was interrupted in 2015, resumed in 2016 due to the pressure from competition.

Fixed telephony market

Telephone contracts (39.0 million at September 30, 2016) continued on a downward trend (0.3% year-on-year at Q3 2016). In fact, the higher number of broadband telephone contracts (27.2 million in the third quarter of 2016, up by 1.1 million year-on-year) did not offset the declining number of PSTN contracts -1.2 million year-on-year). Fixed lines in voice over IP only (21.0 million at the end of September 2016, or +0.4 million year-on-year) have held the lion's share and have been expanding consistently. In addition, the number of fully unbundled lines, which stood at 11.6 million lines at the end of September 2016, was decreasing (Source: Arcep, Q3 2016).

The number of high-speed and very high-speed broadband Internet accesses was 27.5 million at September 30, 2016, up by 3.3%. The growth in the overall number of Internet accesses was entirely driven by the increased number of very high-speed broadband accesses, which accounted for 5 million accesses (Source: Arcep, Q3 2016).

The growth in revenues from fixed services (telephone and Internet), which totaled 16.9 billion euros over 12 months at Q3 2016 was driven by the increase in broadband and very high-speed broadband, which accounted for 65.1% of the overall revenues from fixed services (source: Arcep, Q3 2016).

So-called convergence offers (bundled fixed-line and mobile telephony, Internet access and TV) continue to grow. The increased use of the Internet was driven by the growth of social networks, TV, as well as music and video downloads.

Mobile telephony market

The total number of SIM cards reached 83.4 million at September 30, 2016. The 1.6 million rise in cards year-on-year at Q3 2016 remained driven by contracts. Conversely, the number of prepaid cards continued to fall with a decrease of 1.5 million (Source: Arcep, Q3 2016). Excluding Machine to Machine (M2M) cards, the number of SIM cards reached about 72.5 million, or a penetration rate of 109% of the population.

The market of dedicated connected object SIM cards continued to grow and the number of M2M cards reached 10.9 million at September 30, 2016. However, their increase was impacted by the withdrawal of about 1.5 million SIM cards by one operator in 2016. M2M SIM cards are used to connect remotely to devices (vehicle fleet tracking, remote reading of meters, sensors, alarms, remote interventions).

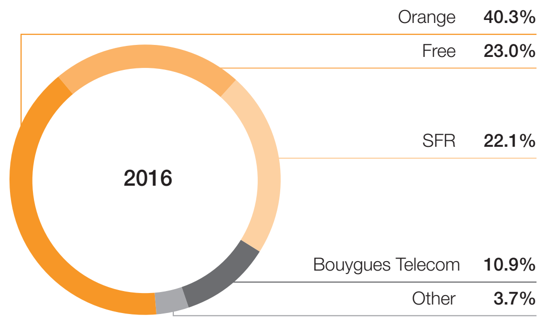
Outgoing traffic from mobiles reached 39.3 billion minutes at Q3 2016, an increase of 5.6% compared with Q3 2015. Changes in consumption trends continued to boost data services, the traffic of which grew by 86% at Q3 2016. Mobile services generated 14.1 billion euros in revenue over 12 months at Q3 2016, down by about 169 million year-on-year (Source: Arcep, Q3 2016).

The number of SMS and MMS sent (52.7 billion) during the third quarter of 2016 continued to rise, but at a slower rate (3.9% year-on-year). The number of MMS sent continued to grow annually at a fast rate (20% at Q3 2016).

3.1.1.2 The competitive environment

Fixed-line telephony and Internet

Broadband Internet market share



Source: Orange estimates (Q3).

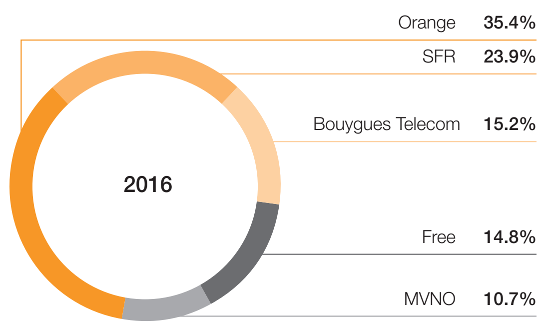
Orange is the leader of the French broadband market, ahead of its competitors Free, SFR/NC and Bouygues Telecom. At end-September 2016, Orange had a broadband market share of 40.3%, up by 0.4 points compared with 2015. Orange is also the market leader in convergence offers, with over 6 million customers subscribed to its *Open multi-line and Sosh* offers at the end of 2016.

Very high-speed broadband

In very high-speed broadband, Orange is the leader in the rollout of Fiber To The Home (FTTH) networks, with approximately 1.5 million customers at end-2016, or a market share estimated at 67.8% at end-September 2016.

Mobile telephony

Mobile market share



Source: Orange estimates (data as of end-September).

Orange is the leading player in the French mobile market, ahead of competitors SFR/NC, Bouygues Telecom, Free Mobile and all MVNOs. At end-September 2016, Orange had market share of 35.4% according to its own estimates, up 0.9 point year-on-year.

2016 was marked by the continued rollout of the 4G very high-speed mobile broadband and the growth in the number of 4G subscribers, which reached 11.3 million at end-December 2016 (up by 3.3 million year-on-year).

The prepaid market continued to fall sharply. The number of prepaid cards (11.6 million at September 30, 2016) continued to fall, by 1.5 million, on an annual basis, as did the number of active prepaid cards (Source: Arcep, Q3 2016).

3

3.1.1.3 Orange France's activities

Fixed-line telephony and Internet activities

Key indicators

	2016	2015	2014
Revenues (in billions of euros)	**11.0**	**10.9**	**11.0**
Retail fixed services	6.4	6.4	6.6
Wholesale Services	4.0	3.9	3.9
Other Services	0.6	0.6	0.5
Number of telephone lines (in millions)	**30.0**	**30.2**	**30.3**
o/w retail lines	16.0	16.3	16.6
o/w wholesale lines	14.0	14.0	13.8
Number of Internet customers (in millions)	**11.2**	**10.8**	**10.4**
o/w narrowband	0.0	0.1	0.1
o/w broadband	11.2	10.7	10.3
Voice over IP subscribers	10.2	9.6	9.1
ADSL or satellite TV subscribers	6.6	6.4	6.1
ARPU (in euros per month)			
Broadband Internet	33.3	33.0	33.3

Source: Orange.

Traditional fixed-line telephony services

Further to the rapid growth in full unbundling, Wholesale Line Rental, and wholesale naked ADSL access to third-party Internet service providers, traditional telephony service business is on the decline. The downward trend has nevertheless slowed down thanks to a marketing policy aimed at mainstreaming offers while offering more exhaustive services.

Online, Internet access and Multimedia services

At end-December 2016, Orange had a total of 11.2 million broadband Internet customers, an increase of 3.9% year-on-year. The growth of convergent offers continued in 2016, with the number of Open customers (fixed and mobile) reaching 7.8 million at end-2016 (+11.2% compared with December 2015). IP telephony had 10.2 million customers at end-December 2016 and continued to grow in 2016 (+5.7%). Television by ADSL and satellite grew by 2.9%, with 6.6 million customers at end-December 2016.

The broadband customer base increased by 3.9%, with a share of approximately 50% of new broadband and very high-speed broadband subscriptions over the year, thanks to the commercial success of fiber and convergence offers. The broadband ARPU improved by 0.9%, thanks to the greater share of fiber services within the customer base.

In May 2016, Orange launched a new *Livebox* improving the line and Wi-Fi speed, particularly with Orange's fiber. This new box provides new features such as the creation of storage spaces on a local hard drive, access to files stored on Orange's Cloud *via* an application, or mainstreaming of the installation process. In addition to its new *Livebox*, Orange launched a new TV decoder in May 2016 that makes it possible to improve customer experience, notably thanks to a wireless connection with the *Livebox* and the Ultra High Definition 4K technology quadrupling the picture resolution compared with High Definition, as well as a 3D sound with Dolby Atmos technology.

Internet portals and advertising management business

The Group's main Internet portal, Orange.fr, has multi-screen availability – web, mobile and tablet – and is amongst the five leading websites in France, with close to 25 million Internet users each month. As the leading French fixed Internet website, this portal ranks 5th after Google, Facebook, YouTube and Microsoft, with 19.5 million unique visitors each month. With 5.7 million unique visitors each day, orange.fr ranks 3rd in terms of daily web traffic, behind Google and Facebook. On mobile screens, orange.fr attracts 12.2 million mobile users as well as 5.2 million tablet users each month (source: Panel Médiamétrie/Netratings Audience, fixed Internet traffic, November 2016 – Global Internet, mobile and tablet, September 2016).

Content-related activities

See the *Content* subsection of Section 3.1.8.2 *Shared Services*.

Carrier services

Carrier services include interconnection services for competing operators and unbundling and wholesale market services (ADSL and fiber), regulated by Arcep. Carrier services as a whole are growing, in particular data collection and transfer services for carriers and access services to FTTH lines rolled out by Orange.

Mobile telephony activities

Key indicators

	2016	2015	2014
Revenues (in billions of euros)	**8.0**	**8.2**	**8.3**
Total number of customers (in millions)	**30.0**	**28.4**	**27.1**
o/w contracts	26.5	24.1	22.0
o/w prepaid offers	3.5	4.3	5.1
Number of MVNO customers	**0.7**	**0.8**	**1.1**
Total ARPU (in euros per month)	**22.2**	**22.5**	**22.8**
Contract ARPU	25.3	26.5	28.0
Prepaid ARPU	5.7	5.5	5.5
Total AUPU (in minutes per month)	**270**	**254**	**241**
Churn rate (in %)	22.4%	22.5%	24.8%

Source: Orange.

At the end of 2016, the total number of Orange mobile customers was 30 million, up by 5.7%. This was due to the significant growth in contracts (including M2M), while prepaid offers continue to decline. Orange increased its subscriber base to 26.5 million contracts at end-December 2016 (up by 9.7% compared with 2015), thanks to its segmentation strategy for the Retail and Enterprise markets and the development of M2M offers.

Orange is present in all market segments, including the entry-level market, offering contracts under the *Sosh* brand, available only on the Internet, with no commitment and no handset. *Sosh* had a total of 3.3 million customers at end-December 2016.

The number of Orange 4G customers was approximately 11.3 million at December 31, 2016, a year-on-year increase of 3.3 million customers. Since 2015, Orange only markets 4G offers, including so-called entry-level packages (*Sosh* Mini, Zen). Orange's key offerings have grown but remain divided into four main ranges:

- *Mini* offers are for customers who need only a small amount of Internet connectivity, but wish to use additional services (Orange *Cloud* and *TV*), as well as benefit from round-the-clock support including a loan telephone in the event of a fault, breakage or theft;
- the *Zen* offer allows for increased Internet connectivity and communications;
- *Play* offers are suitable for more intense Internet usage and international connectivity and allow for low-price smartphones upgrades;
- *Jet* offers are for customers wanting the best smartphones and very intense Internet usage in France and abroad.

Orange pressed ahead with its family-based strategy through its flagship *Open* offer and the development of multi-line *contracts*. The *Open* offers are available in the same ranges as traditional mobile offers (*Zen*, *Play* and *Jet*) and include the same level of service. This refurbishment increased the volume of offers on the core *Open* and Mobile ranges and also helped to improve the premium customer mix in 2016, as reflected by the growth of the contract customer mix (88.2% of customers at end-December 2016, compared with 84.9% at end-2015).

At the same time, the MVNO customer base hosted on the Orange network continued to decline (-7% year-on-year after -25% in 2015) due to the success of low-cost offers and heightened competition at the entry level.

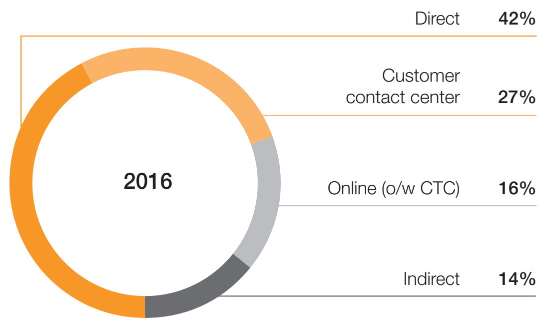
Average monthly Revenues Per User (ARPU) were down 1.3% at end-2016 compared with December 2015. This decline in average revenues compared with 2015 reflects a market that continues to be perturbed by regular and aggressive promotional campaigns as well as decreased revenues, particularly in Roaming.

Machine to Machine SIM cards continued to grow (nearly +50% year-on-year), reaching a total number of 5.7 million at end-December 2016. The M2M segment is one of Orange's growth drivers.

On the background of fierce competition and market restructuring, Orange has retained its leadership in the traditional business areas of access and continued to innovate by launching new services, such as *Orange Cash* mobile payments.

Distribution

Segmentation of distribution channels (as a % of sales actions)



Source: Orange.

Orange's distribution and customer relationship channels consist of:

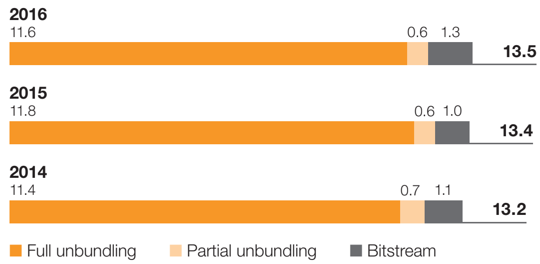
- digital channels which are growing with the setup of 100% digital customer journeys *via* the Orange online store on Orange.fr. This channel already makes it possible to market *Sosh* offers (*via Sosh*.fr) on physical networks as well as bringing simplicity and fluidity to our most digital customers. The digital channel is enhanced by the new multi-contracts version of the *Orange et Moi* mobile application, which makes it possible to manage its offers and options (Deezer, TV selection, pass data…) from a smartphone. Using the digital channel, customers can also ask to be called back to talk directly to an adviser (Click to Call or CTC). The digital channel accounts for 16% of sales actions;
- dedicated customer centers based on the type of services marketed (accounting for 27% of sales actions);

- a network of retail stores throughout France suitable for our customers' needs with the pursuit of the rollout of our Smartstore concept, which was launched in 2015 to offer an unrivaled experience. At end-2015, this network comprised 487 retail outlets owned by Orange (including 9 Megastores and 42 Smartstores), as well as 202 exclusive partners (including 12 Smartstores Gdt). Orange's own network corresponds to the direct distribution channel and accounts for 42% of sales actions, while the partners network corresponds to the indirect distribution channel and accounts for 14% of sales actions.

The Network

The fixed network

Fixed-line unbundling in France (in millions)



Source: Arcep (Survey of Q3 of each year).

Number of lines

	2016	2015	2014
Number of copper lines (in thousands)	29,502	30,144	30,576
Number of FTTH-connectible households (in thousands)	6,879	5,061	3,642
Number of NRA (in thousands)	18.5	17.5	16.5
Number of cross-connection points (in thousands)	94.8	94.7	94.5
Number of vDSL NRA (in thousands)	15.0	11.1	7.8

Source: Orange.

Fixed broadband coverage

(as a % of the population)	2016	2015	2014
< 512 Kbps	0.4%	0.5%	0.6%
≥ 512 Kbits/s ≤ 2 Mbits/s	5.9%	7.0%	9.9%
>2 Mbits/s	93.6%	92.5%	89.5%

Source: Orange.

In 2016, Orange accelerated again its very high-speed fixed broadband deployment program with about 7 million households connectable in FTTH, or a growth of 1.8 million households in 2016.

Actions to improve the network speed with a view to significantly improving the Internet experience of households and professional customers in rural areas were intensified with the Internet component of the *Orange Territoires Connectés* program that was launched on June 8, 2016: fiber deployment in town centers (subscriber connection node optimization, fiber to cross-connection point), participation in the FTTH networks managed by local public authorities (RIP) in local and regional authorities.

The mobile network

Coverage

(as a % of the population)	2016	2015	2014
GSM Voice/Edge	99.9%	99.9%	99.9%
3G (UMTS)/HSDPA	99.6%	99.0%	99.0%
4G (LTE)	87.6%	79.6%	74.1%
Number of 2G radio sites (in thousands)	20.8	20.6	20.4
Number of 3G radio sites (in thousands)	20.9	19.4	18.5
Number of 4G radio sites (in thousands)	10.2	8.3	6.9

Source: Orange.

2016 was marked by:

- the continued rollout of 4G sites, covering 87.6% of the French population;
- the expansion of coverage to locations where customers travel to, including tourism areas, stadiums, journeys by train (coverage of Paris-Lyon high-speed rail lines, euro 2016) or by car (coverage of main highways);
- the continued deployment of UMTS 900 in dense areas to improve reception inside housing.

Cluster, Transmission, and Transport Network

Fixed-line broadband access engineering (vDSL and FTTH) was simplified, as well as being made more flexible, and adapted to the sharp increase in traffic. Preparatory works for an experiment on the transition from traditional telephony services to IP telephony, planned over two years as at February 2017, were carried out.

3.1.2 Spain

3.1.2.1 The Telecom Services Market

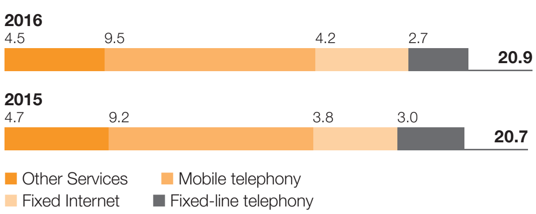
Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	46.4	46.4	46.5
Households (in millions)	18.4	18.3	18.3
GDP growth (%)	+3.1%	+3.2%	+1.4%
GDP per capita (in PPP dollars)	36,451	34,861	33,393
Unemployment rate	19.4%	22.1%	24.5%
Change in household consumption (in %)	1.8%	1.7%	0.6%

Source: INE, IMF (October 2016), Eurostat.

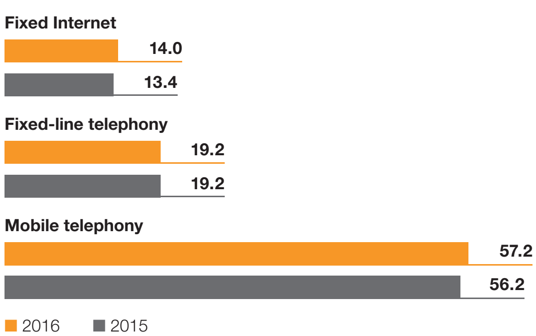
2016 was marked by an improvement in key macroeconomic indicators. GDP grew by 3.1% (compared with 3.2% in 2015), the unemployment rate fell to 19.4% (down 2.7 percentage points from 2015) and household consumption rose to 1.8% (from 1.7% in 2015).

Revenues from telecom services (in billions of euros)



Source: CNMC (Q3 2016 and estimates for Q4 2016, excluding audiovisual services).

Number of customers (in millions)



Source: CNMC (Q3 2016 and estimates for Q4 2016).

Revenue trends confirmed the recovery in 2016, with a growth of 1%, (compared with a decrease of 3.5% in 2015), associated with the growing usage of very high-speed broadband data, which in turn was boosted by the development of 4G and FTTH networks. In addition, convergence has become common-place on the market.

Fixed-line telephony and Internet market

The number of fixed telephone lines decreased by 0.1% in 2016, while the number of Internet customers reached 14 million, an increase of 4.9% (compared with +4.1% in 2015).

The Spanish market was marked by the growth of very high-speed broadband throughout 2016. Telefónica, Orange/Jazztel and Vodafone/ONO made massive investments in FTTH technology, which made it possible to reach over 31 million connected households at end-2016. The number of FTTH subscribers reached 5 million at end-2016.

Convergence is now the norm on the market. The number of mobile and fixed access convergence offers reached 10.9 million, i.e. over 78% of the overall customer base (source: Orange estimate). Convergence offers, including TV, also saw a strong growth, thereby accelerating the development of the audiovisual content market. At the end of 2015, 6 million customers had subscribed to TV services, attracted by the new football broadcast offers, richer content, and the arrival of major TV broadcasters (HBO, Netflix).

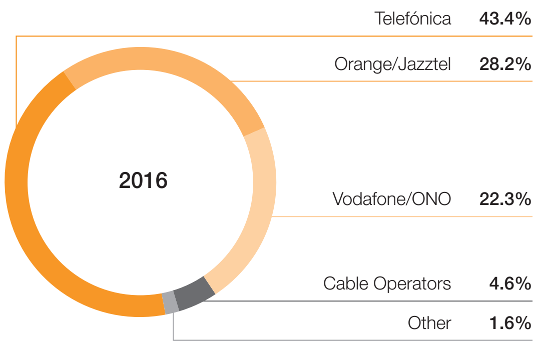
Mobile telephony market

The total number of customers rose by 1.8% in 2016, reaching 57.2 million. The proportion of contracts grew by 4.1%, reaching 44.4 million and accounting for 78% of the overall customer base. On the other hand, the number of prepaid customers fell 2.9% to 12.8 million. The number of convergence offer customers reached 20 million, accounting for over 51% of the overall customer base. Very high-speed broadband mobile services continued to grow. At the end of 2016, over 21 million customers had signed up to a 4G plan, corresponding to a 37% penetration of the mobile market (source: Orange estimate).

3.1.2.2 The competitive environment

Fixed-line telephony and Internet

Broadband Internet market share

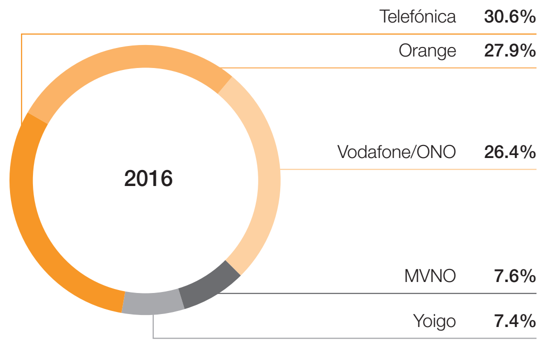


Source: CNMC (Q3 2016) and Orange estimates for Q4 2016.

The Internet market is dominated by three main players representing over 90% of the market, with market shares of 43.4% for Telefónica, 28.2% for Orange/Jazztel and 22.3% for Vodafone/ONO. In 2016, the market shares of Orange/Jazztel and Vodafone/ONO had increased by 0.1 and 0.2 percentage points respectively compared with 2015, whereas the market share of Telefónica had decreased by 0.3 percentage points.

Mobile telephony

Mobile market share



Source: CNMC (Q3 2016) and Orange estimates for Q4 2016.

The mobile market is dominated by three main players which account for almost 85% of the market: Telefónica (30.6%), Vodafone/ONO (26.4%), and Orange/Jazztel (27.9%). The market shares of Vodafone/ONO, Orange/Jazztel, Yoigo, and Telefónica grew to the detriment of MVNO, whose market share shrank by 2.9 percentage points.

3.1.2.3 Orange España activities

Fixed-line, Internet and mobile telephony activities

Key indicators

Key financial indicators	2016	2015	2014
Revenues (in millions of euros)	**5,014**	**4,253**	**4,355**
Mobile telephony	2,630	2,403	2,517
Fixed-line telephony and Internet	1,872	1,375	1,301
Mobile equipment	508	470	489
Other revenues	4	5	7
Number of broadband customers (in millions)	**3.94**	**3.75**	**3.52**
ARPU broadband Internet (in euros per month)	**31.4**	**29.2**	**27.9**
Number of mobile customers (in millions)	**15.9**	**15.2**	**14.5**
o/w contracts	12.7	12.0	11.2
o/w prepaid offers	3.2	3.2	3.3
Number of MVNO customers	**2.4**	**1.5**	**3.2**
Total ARPU (in euros per month)	**13.7**	**13.7**	**15.6**
Contract ARPU	16.2	16.6	19.7
Prepaid ARPU	4.9	4.9	5.0
Total AUPU (in minutes per month)	**206**	**204**	**189**
Churn rate (in %)	-25.4%	-26.8%	-29.0%

Source: Orange (Jazztel including six months in 2014 and 2015).

Following the successful integration of Jazztel into Orange España during the second half of 2015, both carriers turned into one company in 2016. Orange España based the strategy of the new company on the combined potential of the 4G and FTTH networks, boosted by improved services, the increased number of TV customers, and the expanded convergence of the customer base.

2016 was marked by a growth of 6.0% in revenues on a comparable basis (+17.9% on a historical basis), backed by increased revenues from services. Revenues generated by fixed services grew by 5.0% on a comparable basis, while mobile services continued to improve, with revenues of 2.6 billion euros in 2016, up by 7.7% on a comparable basis. The success of its convergence offers enabled Orange to expand its broadband customer base by 5% in one year.

Orange was able to significantly boost its very high-speed broadband (VHBB) capacity, with 9.6 million connectable households at end-2016. In 2016, Orange's FTTH customer base (including Jazztel) doubled, reaching 1.6 million subscribers at the end of the year.

TV offers also worked as growth drivers. At the end of 2016, *Orange TV* had 507,000 subscribers (corresponding to a 1.7-fold increase in the TV customer base from 2015), thanks to the success of the football broadcast offers and improved contents.

In respect of the mobile market, Orange maintained its position as top net seller and also expanded its subscriber base to 12.7 million, up 5.8% over 2015. Orange's strategy focuses on providing value-for-money, high-quality services, including low-cost offers, to meet the needs of all customer segments. Orange España reviewed its convergence offer by replacing it with an offer called *Love*, which was very popular, and introducing new high-value offers to meet the growing demand of data users. Orange España is also a key player on the *low-cost* market with offers available only on the Internet, *Amena* and *Simyo*, as well as *Mundo*, which targets migrants. *Simyo* reached 802,000 customers in 2016 and *Amena* 376,000. Moreover, Orange España markets a wide range of 4G offers, both for convergent and mobile-only customers, whose customer base, reaching 7.9 million in December 2016, increased by a factor of 1.5 in comparison with 2015.

Distribution

The Orange retail distribution network consists of 1,809 points of sale including:

- Orange's own shops;
- franchises;
- specialized shops under the Orange brand;
- specialized Jazztel stands and shops under the *Jazztel*, *Amena* and *Simyo* brands;
- non-exclusive specialized shops; and dedicated areas inside hypermarkets.

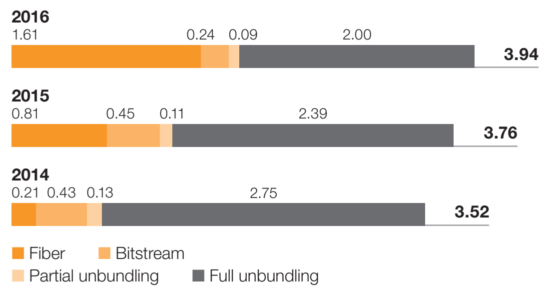
The on-line sales share continues to grow and now accounts for 16% of total sales (general public). Indirect distribution is also growing through new channels such as stands and kiosks. 4,000 agents perform sales over the telephone from 16 platforms.

In 2016, Orange España optimized its retail distribution network by transforming its outlets into *Smart Stores* focused on services and customer experience.

The network

The fixed network

Fixed-line unbundling in Spain (in millions)



Source: Orange.

Fixed broadband

Fixed broadband	2016	2015	2014
Number of accessible copper lines (in millions)	18.50	18.50	17.77
Number of FTTH-connectible households (in thousands)	9,600	6,800	830
Number of subscriber connection nodes (in thousands)	1,323	1,319	1,127

Source: Orange (December 2016).

With its fixed-access infrastructure, based on its fiber optic network and a vast ADSL rollout, Orange España can provide advanced telecommunications services, including broadband access, Voice over IP, TV streaming, VoD and advanced business services.

At end-2016, Orange was offering very high-speed broadband (VHBB) to 9.6 million households through its fiber optic network and the network infrastructure sharing agreement signed with Vodafone. Orange España also had telephone interconnections and ADSL with 1,323 main switches, thereby covering 82.6% of the population.

The mobile network

Coverage (as a % of the population)

Coverage	2016	2015	2014
2G Voice/EDGE	99.4%	99.4%	99.4%
3G (UMTS)/HSDPA	98.9%	97.6%	97.6%
4G	90.3%	84.6%	70.1%

Source: Orange.

The Orange mobile network covered 99.4% of the population in 2G technology, 98.9% in 3G, and 90.3% in 4G.

3.1.3 Poland

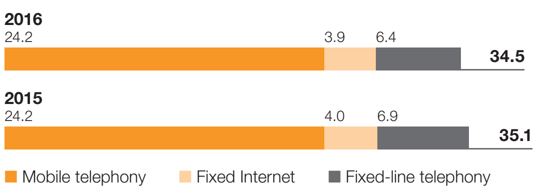
3.1.3.1 The Telecom Services Market

Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	37.9	38.0	38.0
Households (in millions)	N/A	14.1	14.0
GDP growth (in %)	+3.1%	+3.6%	+3.3%
GDP per capita (in PPP dollars)	27,714	26,500	25,286
Change in household consumption (in %)	3.6%	3.2%	2.6%

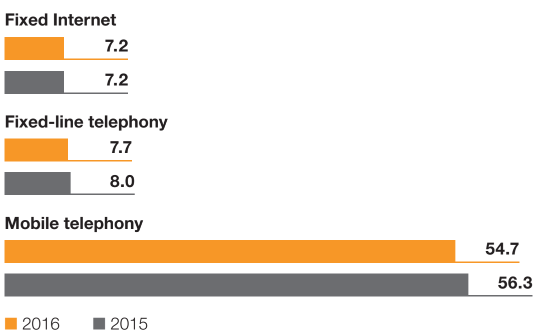
Source: Eurostat and IMF, October 2016.

Revenues from telecom services (in billions of zlotys)



Source: Orange Polska estimates.
1 zloty = €0.229189 (average rate in 2016).

Number of customers (in millions)



Source: Orange Polska estimates.

In 2016, the Polish economy continued to grow at a slightly faster pace than in 2015. At the same time, low oil and common consumer goods prices kept deflation at 0.6% in 2016, while the unemployment rate fell to 8.3% (source: Central Polish Bureau of Statistics). These factors had a positive impact on households disposable income and consumption, which grew more than 3.6%.

Fixed telephony market

The penetration rate of fixed lines continued to decline, shrinking by 5.0% in 2016 and accounting for 20% of the population at year-end, compared with 21% at end-2015. The total number of fixed broadband lines fell in 2016, resulting from the growth of LTE-based mobile broadband. This process was particularly marked in rural or less urbanized areas that are seldom covered by very high-speed broadband (fiber or cable) infrastructures.

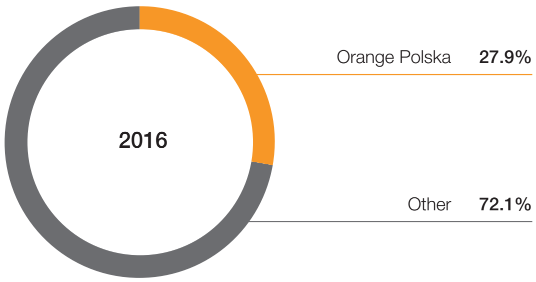
Mobile telephony market

The number of mobile telephony customers fell by 2.7% in 2016. This is mainly due to the implementation of a decree mandating the registration of all prepaid cards as well as carriers deactivating certain prepaid SIM cards that were generating neither traffic nor revenue. Following this decree, all carriers saw a decrease in their gross sales, with a decline in their casual users. At end-December 2016, the mobile penetration rate stood at 144.2% of the population.

3.1.3.2 The competitive environment

Fixed-line telephony and Internet

Broadband Internet market share



Source: Orange Polska estimates.

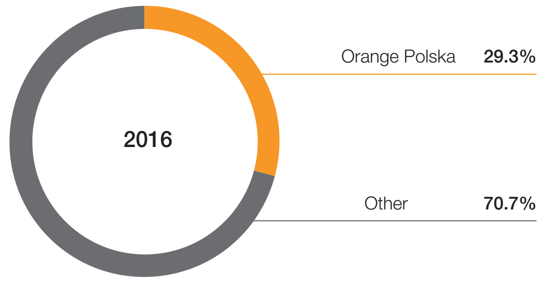
As in the case of fixed-line telephony, affected by a strong shift to mobile services for several years now, the growing success of mobile broadband has impacted the development of fixed broadband, which decreased in 2016. This trend gathered momentum as all mobile operators launched 4G services and attractive mobile broadband offers (in terms of prices or high or even unlimited data traffic), as well as improved geographical coverage. LTE technology was also used in Poland to offer mobile Wi-Fi broadband terminal services (for instance at home).

In the fixed broadband market, Orange Polska is still under strong competitive pressure from cable television operators, whose market share is climbing steadily. Their overall position on the market is constantly growing, mainly thanks to the success of their TV offers. The commercial offers of these operators are also backed by the investments they make in infrastructure to deploy the DOCSIS 3.0 standard and expand fiber access. Cable operators are also expanding their offers towards SoHo and SME client segments.

Alternative operators, primarily Netia, still make use of bitstream and unbundling services. However, the total volume of lines using bitstream access has been falling for several years now, and there were 110,000 unbundled lines at end-2016, compared with 131,000 a year earlier.

Mobile telephony

Mobile market share



Source: Orange Polska estimates.

Poland has four main mobile telephony operators: Orange Polska, T-Mobile (wholly owned by Deutsche Telekom), Polkomtel (operating under the PLUS brand, in association with broadcaster and satellite TV platform Polsat Cyfrowy, owned by Polish magnate Zygmunt Solorz-Zak), and P4 (held by Tollerton Investments Ltd and Novator Telecom Poland SARL, operating under the PLAY brand). In 2016, the four main mobile carriers represented 98% of the total number of active SIM cards in Poland.

Orange Polska's estimated market share had increased slightly to 29.3% at end-2016. The compulsory registration of prepaid cards led to a decrease in the customer base of all carriers. In 2016, Orange saw a sharp increase in its contract services – ranking second in terms of net sales on the market – as well as a growth for the third year in a row.

Growing differences in the methodologies used between operators in the calculation of SIM cards make it is increasingly difficult to compare the data presented by these operators.

3.1.3.3 Orange Polska's activities

Fixed-line telephony and Internet activities

Key indicators

	2016	2015	2014
Revenues (in millions of zlotys)	**5,117**	**5,699**	**6,072**
Number of Consumer telephone lines (in millions)	**3.9**	**4.2**	**4.5**
o/w traditional telephony	3.3	3.6	4.0
o/w VoIP (main line)	0.7	0.6	0.5
Wholesale lines sold (in millions)	**0.7**	**0.8**	**1.0**
Number of Internet customers (in millions)	**2.0**	**2.1**	**2.2**
Subscribers to ADSL or satellite TV offers	0.8	0.8	0.7
ARPU (in zlotys per month)			
Fixed telephone lines (STN/ISDN)	38.6	40.0	41.0
Broadband Internet, TV and VoIP	60.2	61.2	60.4

Source: Orange Polska.
1 zloty = €0,229189 (average rate in 2016).

Convergent solutions

A main strategic objective of Orange Polska is to lead in convergence, by marketing bundled fixed-line and mobile offers. Addressing households telecommunications needs in a comprehensive manner and getting mobile customers to buy additional services, convergence improved customer satisfaction and retention, as the customer renewal rate is much lower than that of single-service users. It also helps increase revenues and improves efficiency of expenses for information systems and marketing. In consumer services, Orange Polska is the only operator offering convergence solutions, which is a differentiating factor and gives it a competitive edge.

Orange Polska markets its *push* convergent solution, both on the consumer and business customer (small to medium size enterprises) markets. The main factors contributing to the expansion and appeal of convergence solutions are the rollout of the fiber network and the development of an IPTV offer based on content aggregation. The total number of services sold as part of convergence solutions reached nearly 4 million, or an average of more than four services used per customer.

Fixed voice

The number of fixed lines continued to fall, with a net loss of voice customers (traditional STN or VoIP). This decline could mainly result from structural demographic factors as well as the growing appeal of mobile services offering unlimited calls across all networks.

Orange Polska is pursuing its efforts to counter the decline in its fixed-line subscribers, mainly using convergence solution services.

Fixed broadband access

In 2016, Orange Polska recorded a fall of 68,000 fixed broadband accesses compared with 136,000 in 2015. This slower reduction results exclusively from an increase of 50% of the very high-speed broadband customer base. This increase was backed by significant investments in the fiber network and ADSL migration, which has become less and less competitive. Therefore, the share in very high-speed broadband services reached about 25% of fixed broadband accesses (compared with 15% at end-2015). Broadband ARPU slightly decreased in 2016, as the impact of significant price reductions in 2015 was partially offset by the cross selling of services.

Orange Polska's initiatives in the fixed broadband segment are aligned with the objectives announced in February 2016 as part of its medium-term action plan. Orange Polska focuses on a differentiated approach in large, medium-size and small cities, as well as rural areas, by taking into account local differences in the competitive environment, the potential in relation to population density, and customer needs. In large cities, Orange Polska is focusing on developing the FTTH coverage and improving its fixed broadband market share. Its main objective is to maintain its fixed broadband customer base by capitalizing on its excellent position in the mobile market through cross selling of fixed and mobile services. However, mobile technologies in rural areas are the first solution for broadband access.

Mobile telephony activities

Key indicators

	2016	2015	2014
Revenues (in millions of zlotys)	**6,421**	**6,141**	**6,140**
Total customers (excl. MVNOs – in millions)	**16.0**	**15.9**	**15.6**
o/w contracts	9.5	8.4	7.7
o/w prepaid offers	6.5	7.5	8.0
o/w broadband	2.7	2.0	1.5
Number of MVNO customers (in thousands)	**5.0**	**7.0**	**22.0**
Total ARPU (in zlotys per month)	**28.4**	**30.3**	**31.5**
Contract ARPU	43.8	49.2	54.0
Prepaid ARPU	12.2	12.7	12.4
Total AUPU (1) (in minutes per month)	**233**	**219**	**199**
Churn rate (in %)	**36.4%**	**39.4%**	**39.3%**
o/w contracts	11.4%	12.8%	13.6%

Source: Orange Polska.
(1) Excluding M2M SIM cards.
1 zloty = €0,229189 (average rate in 2016).

Orange Polska had around 16 million mobile customers at end-2016, slightly up by about 84,000, or +0.5% compared with end-2015.

Contract customers increased by 1.1 million, along with an excellent commercial momentum that started in 2015. This growth results from commercial activities and the acceleration of prepaid migration, as well as initiatives aimed at reducing churn rate. The distribution between new business, retail and M2M card customers is balanced.

On the other hand, the prepaid card customer base sharply fell. This is largely due to the compulsory registration of cards that came into force in July 2016. However, most of the decrease was in single-use and low-income revenue, and it has no significant impact on corresponding revenues.

The average revenues per subscriber decreased by 6% in 2016. This decrease results from multiple factors: successful offers with multiple SIM cards, development of offers with no handset purchases, handset credit sales (where the income share corresponding to the handset sale is excluded from the ARPU calculation), discounts related to convergence solution contracts, decreased prices mainly on the B2B segment, and a slower growth in incoming traffic compared with 2015.

Distribution

Orange Polska has different distribution channels: traditional physical points of sale (owned by Orange, franchised, or independent), online sales, call centers, and doorstep sales.

Orange Polska specifically focuses on developing the online sales channel, promoting the cross utilization of its various distribution channels, and upgrading its physical points of sale, in order to improve customer satisfaction and enhance its efficiency. At end-2016, Orange Polska held:

- approximately 755 points of sale and franchises, offering a complete range of mobile and fixed services. Moreover, Orange Polska progressively opened *Smart Stores* to ensure a more efficient customer service in more welcoming and innovative environments. Finally, Orange Polska operated 38 *Fiber Shops* dedicated to the fiber offer and located in close proximity to FTTH networked areas;
- an independent distribution channel with 740 distribution points of sale such as Media Markt, Saturn and Neonet;
- a rapidly growing online sales channel. As part of the fiber offer, Orange Polska introduced an option to check connection eligibility online and to reduce the purchase process. The progressive implementation of multi-channel solutions ensures customers that their applications are consistently processed, anywhere and at any time;
- a sales channel over the telephone, mainly used to retain customers and promote online sales conversion as part of cross selling, while the product and the contract are subsequently delivered by mail or picked up at the store;
- a doorstep sales channel for FTTH fiber optic which is the most efficient means of distribution to compete with cable operators.

The network

The fixed network

Fixed-line unbundling in Poland (in millions)

	2016	2015	2014
Total number of fixed lines	**3.9**	**4.4**	**5.0**
Full unbundling	0.1	0.1	0.2
Bitstream	0.2	0.2	0.3
Number of FTTH-connectible households (in thousands)	1,471	716	79

Source: Orange Polska.

In 2016, Orange Polska continued the deployment of its FTTH network, extending it to close to 1.5 million connected households in 37 cities. vDSL coverage also increased slightly, reaching approximately 4.8 million households. At the same time, migration of the aggregation network from ATM to IP continued in line with the pace of FTTH and vDSL development and customer demand.

The mobile network

Coverage

(as a % of the population)	2016	2015	2014
3G (UMTS)/HSDPA	99.6%	99.6%	99.4%
4G (LTE)	99.1%	83.7%	60.9%

Source: Orange Polska.

In 2015, the Group was awarded two 5 MHz frequency blocks, each in the 800 MHz band, and three 5 MHz frequency blocks in the 2,600 MHz band, which had been auctioned by the regulatory authority (UKE). After being awarded these frequencies, Orange developed the LTE technology using the 800 MHz band to expand the coverage of its mobile broadband access services, while the 2,600 MHz band was mainly used to increase the capabilities in areas where mobile data traffic was particularly high.

Orange Polska also continued its cooperation in sharing radio access networks (RAN) with T-Mobile. In December 2016, the network sharing was expanded to 800 MHz and 2,600 MHz bands. A joint company managing radio networks owned by Orange and T-Mobile, NetWorkS!, was also created as part of this cooperation.

At end (2016,) the coverage of Orange's LTE services reached more than 99% of the population and more than 90% of the country.

3.1.4 Belgium and Luxembourg

3.1.4.1 Belgium

The Telecom Services Market

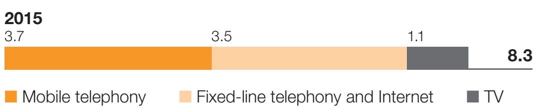
Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	11.3	11.2	11.2
Households (in millions)	N/A	4.7	4.7
GDP growth (in %)	+1.4%	+1.4%	+1.3%
GDP per capita (in PPP dollars)	44,881	44,148	43,105

Sources: Eurostat and IMF, October 2016.

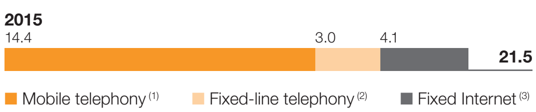
The Belgian economy continued to grow at a slightly faster pace in 2016 compared with 2015, backed by stronger household consumption. Inflation was greater than the average in the euro zone due to increased indirect taxation and salary indexation. The unemployment rate continued to decline in 2016, falling below 8% towards the end of the year.

Revenues from telecom services (in billions of euros)



Source: IBPT.

Number of customers (in millions)



Source: IBPT.
(1) including M2M.
(2) Residential.
(3) Broadband.

Fixed-line telephony market

Following the resumption of growth in 2015, the fixed-line telephony market in Belgium maintained a steady pace in 2016. The return to growth is mainly related to the residential market, particularly due to the higher prices for digital TV and fixed-line broadband services driven by a steady increase in the demand for these services. This positive trend largely offset the decline in fixed telephony services. The business market slightly decreased in 2016, mainly due to the decline in income from fixed-line telephony.

Mobile telephony market

In 2016, the mobile telephony market was marked by a strong demand for mobile data services. During the second half of 2016, most mobile telephony carriers introduced new offers on the market in order to meet the mobile data demand and to improve access to intermediate and higher pricing plans. The share of prepaid versus contract solutions is still changing in favor of contracts. This trend is backed by the success of contract convergence solutions, compulsory prepaid registration and the success of bundled offers combining services and handsets. Most handsets in the market are compliant with the 4G standard, which explains the steady increase in smartphone penetration.

The competitive environment

The competitive structure of the fixed-line telephony market remained relatively steady in 2016, with the predominance of the incumbent operator Proximus and regional cable operators Telenet, VOO and SFR. In December 2016, Telenet announced the acquisition of SFR owned by Altice.

Triple play offers remain expensive and all operators in the market announced price increases by early 2017. Cable distributors and Proximus announced their intentions to invest in their own networks. In terms of content strategy, cable operators focus on vertical integration by purchasing or producing exclusive content and controlling their broadcast channel, while Proximus aims to position itself more as an aggregator.

In the mobile telephony market, the number and position of operators changed in 2016 with the presence of three main operators instead of four, following the acquisition of BASE by the cable operator Telenet, in addition to many smaller MVNO. In line with 2015, operators increasingly focused on promoting convergent solutions, which have become the most important tool to expand their customer base and retain customers.

Following the decrease in prices between 2012 and 2014, contract prices have remained stable since 2015 (Source: IBPT). Price reductions were observed in offers that included prepaid data.

Orange Belgium's activities

In Belgium, Orange is operating through Orange Belgium (previously Mobistar) listed on the Brussels stock market. The Orange group holds 52.9% of the capital.

Operating indicators

	2016	2015	2014
Number of customers (in millions)			
Fixed lines	0.16	0.19	0.22
Mobile customers (excluding M2M)	2.97	3.04	3.04
ARPU (in euros per month)	**24.5**	**23.9**	**24**

Source: Orange Belgium.

2016 was a pivotal year for Orange Belgium, with the nation-wide launch of an Internet and TV offer and as the company was renamed to strengthen is position as a convergence operator in the retail and business market.

At end-December 2016, Orange Belgium's customer base (excluding M2M) stood at 2.97 million, including 2.25 million contracts, up by +1.8%, and included 0.72 million prepaid customers, down by -12.8%. The MVNO customer base was 2.04 million (+14.4%), with 0.83 million active M2M cards.

With its Internet and TV offer, Orange Belgium has become the first operator in Belgium to offer a nation-wide cable network, which led to a strong growth in its customer base.

Moreover, Orange Belgium reorganized all of its offers in 2016 by placing a strong emphasis on data. The number of Orange Belgium's smartphone users exceeded 2 million, including more than 1.4 million 4G smartphone users. Therefore, smartphones accounted for 68% of Orange Belgium's total customer base, while the penetration rate of 4G and 4G + smartphones reached 48% and 10%, respectively. At the end of December 2016, 4G traffic accounted for over 80% of total traffic. Customers opting for 4G show a higher level of satisfaction and consume more mobile data compared with other customers, which translates into a greater average income per subscriber. Hence in 2016, the ARPU grew by +2.7%.

The new name Orange Belgium, combined with the launch of convergence solutions, also contributed to the consolidation of Orange Belgium's position in the business segment by benefiting from the international strength of the Orange group's portfolio.

Distribution

At end-2016, Orange Belgium had 144 points of sale, in addition to 69 points of presence (shop-in-shops) in Carrefour and Media Market hypermarkets. As part of the transformation of its distribution network, Orange Belgium strengthened its direct channels and digitized them to increase the number of visitors and conversion rates, and to improve customer satisfaction.

Distribution and customer relationship networks of Orange Belgium comprise:

- a points of sale network across Belgium, easily accessible to all of its customers. In 2016, Orange Belgium also opened three Smart Stores;
- new digital channels, in particular the online Orange store. Customers can explore handsets, Internet offers, mobile and multimedia broadband offers marketed by Orange, and directly order them online for a home delivery;
- specialized customer centers based on the type of services on offer;
- a *Smart Service Network* that markets mobile, energy and TV services for the residential market and small companies. The *Smart Service Network* uses a relationship marketing strategy ("Multi Level Marketing" or "MLM"), which guarantees, with one thousand independent vendors, proximity, flexibility and improved customer experience.

The network

Coverage

(as a % of the population)	2016	2015	2014
3G (UMTS)/HSDPA	99%	99%	99%
4G (LTE)	99%	99%	88%
4G+	54%	21%	0%

Source: Orange Belgium.

Investment in mobile networks remained strong with the steady deployment of 4G, mainly to expand coverage within homes, and to invest in the core transmission network. At end-2016, Orange Belgium's 4G coverage was 99.6% of the population outdoors and 91.9% indoors. 4G+ coverage, which provides customers with a download speed up to three times faster than 4G, was 54.0%. In addition, Orange Belgium increased its investments in equipment installed on customer premises, such as decoders, modems and TV remote controllers, as well as in the corresponding activation and the installation costs for the Internet + TV offer.

3.1.4.2 Luxembourg

Key macroeconomic indicators

	2016	2015	2014
Population (in thousands)	576	563	550
GDP growth (in %)	+3.5%	+4.8%	+4.0%
GDP per capita (in PPP dollars)	101,936	99,505	96,163

Sources: IMF, October 2016.

In 2016, the Luxembourg market remained strongly focused on convergence. The use of voice services strongly decreased on fixed networks and remained unchanged on mobile networks, while data services sharply increased in volume, particularly on mobile networks. Mobile communication prices fell for most user profiles, both for contracts and prepaid.

The new generation FTTN/vDSL copper technology covered most of the country and cable reached more than 70% of households. Fiber optic coverage stood at more than 60% of households at end-2016.

The competitive environment

Orange Communications Luxembourg – a subsidiary of Orange Belgium – ranks third in terms of market share, behind market leader Post Luxembourg, a subsidiary of the incumbent operator, and Tango, a subsidiary of Belgian operator Proximus. Post Luxembourg also has the largest market share in the fixed-line and Internet market. In December 2016, Telenet acquired SFR Belux operations in the Grand Duchy of Luxembourg.

Orange Luxembourg's activities

At end-2016, Orange Luxembourg had 159,300 mobile customers, compared with 139,900 at end-2015, up by about +14%. Contract customers, backed by the convergent position of Orange Luxembourg, slightly increased, reaching 97,300, up by +6.3%. The ARPU decrease was slowed down by the introduction of new services in high-end offers. Broadband Internet and TV customers stood at 9,600. Orange Luxembourg expanded its Internet + TV offer by adding two new high definition channels. Moreover, as a promotion for its new convergent customers, Orange Luxembourg offered free installation and activation services.

3.1.5 Central European countries

3.1.5.1 Romania

The Telecom Services Market

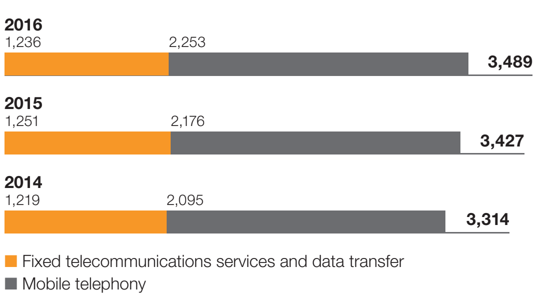
Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	19.8	19.9	19.9
GDP growth (in %)	+5.0%	+3.8%	+3.0%
GDP per capita (in PPP dollars)	22,319	20,872	19,827

Source: IMF, October 2016.

In 2016, the Romanian economy continued to grow, at a pace that was the fastest in Europe, driven by tax easing and wage increases boosting household consumption, as well as services and industry growth.

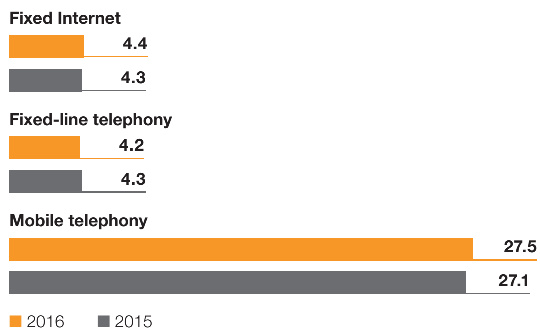
Revenues from telecom services (in millions of euros)



Sources: ANCOM and Orange Romania estimates.

The value of the telecommunication services market in Romania increased by 1.8% in 2016, as the mobile market is the main growth driver, while fixed-line telephony continued to decline.

Number of customers (in millions)

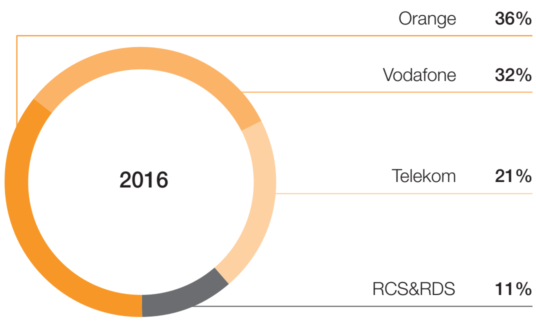


Source: Orange Romania estimates.

In 2016, the growth in the mobile market slowed down in terms volume at +1.5%, according to Orange Romania's estimates, although its value grew thanks to mobile data monetizing and customers' increased interest in abundance offers. Substantial investments in fiber and content purchase resulted in the growth of the fixed broadband and TV market while the fixed voice market continued to fall.

The competitive environment

Mobile market share



Source: Orange Romania estimates.

In 2016, the market focused on developing data services and 4G deployment was competitive. All operators marketed unlimited and abundance offers at competitive prices. In an increasingly competitive market in terms of prices, data abundance and prepaid offers, Orange saw a decrease in its market share in volume while dominating the market in value. Subsidized smartphone offers accelerated the migration from prepaid to contracts and promoted portability between operators. The market grew towards three convergence operators when Orange Romania joined Telekom and RCS&RDS in this market in Q3 2016.

3

Orange Romania's activities

Operating indicators

	2016	2015	2014
Number of customers (in millions)			
Mobile customers	10.1	10.2	10.5
ARPU (in euros per month)	**6.9**	**6.4**	**6.2**

Source: Orange Romania.

In 2016, the number of Orange Romania mobile customers stood at 10.1 million (including M2M), including 5 million subscribers, up by 3 percentage points compared with the previous year. This growth results from the 4G deployment, a wider smartphone penetration and the accelerated migration from prepaid to contracts. Orange continued to include more data in its offers, by reorganizing its portfolio and focusing it on families and households. These new offers increased customers' interest in tablets and smartphones, particularly when they are 4G-compatible. Orange maintained its leadership in 4G with 2 million customers at end-2016.

Orange entered the mobile financial services segment in November 2016, with the launch of Orange Money. Payment and fund transfer services are available to all customers nationally. Users can pay services, recharge prepaid cards, receive or send money, using their mobile phone. In September 2016, Orange launched *Orange Home*, its first convergence service offer, in more than 90 Romanian cities, making it possible to access up to 1 Gbits/s Internet, cable TV and fixed voice services.

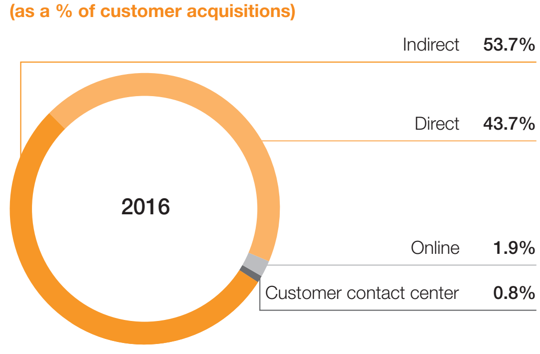
Orange TV service reached around 328,000 subscribers at the end of the year, and the *Orange TV Go* complemented its contents with more than 80 channels and 500 movies and TV series.

Orange continued to lead in terms of innovation through the launch of *Smart Home*, a connected objects solution, and the implementation of a *Smart City* solution in Alba Iulia.

Finally, Orange consolidated its position as an innovative service integrator for its business customers of any size, both through its *Orange Pro* contract offer and integrated solutions impacting directly their productivity.

Distribution

Segmentation of distribution channels (as a % of customer acquisitions)



Source: Orange Romania estimates.

In 2016, Orange Romania continued to optimize the performance of its distribution network by welcoming new customers in 18 Smart Stores, selecting better locations, digitizing its points of sale and renegotiating certain rental contracts.

The network

Coverage

(as a % of the population)	2016	2015	2014
3G (UMTS)/HSDPA	99.5%	99.3%	99.0%
4G (LTE)	80.2%	71.6%	62.4%
Number of 3G radio sites (in thousands)	5.5	5.0	4.4

Source: Orange Romania.

The implementation of the network sharing agreement with Vodafone to improve 2G and 3G coverage was finalized in 2016. Investment in the 4G mobile network continued in 2016 to cover 80% of the total population, and 97% of the urban population. This extended coverage enabled rapid adoption of smartphones and significant growth in data traffic and data service revenues.

3.1.5.2 Slovakia

The Telecom Services Market

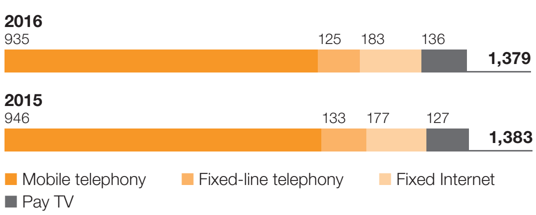
Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	5.4	5.4	5.4
GDP growth (in %)	+3.4%	+3.6%	+2.5%
GDP per capita (in PPP dollars)	31,182	29,758	28,447

Source: IMF.

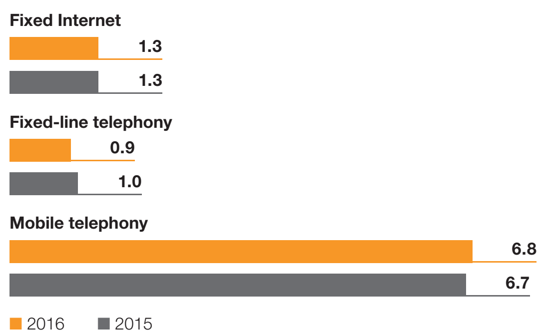
With its industry strongly oriented towards exports to Europe, the Slovakian economy continued to grow, by +3.4% in 2016. This growth is also supported by renewed domestic consumption and a decrease in the unemployment rate.

Revenues from telecom services (in millions of euros)



Source: Orange Slovensko estimates.

Number of customers (in millions)



Source: Orange Slovensko estimates.

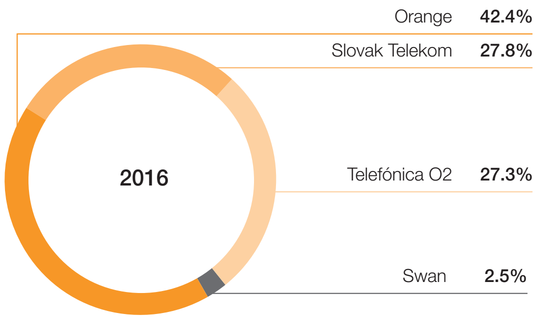
In 2016, the contraction of the telecommunication services market continued at -0.3%. The decline in traditional voice services (mobile and fixed) was partly offset by increased data and television services. The fixed Internet services and television services markets grew by 3.4% and 7.1% respectively.

The competitive environment

Broadband Internet market share

The fixed broadband market in Slovakia is dominated by the incumbent operator Telekom, whose infrastructure covers the whole country. Orange Slovensko, which rolled out its own fiber optic network to serve approximately 349,000 households in Slovakia, and has marketed DSL Internet services *via* a commercial agreement with Telekom, is ranked second in this market.

Mobile market share



Source: Orange Slovensko estimates.

Orange Slovensko competes with three other mobile operators: Telefónica O2, Slovak Telekom (100% owned by Deutsche Telekom) and Swan. The Slovak post and Swan started to offer mobile services in October 2015, only in prepaid formulas, available in all post offices. Orange Slovensko remains the market leader, with a market share of 42.4%, down by 1.2 percentage points. Slovak Telecom ranks second, down by 0.5 percentage points. O2's market share increased by 0.7 percentage points in 2016. The mobile market penetration rate is close to 124%.

Orange Slovensko's activities

Operating indicators

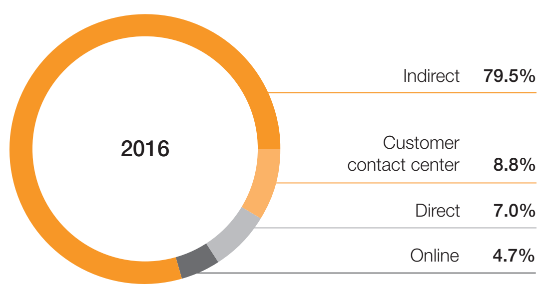
	2016	2015	2014
Number of customers (in millions)			
Internet lines FTTH	0.07	0.07	0.06
Mobile customers	2.883	2.896	2.84
ARPU (in euros per month)	**12.8**	**13.3**	**14.7**

Source: Orange Slovensko.

In 2016, Orange Slovensko's sales activities were mainly focused on maintaining its market position following the arrival of a fourth operator during the third quarter of 2015. Despite a slight decline in its customer base, of 10,000 customers, Orange maintained its leadership in terms of volume and value. Its offers are designed to position it as the best choice for families. Thus, 50% of households subscribed to Orange's *Family voice* offer. A new portfolio of mobile rates as well a new segmented convergence offers were launched to offset the decreasing value and as a competitive differentiator. Orange focused on innovation and introduced a number of new offers (children's traceability, in-built vehicle Wi-Fi, or innovations in the health sector).

Distribution

Segmentation of distribution channels (as a % of sales actions)



Source: Orange Slovensko.

Orange Slovensko sells its products and services through various distribution channels:

- 137 exclusive franchises selling only Orange products;
- resellers and distributors of prepaid cards;
- dedicated spaces in *Nay* electronic appliance stores;
- a dedicated team of approximately 50 members for VIP and SME customers and door-to-door salespersons specialized in fiber optic products and services;
- a specialized sales team within Orange Slovensko, dedicated to the acquisition and retention of business customers (key accounts);
- a customer service platform managed directly by Orange Slovensko;
- an online store where customers can buy Orange products, services and accessories.

The network

Coverage

(as a % of the population)	2016	2015	2014
3G (UMTS)/HSDPA	93.4%	93.0%	86.2%
4G (LTE)	80.0%	64.7%	30.2%
Number of 3G radio sites (in thousands)	1.93	1.83	1.72
Number of 4G radio sites (in thousands)	1.28	0.94	0.50
Number of FTTH-connectible households (in thousands)	349	342	333

Source: Orange Slovensko.

Orange Slovensko offers the best mobile broadband coverage, reaching 93.4% of the population. In 2016, the coverage of LTE and LTE+ were expanded to 80% and 25% of the population, respectively.

The expansion of the all-IP network continued to virtualize its resources. The Voice over LTE (VoLTE) experiment was launched at the end of 2016 with plans to market it in April 2017.

3.1.5.3 Moldova

The Telecom Services Market

Key macroeconomic indicators

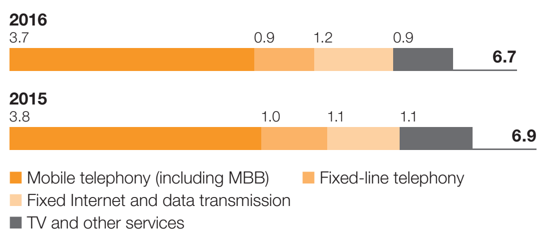
	2016	2015	2014
Population (in millions)	3.6	3.6	3.6
GDP growth (in %)	+2.0%	-0.5%	+4.8%
GDP per capita (in PPP dollars)	5,218	5,047	5,013

Source: IMF, October 2016.

In 2016, Moldova's economy was showing signs of recovery:

- the GDP grew by an estimated 2%, driven by domestic demand, while the decline in exports had a negative impact;
- inflation slowed down to 6.7% compared with 13.6% in 2015, which allowed Moldova's National Bank to lower interest rates;
- however, Moldova still depends on the funds from the European Union and the IMF to revive its economy.

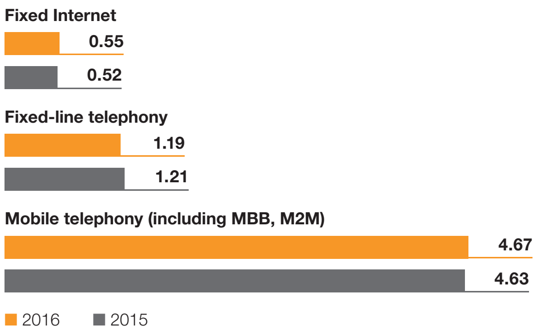
Revenues from telecom services (in billions of lei)



Source: ANRCETI (year-on-year cumulative to Q3 for each year).
1 leu = €0,045377 (average rate in 2016).

The value of the telecommunications market is estimated at 6.7 billion lei, down by 3.1% following the declining revenues from mobile and fixed telephony. The mobile market fell by 1.1% during the year, owing to the counter-effects of the 8.7% recovery in broadband revenues and the 1.8% decrease in telephony revenues due to the contraction of revenues from international traffic. The same situation was observed in the fixed-line market, where the growth of the fixed broadband access and data transfer market (+6.1%) was offset by lower fixed-line revenues (-8.6%). The main factors promoting the development of broadband access services have been the abundance of mobile and fixed broadband Internet offers, with an emphasis on 4G, and bundles with higher traffic volumes.

Number of customers (in millions)



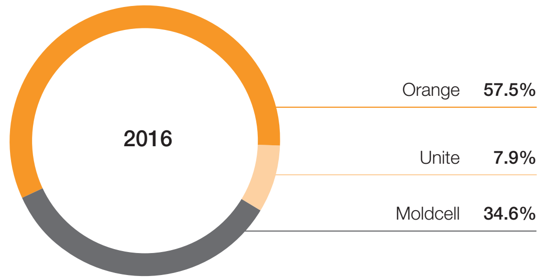
Source: ANRCETI (at Q3 2016).

The total market volume is estimated at 6.68 million customers at Q3 2016, up by 0.8% year-on-year. The mobile market slightly increased (+0.9%), while the fixed-line market declined due to the fall in fixed-line telephony customers (-1.7%), which was not entirely offset by the increase in the fixed Internet market (+4.7%).

The mobile penetration rate stood at 129.7% at end-2016.

The competitive environment

Mobile market share



Source: ANRCETI (at Q3 2016).

Competition in the mobile market remained stable overall, which enabled Orange Moldova to maintain its leading position, with a market share of 57.5% (-0.8 percentage points). Moldcell was up slightly to 34.6% (+0.2% percentage points) and Unite virtually maintained its market share at 7.9%. In addition, OTT operators competed with traditional telecommunications operators, particularly in international calls.

Orange Moldova's activities

Operating indicators

	2016	2015	2014
Number of customers (in millions)			
Mobile customers	2.19	2.14	2.22
ARPU (in euros per month)	**4.2**	**4.6**	**5.4**

Source: Orange Moldova.

Orange Moldova increased its billing revenues by 3% in 2016, thanks to price revision initiatives during the first half of the year and the migration from prepaid offers to contracts, which partly offset the declining international revenues.

Commercial efforts focused on 4G adoption, by:

- increasing 4G smartphone sales;
- accelerating the adoption of data offers as part of contracts as well a trial-before-buying options for prepaid customers;
- developing the digital experience among customers through *My Orange* App, and using social networks.

Orange Moldova's network was recognized as the best network in the country in terms of performance and quality with 4G coverage reaching 97,5% of the population.

In October 2016, OMD acquired 100% of Sun Communications, the main pay TV supplier in Moldova.

3.1.6 Africa & Middle-Eastern countries

3.1.6.1 Egypt

The Telecom Services Market

Key macroeconomic indicators

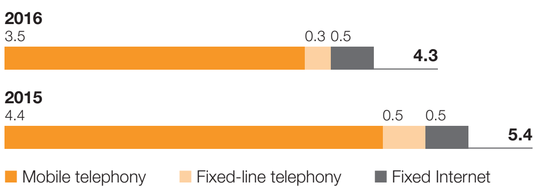
	2016	2015	2014
Population (in millions)	91.0	88.4	86.7
GDP growth (in %)	+3.8%	+4.2%	+2.2%
GDP per capita (in PPP dollars)	12,137	11,262	11,918

Source: IMF.

In 2016, the Egyptian government undertook economic measures to liberalize the Egyptian pound, partially eliminate energy price subsidies and increase interest rates. Following these measures, the pound lost more than half of its value, which significantly impacted both production costs and living standards. Inflation increased from 19.4% in November 2016 to 23.3% in December, and average short-term borrowings interest rates reached 16.3% in December (Source: IMF and Central Bank of Egypt).

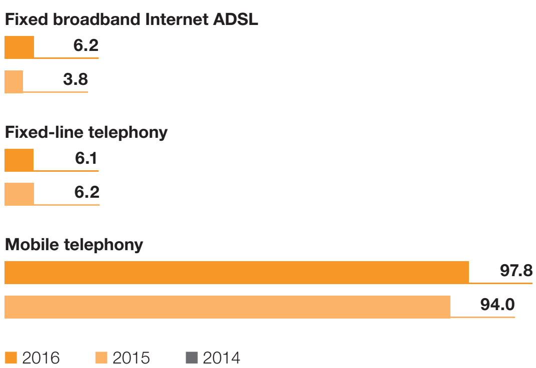
In addition, the Egyptian tourism industry is still suffering from security-related instability which, in turn, had a serious impact on roaming revenues.

Revenues from telecom services (in billions of dollars)



Source: Orange Egypt estimates.
1 US dollar = 0,903693

Number of customers (in millions)



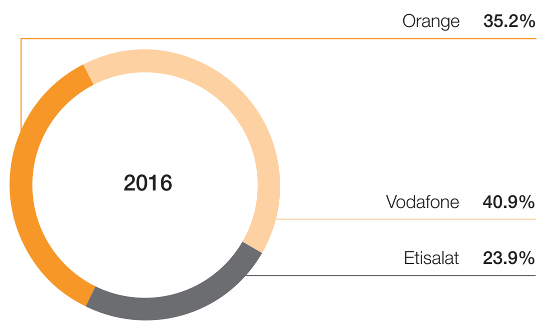
Source: Ministry of Communications and Information Technology (MCIT).

The National Telecom Regulatory Authority continued to impose restrictions on the sales of lines for security reasons, which led, for the first time in 2015, to a decrease in the number of mobile phone subscribers in Egypt. In 2016, mobile operators undertook measures to overcome and mitigate the impact of these restrictions, which resulted in a resumption of economic growth in the mobile market. The mobile telephony market in Egypt essentially comprises prepaid customers. Increasingly, operators are expanding their offers to the lower end of the market, reducing connection fees, offering cheap telephones and allowing customers to recharge small amounts. This strategy aims to attract middle-class and rural customers, and resulted in a decrease in the average revenue per user (ARPU).

At the end of 2016, the number of mobile subscribers reached 97.8 million, an increase of 4% year-on-year, or a penetration rate of 107% of the population. The number of ADSL subscribers reached 4.4 million, an increase of 17% year-on-year.

The competitive environment

Mobile market share



Source: BMI Research.

The Egyptian market is characterized by an increasingly competitive environment. Most competition is between mobile telephony operators, but is also moving increasingly into Internet and B2B markets. At the same time, OTT operators are competing in the traditional telecommunications segment.

Despite the highly competitive market and regulatory pressure, Orange successfully increased its customer base in 2016 and maintained its second place, with a market share of 35.2%, behind Vodafone, which remained the market leader with a market share of 40.9%, and before Etisalat in third position, with 23.9%.

Orange Egypt's activities

Operating indicators

	2016	2015	2014
Number of customers (in millions)	**33.9**	**33.1**	**33.7**
o/w contracts	6.8	6.2	5.8
o/w prepaid offers	27.1	26.8	27.9
ARPU (in euros per month)	**2.5**	**2.9**	**2.5**

Source: Orange.

Mobinil changed name to Orange in March 2016, notably to benefit from a powerful international brand, solid mobile customer relationship and a strong market footprint, a valuable customer base and a wide product range and competitive offers. Orange's market position is transitioning from an emotional bond with a brand perceived as that of an Egyptian company to an internationally recognized brand that offers state-of-the-art connectivity and services.

Orange's mobile customer base stood at 33.9 million at the end of 2016, with an increase of 2.4% compared with 2015. About 80% of mobile customers are positioned on prepaid offers. However, the proportion of prepaid customers decreased in 2016 due to the success of capped usage contracts. In euros, the annual revenues stood at 1.13 billion in 2016, a decrease of 15.3%.

Distribution

Orange sells products and services in Egypt through different distribution channels:

- 54 Orange stores;
- 55 franchise stores;
- 15 Orange kiosks;
- 144 express stores;
- 1,460 distribution and retail stores.

Network and licenses

Orange Egypt owns a GSM license and a 15-year UMTS-3G license obtained in 2007. A coverage plan detailed over five years accompanies the grant of the 3G license, and the Egyptian Telecommunication Regulatory Authority (NTRA) guaranteed to Orange the grant of other frequency bands, the possibility of applying a special rate to its customers for communications within the Orange network (on net mode), and the reservation of a new network code. Additional spectrum was acquired in 2013.

In October 2016, Orange Egypt acquired an LTE license with additional 10-MHz spectrum for 484 million of dollars, for a rollout in 2017, as well as a fixed virtual network operator (FVNO) license for 11.3 million dollars.

3.1.6.2 Senegal

The Telecom Services Market

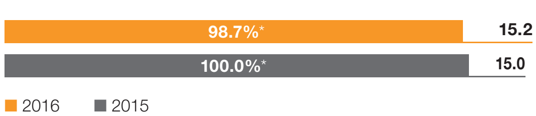
Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	15.4	15.0	14.5
GDP growth (in %)	+6.6%	+6.5%	+4.3%
GDP per capita (in dollars PPP)	2,578	2,456	2,349

Source: IMF, October 2016.

With a population of 15.4 million, Senegal is West Africa's third-largest economy.

Number of mobile customers (in millions)



Source : ARTP, fourth quarter 2016.
* Penetration rate (as a % of the population).

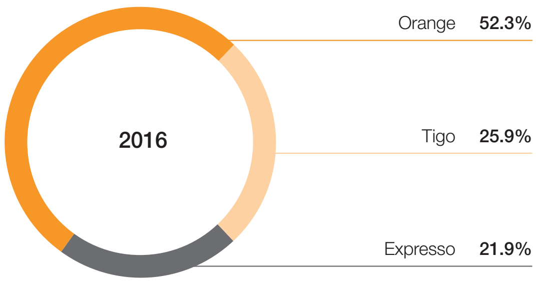
The mobile market reached 15.2 million SIM cards in 2016, a slight growth of 1.5%, which means 227,000 more customers than in 2015, despite the implementation of compliance measures for subscribers bases, resulting in the termination of customers who did not fulfill the identification criteria as defined by regulating authorities. At the same time, the mobile penetration rate decreased from 100.0% in 2015 to 98.7% at the end of 2016.

The regulated mobile call termination rates dropped again in 2016 along with the reintroduction of asymmetry (from 12 to 9 CFA francs per minute for Orange and from 12 to 11 CFA francs for competitors).

Sonatel, an entity through which Orange operated in the country, secured in 2016 the renewal of its concession to operate its networks in Senegal for 17 years, and acquired spectrum to operate the 4G network.

The competitive environment

Mobile market share



Source: ARTP, fourth quarter 2016.

The telecommunications market in Senegal comprises three players: Orange, Tigo-Sentel (subsidiary of the Millicom International Group) and Expresso Sénégal (subsidiary of Sudan Telecom). Despite a highly competitive market, notably for abundance offers and data services, Orange retained its first place in 2016, even though its mobile market share dramatically decreased owing to the termination of customers who do not satisfy the new identification criteria. This performance results from the strengthened commercial offers and activities, notably those developed around the mobile data services. With the democratization of smartphones, the development of the mobile network, the constant improvement of service quality and the enrichment of offers made it possible for Orange to benefit greatly from the explosion of mobile data applications.

Orange Senegal's activities

Operating indicators

	2016	2015	2014
Number of customers (in thousands)	**8,276**	**8,797**	**8,493**
Fixed lines	278	283	291
Internet lines (ADSL)	98	101	105
Mobile customers	7,900	8,413	8,097
Mobile ARPU (in euros per month)	**4.6**	**4.5**	**4.7**

Source: Orange Senegal.

The number of Orange mobile customers almost entirely comprises prepaid options. After a growth of 3.9% in 2015, Orange's subscribers base decreased by 6.1% in 2016 following the implementation of compliance measures for subscribers bases, resulting in the termination of more than customers who did not fulfill the new identification criteria.

Despite the decrease in the mobile subscribers base and the reduced average price for voice services following the increase in the level of free abundance offers, the ARPU remained fully stable compared with 2015 in view of, on the one hand, an enhanced monetization of mobile data applications and value-added services, and, on the other hand, the development of Orange Money. This relative stability for the ARPU is all the more notable in that it is part of contracting mobile call termination revenues impacted by the asymmetrical decrease of mobile interconnection rates.

The development of the mobile Internet offer continued in 2016 with the *3G and 4G Pass Internet* options sold by retailers from 100 CFA francs. As for the Orange Money mobile payment offer, which had close to 1.1 million active customers at the end of 2016, or 14% of the mobile customer base, it fully benefited from the expansion of the partnership with new players in merchant payment and invoice payment as well as the launch of new offers, which led to significant growth in the volume of transactions (+73%) compared with 2015.

Distribution

Orange's distribution network is made up of:

- one center bringing together the direct distribution network's commercial activities around seven regional sales departments and managing 37 directly owned stores, 11 of which are in Dakar;
- and one branch dedicated to the development of sales by indirect networks, which notably comprise 116 Orange stores and 60,360 indirect partners (wholesalers – semi-wholesalers – retail vendors).

3.1.6.3 Ivory Coast

The Telecom Services Market

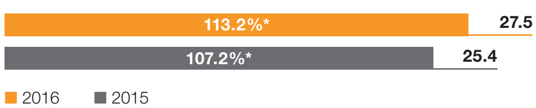
Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	24.3	23.7	23.1
GDP growth (in %)	+8.0%	+8.5%	+7.9%
GDP per capita (in dollars PPP)	3,581	3,359	3,141

Source: IMF, October 2016.

2016 saw the consolidation of economic gains and the pursuit of the private sector reforms of the National Development Plan covering 2016-2020, for a total cost of 30,000 billion CFA francs (45.7 billion euros). This plan, which includes 58 reforms as identified by the government, should help further improve the business environment in the country in 2017. The political and institutional environment should be strengthened with the establishment of the 3rd Republic in 2016.

Number of mobile customers (in millions)

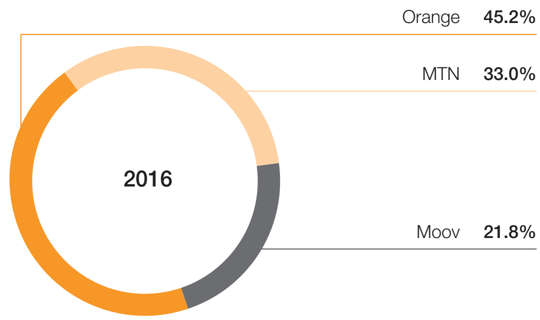


Source: ARTCI.
* Penetration rate (as a % of the population).

Although during Q1 2016 two operators (Koz and GreenN) withdrew from the market, between 2015 and late September 2016, the mobile market grew from 25.4 to 27.5 million SIM cards, an increase of 8.3%. At the same time, the penetration rate increased significantly to 113.2%, notably following the expansion in the number of consumers with multiple SIM cards and the number of abundance offers, as well as falling communication prices and handset costs.

The competitive environment

Mobile market share



Source: ARTCI.

2016 was marked by a stronger competition, both in voice offers and mobile data offers. Within this context, Orange Ivory Coast successfully improved its market share, which stood at 45.2% at the end of 2016 (compared with 42.5% at the end of 2015), therefore consolidating its first place before MTN. This performance not only results from an active acquisition strategy, but also from the segmentation and differentiation of offers, including those developed around mobile data services.

The level of competition in the market should remain high in 2017 following the grant of the 4th global license to Libyan Post Telecommunication and Information Technology, as a substitute for the four smaller operators.

Orange Ivory Coast activities

Operating indicators

	2016	2015	2014
Number of customers (in thousands)	**12,754**	**11,111**	**9,166**
Fixed lines	278	264	231
Internet lines (ADSL)	69	49	39
Mobile customers (incl. MBB)	12,407	10,798	8,896
ARPU (in euros per month)	**5.0**	**5.5**	**6.1**

Source: Orange.

The number of fixed lines of Orange Ivory Coast represents a low percentage of the total number of customers, due to strong competition from the growth of mobile. There was strong growth in the mobile broadband market, with the arrival of 3G.

In addition, Orange Ivory Coast had approximately 69,000 ADSL Internet customers at the end of 2016, an increase of 41%, thanks to the launch of a new ADSL range and the promotion that was led for Parents' Day.

Distribution

Since the operational merger of Orange Ivory Coast and Côte d'Ivoire Télécom in 2010, Orange has had the leading network of retail stores in the country's telecom sector, with a total of 137 of these, including 37 that were directly owned and 100 franchises at end 2016. Indirect distribution is managed through a network of 14 exclusive partners comprising close to 80,000 retailers.

In 2016, Orange Ivory Coast continued to offer training to its partners, to help them build their business skills. Outreach activities were also carried out among all the distribution network to support the growth of Orange Money's services, including the rollout of Millenium kiosks.

3.1.6.4 Jordan

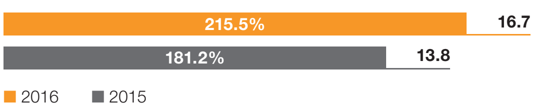
The Telecom Services Market

Key macroeconomic indicators

	2016	2015	2014
Population (in millions)	7.75	7.59	7.42
GDP growth (in %)	+2.8%	+2.4%	+3.1%
GDP per capita (in PPP dollars)	11,125	10,902	10,789

Source: IMF, Q3 2016 – figures excluding refugees and expatriates.

Number of mobile customers (in millions)

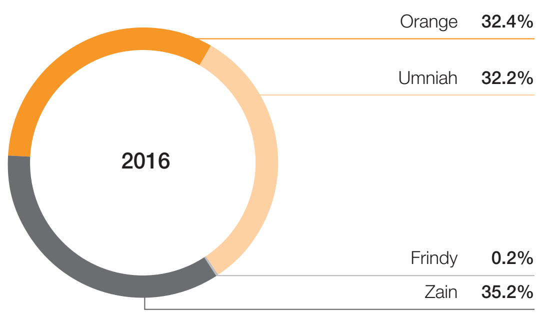


Source: TRC, Q3 2016 – figures excluding refugees and expatriates.

The mobile market grew from 13.8 million SIM cards at the end of 2015 to 16.7 million in 2016. The mobile telephone market increase was driven by competition, with abundance offers for data taking over from prepaid voice offers, together with the regular growth in broadband mobile services.

The competitive environment

Mobile market share



Source: TRC.

Jordan has three large mobile operators. Orange remained in second place in the mobile market, with a 32.4% market share. Strong competition continued to be the main trend in 2016, as all operators extended 4G offers and introduced mixed data and voice offers to take advantage of the tax rate difference between voice and mobile data.

Orange Jordan's activities

Operating indicators

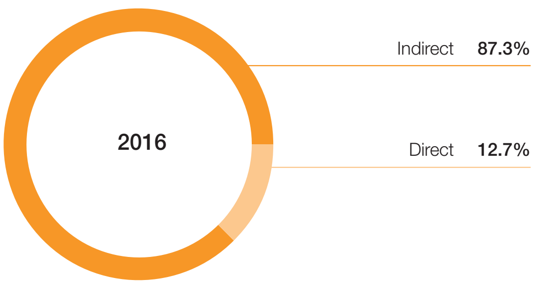
	2016	2015	2014
Number of customers (in thousands)	**4,415**	**3,654**	**3,776**
Fixed lines	404	430	433
Internet lines	202	214	206
Mobile customers	3,809	3,010	3,137

Source: Orange Jordan commercial base.

Orange had a total base of 4.4 million customers at the end of 2016, including 3.8 million mobile customers. The mobile customer base increase is mainly due to the mobile data services growth following the replacement of fixed Internet with mobile broadband and the strong competition in fiber. Orange continued to roll out a full range of Internet services based on ADSL and fiber technologies and on the implementation of abundance offers to better meet customers' expectations.

Distribution

Segmentation of distribution channels (as a % of customer acquisitions)



Source: Orange Jordan.

Indirect distribution is Orange Jordan's main distribution channel, due to the fact that prepaid card sales represent the majority of its sales. Orange stores and customer contact centers make all sales in relation to fixed-line telephony services, ADSL, mobile and Enterprise. Orange Jordan has launched an online sales service since 2014.

3.1.6.5 Botswana

With three mobile operators (Orange Botswana, Mascom Wireless Botswana and Botswana Telecommunications Corporation Limited or BTCL), the mobile telecommunications market further grew in 2016, despite a high penetration rate. 2016 saw the admission of BTCL on the stock market, after the merger of its fixed and mobile operations under the Be-mobile brand to create a convergence operator named BTC, and the launch of Mascom's 4G mobile services as well as the *Flybox* (mobile Internet router).

Orange remained in second place in the mobile market, with a market share of 32% (source: Botswana Communications Regulatory Authority), and a base of 906,000 subscribers at the end of the year (source: Orange Botswana).

Wholesale mobile services are provided by Botswana Fiber Networks (BoFiNet) and a newcomer, Liquid Telecom, in collaboration with the electricity operator Botswana Power Corporation (BPC).

Orange was the first mobile operator to launch 4G services and continued to expand its 4G coverage in 2016, which stood at 30% at the end of the year. Orange covers 55% of the population with its 3G services, and most of the population with mobile services (Source: Orange Botswana). The Orange Money solution maintained its position as a leading provider of mobile payment services, with a market share of 68% (source: Botswana Communications Regulatory Authority).

Orange has a distribution network of 15 stores around the country, plus an indirect distribution network made up of retail chains and wholesalers. At the end of 2016, the first Smart Store had been launched.

3.1.6.6 Burkina Faso

Burkina Faso holds a strategic geographic location at the heart of Western Africa, between Ivory Coast, Mali and Niger. The country has a predominantly rural population, estimated at 18.4 million. The country is characterized by a long period of political stability which has allowed average economic growth of 5.5% between 2011 and 2016.

The operator acquired in 2016 by Orange in Burkina Faso is the country's second largest operator with almost 6 million mobile customers, a gain of 700,000 in 2016, and a market share of 36%. An increasing share of its subscriber base, one-third in 2016, is a consumer of data services. Mobile financial services are also booming with more than 3.4 million users at end-2016, which represents a market share of around 95%.

3.1.6.7 Cameroon

The telecommunications market in Cameroon grew by 4.6% despite a slight decline due to stricter regulations on subscribers' identification.

Orange Cameroon finished 2016 with a base of 5.8 million active mobile customers, a decrease of 1.2 million compared with 2015, impacted by the implementation of the new regulations on subscribers' identification.

In 2016, trends previously observed in the Cameroonian telecommunications market continued, such as greater competition, resulting in price pressure and a progressive substitution of voice and SMS applications by data communications and value-added services.

In response, Orange Cameroon launched a large program to expand its 3G and 4G coverage and upgrade its access network, with a view to align its network capabilities with new applications and the development of high- and very high-speed broadband.

Furthermore, Orange Cameroon consolidated its leading position in mobile payments thanks to the numerous innovations of its Orange Money service. An Orange Money Visa card was launched in December.

3.1.6.8 Guinea-Bissau

The mobile market in Guinea-Bissau, mainly focused on voice applications, continues to grow with a penetration rate of approximately 76.5% (source: TeleGeography). As the most recent entrant in a market shared by two operators, at the end of 2016, Orange confirmed its leading position in the mobile market in terms of volume and value. Orange Bissau had close to 600,000 active mobile customers at the end of 2016 (+7.3% compared with 2015), or a market share of 52%. Orange Bissau was the first operator to launch the 4G network in the Africa region at the end of 2015. Through the introduction of this new technology, Orange Bissau's base had reached more than 58,000 mobile data subscribers at the end of December 2016, compared with 27,000 in December 2015. Orange Bissau is the leader on the Internet market.

3.1.6.9 Guinea-Conakry

Orange Guinea, the 4th company to join the telecommunications market in 2007, has maintained its leadership since 2013, closing 2016 with a market share of 57.6%, or more than 6 billion subscribers. Voice traffic still dominates mobile usage, but mobile Internet, value-added services and mobile payments are growing. As a result, the Orange Money service had a total of more than 509,000 active customers at the end of 2016. At the end of 2016, Orange was the only operator in Guinea-Conakry to cover all of the sub-prefecture capitals both in 2G and 3G. The operator has a direct distribution network comprising 22 branches and an indirect network of 250 stores.

3.1.6.10 Mauritius

Mauritius Telecom – Orange is the leading fixed-line (ahead of DCL) and mobile (ahead of Emtel and MTML) telecommunications operator in Mauritius (source: GSMA). The operator offers a comprehensive range of fixed and mobile data and voice services. It also offers convergence packages (voice, IP and TV) though its *MyT* service. The first operator to launch the 4G network and the Orange Money mobile payment service in 2012, Orange launched its fiber optic network (FTTH) with a flow rate of 10 to 100 Mbits/s in 2013.

In 2016 Mauritius Telecom – Orange saw its customer base grow across its Internet (8.1%, or 198,000 broadband customers), mobile (+4.7%, or 934,000 customers), and fixed (+0.5%, or 367,000 customers) segments. This growth strengthened Mauritius Telecom – Orange's leadership position in the market. In addition to the Cloud offers for companies, the operator has an enriched TV selection, which enables it to be the leader in Pay TV with more than 134,000 customers (+12.6%).

The company also delivers global connectivity *via* the Sat 3/WASC/SAFE, LION/LION2, Eassy, and GIE fiber optic submarine cables. Mauritius Telecom – Orange also has a presence abroad through its investments in Orange Madagascar, CSL Madagascar, and its stake in TVL, the incumbent operator in Vanuatu.

3.1.6.11 Iraq

At end-2016, Iraq had a population of 38.1 million inhabitants (source: GSMA, March 2017). In the third quarter of 2016, the mobile services market totaled 32.3 million users, which resulted in a penetration rate of 84.6% (source: GSMA, March 2017). In 2011, the Orange group acquired a 20% minoriy stake in the Iraqi operator Korek Telecom, which holds 2G and 3G mobile licenses. The economic conditions changed drastically from June 2014 with the start of the civil war in the northern and eastern parts of the country, with security problems affecting the expenditure and consumption of Iraqi citizens as well as Korek Telecom's operations. At end-2016, Korek Telecom's active customer base totaled 7 million customers.

3.1.6.12 Liberia

Liberia has 4.6 million inhabitants, with a mobile penetration rate of 70%. In April 2016, Orange Ivory Coast, a subsidiary of Orange Group, acquired the operator Cellcom in this country. Cellcom is the leading mobile operator in the market, with more than 1.5 million mobile customers, before MTN, which launched a second brand called Novafone. Despite the strong market competition and a fragile economic environment, Cellcom's revenues grew by 3,8% in 2016. Cellcom's success lies in new attractive offers launched in 2016. 2016 was also marked by the launch of d'*Orange Money* in April and that of 4G/LTE, which propelled it to the leading position in data communications.

3.1.6.13 Madagascar

2016 was marked by the improvement of the country's political situation and the disbursement of international aid, including the grant of 9.7 billion dollars in funds to support the economic recovery. In addition, the implementation of the budget program and a conservative monetary policy should make it possible to strengthen this stability and to lay the foundations for sustainable growth. At the end of 2016, the mobile penetration rate was 23.4% of the population (source: GSMA), an increase of 1.3 points compared with 2015.

In Madagascar, Orange holds a global license (2G, 3G and 4G). While its mobile customer base remained stable compared with 2015, Orange strengthened its leading position in the 3G and 3G+ very high-speed broadband mobile Internet market, notably for businesses, by capitalizing on the quality of international connectivity provided by the LION cable. Benefiting from an attractive business policy and the quality of its customer experience in data communications, Orange draws on its network covering 68% of mobile data customers (source: Communication Technology Regulatory Authorities).

The Orange Money service confirmed its growth dynamic in 2016, increasing its active customer base by more than 23.4% compared with 2015, which generated about 555.7 million euros in transactions (source: Orange).

3.1.6.14 Mali

In 2016, the telecommunications market continued to see a decrease in the mobile penetration rate, which stood at 102% at the end of 2016, or a reduction of 17 points compared with 2015 (Source: Orange Mali estimates). This trend results from the implementation of new identification rules for subscribers, which came into force at the end of 2015.

Orange, as the second company to join the mobile market, still managed to maintain its leading position in this segment, with a market share of 59.3% (source: Orange Mali estimates). The other operators in this market are the incumbent operator Sotelma, held by Maroc Télécom, and the Planor-Monaco Télécom International consortium operating through the Malian operating company Alpha Télécommunication Mali SA (Atel-SA).

At the end of 2016, Orange Mali's network covered about 95% of the population and 46% of the country and had a base of 11.3 million active mobile subscribers, of which more than 99% were prepaid customers. Their uses mainly cover voice, mobile Internet and mobile payment services. Launched in June 2010, Orange Money service had 3.5 million customers at the end of 2016 (compared with 3.4 million at the end of 2015). The broadband Internet customer base, which included close to 191,000 subscribers at the end of 2016, grew by more than 15% compared with 2015.

3.1.6.15 Morocco

In 2016, the telecommunications market in Morocco was marked by a significant drop of 15% in average prices for mobile services, which led to a 12% increase in average usage per customer (source: ANRT, 4th quarter of 2016). However, for the first time in several quarters, the new rules for the approval of offers by regulatory authorities helped increase prices during the 3rd quarter of 2016. The Internet market's dynamics continued in 2016, with an increase of the penetration rate from 43% at end-2015 to 50% at end-2016, mainly resulting from mobile Internet growth, which accounted for 93% of Internet access and with an increase of 18.6% in users in 2016 (source: ANRT, 4th quarter of 2016).

Orange is present in the Moroccan market through a subsidiary that, after having operated under the Meditel brand, has been marketing its services under the Orange brand since December 8, 2016. Orange Morocco, which had a base of 13.9 million mobile subscribers at the end of December 2016, saw, in 2016, its mobile market share increase to 32.8%, up by 0.9 percentage points (source: ANRT). Hence, Orange Morocco confirmed its 2nd place in the market, behind Morocco Telecom and before Wana Telecom, whose mobile market shares at end-2016 were 44% and 23%, respectively. In addition, the number of Orange Morocco mobile Internet subscribers stood at 3.8 million at the end of December 2016, which represents a market share of 23.8% (source ANRT).

Among the highlights for 2016, Orange Morocco notably:

- reviewed its residential and B2B offers in accordance with new regulatory guidelines, and ended the marketing of its unlimited offers;
- submitted a complaint to the ANRT against IAM for anticompetitive practices in the context of unbundling;
- reestablished on November 4, as instructed by the regulatory authorities, VoIP, which had been interrupted since January 1, 2016, which accelerated the decrease in outgoing and incoming international traffic;
- transferred all of its business activities and offers from the Meditel brand to the Orange brand;
- continued to provide innovative and attractive support for the development of the contract market.

3.1.6.16 Niger

The most recent company to join the mobile market, Orange Niger is the second-largest operator, with a mobile market share of 29.5% (source: Orange estimates). This position remained unchanged despite the establishment of the public operator Niger Télécom, which resulted in an alliance with Sonitel and Sahelcom at the end of 2016.

At the end of 2016, Orange Niger's base comprised 1.6 million active mobile customers with a coverage of 82% of the population. As the first operator to have launched the 3G network, from 2011, Orange Niger is also leading the broadband mobile Internet market.

Orange Niger's business activities draw on a direct distribution network of 10 stores, in addition to an indirect distribution network comprising 28 distributors and more than 22,000 points of sale across the country.

3.1.6.17 Central African Republic

The growth of telecommunications, the potential of which is significant as the penetration rate remains low, is still affected by the country's challenges (strong inflation, infrastructure deficiency), particularly due to the conflicts that have been known since 2013.

Orange is the most recent company to join the market, which comprises four operators. Orange has more than 400,000 active mobile subscribers, most of them being prepaid customers. After being the first operator to launch the 3G network in 2013, Orange has provided the four main cities of the country with mobile data services through its positioning in offers to companies, organizations and international military forces. In addition, Orange is the only operator to provide mobile payment services since it launched its Orange Money offer in 2016.

Orange Central African Republic has the second-largest distribution network in the country in terms of scale, with a total of 109 sites, and draws on direct and indirect distribution channels comprising 30 distributors and 8,000 resellers.

3.1.6.18 Democratic Republic of the Congo

The Democratic Republic of the Congo has a population of 84.1 million, putting it in fourth place in Africa in terms of population (source: IMF, October 2016). However, the mobile penetration rate is only 36% (source: Telecommunications and Postal Services Regulatory Authority of Congo, Q3 2016), which is a much lower level than that of most neighboring countries.

In 2016, the country's overall economic environment was marked by difficulties, notably following the depreciation of the Congolese franc compared with the American dollar (two currencies used in the Democratic Republic of the Congo) and the expected institutional changes, notably the delay in the presidential elections that were initially due in November 2016.

In a context of weak mobile penetration representing a huge potential for growth, Orange, which already held a 2G and 3G national license, strengthened its position in 2016 by acquiring the operator Oasis in April 2016, which was operating under the Tigo brand. Through this acquisition, Orange managed to further develop its market position by reaching second place in terms of mobile market share, with 30.8%, or 1.6 point behind the leader, and by becoming a leader in the mobile Internet segment, with a market share of 41.6%, far ahead of its competitor AIRTEL at 32.7% (source: Telecommunications and Postal Services Regulatory Authority of Congo, Q3 2016).

The number of Orange mobile customers, which stood at 5.3 million at the end of 2015, reached 7.3 million at the end of 2016, or an increase of 38%, mainly due to the purchase of Oasis. On a comparable basis, the customer base is in fact down 27% considering the negative impact of the depreciation of the Congolese franc and the law on subscriber's identification, which significantly slowed down acquisitions, particularly during the first half of 2016. In this context, Orange DRC's revenues contracted by 10% during 2016.

3.1.6.19 Sierra Leone

Sierra Leone has 6.4 million inhabitants, many of which live in rural areas. The country's GIP grew by 4.3% in 2016, with an inflation of more than 9.7% (Source: IMF. October 2016). Its economy has been weakened by its dependency on the US dollar.

The subsidiary was acquired by Orange in July 2016. It has 1.5 million customers. As population's mobile coverage and mobile penetration rates are low, the country therefore has a strong growth potential. In an environment where the percentage of people with bank accounts is low, almost one out of two customers is involved in Orange Money's activities. Ultimately, international communications, liberalized in April 2016, offer a growth opportunity.

3.1.6.20 Tunisia

Orange Tunisia is the 3rd largest fixed and mobile operator in Tunisia which, since it joined the mobile market in 2010, has established a strong position in the 3G segment. Orange Tunisia's strategy, focused on developing data services, continued in 2016 through the launch of 4G.

At the end of 2016, Orange Tunisia had 4.3 million mobile customers (an increase of 316,000 customers compared with 2015), or a mobile market share of 26% (source: *Instance Nationale des Télécommunications* (INT)), an increase of 3 points compared with the end of 2015. In addition, the company confirmed its leading position in the mobile Internet segment, with a market share of 40.1% (source: INT).

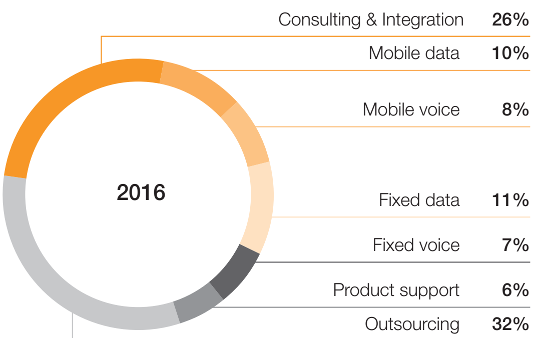
Orange Tunisia's growth strategy is based on an innovative and diverse commercial offer, particularly in the prepaid mobile and mobile Internet segments. This dynamic was strengthened in 2016 through the launch of number portability, which allowed Orange Tunisia to acquire 27,000 new mobile numbers, or 58.5% of the total number of portabilities carried out. In addition to the continued development of distribution, as regards technical developments, 2016 saw the successful rollout of 4G and the continuation of the plan for extending and densifying the network.

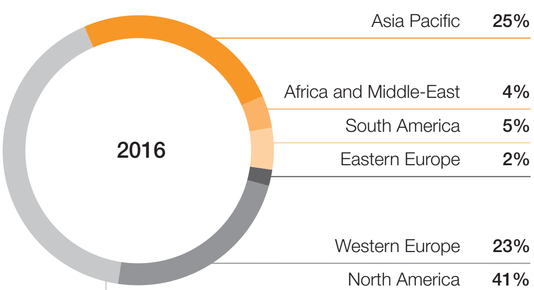
3.1.7 Enterprise

3.1.7.1 The market

Orange Business Services brings together the expertise and know-how of Equant, Orange and of its subsidiaries, and operates worldwide under the Orange brand across the whole business communications and IT services market. This market is part of the broader Information and Communication Technologies (ICT) sector, which includes technologies used to process and send information. Worldwide this market represented nearly 1,300 billion euros in 2016, with telecommunications accounting for slightly less than 40% of this total:

Breakdown of global business communications and IT services market in 2016, in value (%)





Source: Gartner.

Orange Business Services offers a range of services to key accounts, local authorities and SMEs in France, as well as to multinationals around the world, supporting their digital transformation and the implementation of their communication projects. To achieve this, and thereby become the trusted partner in the digital transformation of its customers, Orange Business Services offers a full range of services, primarily in the fixed-line communications and IT services markets.

Worldwide, the contraction in fixed-line connectivity services (voice and data), on one hand, and the sharp increase in IT services, on the other hand, led to overall market growth of approximately 3%, at constant exchange rates, in 2016:

- the connectivity market continued to decrease in 2016, with a contraction between 2 and 2.5%, at constant exchange rates. The decline in the legacy voice and data markets was only slightly offset by the demand for IP VPN networks and broadband and very high-speed broadband networks, particularly Ethernet;
- the IT services market grew by about 4.5%, still at constant exchange rates, with the various services – consulting, integration, outsourcing, product support – all contributing to this growth.

In France, the market continued to grow in 2016 at a rate of more than 1%. The ongoing decline in the fixed-line voice market together with the erosion of the fixed-line data market, were largely offset by the growth in the IT services market:

- the Enterprise network services market continued to decline, by around 4% in 2016. The fixed-line voice market continued to contract, due to the lower number of accesses, the erosion of prices, technological migration (SIP) and substitution by other methods of communication (mobile telephony, unified communications, email, OTT services Over-The-Top, etc.). Also, the data market continued to fall as growth in the broadband and very high-speed broadband markets did not offset the sharp downward trend in the legacy services market, along with the decline in the MPLS networks market;
- the IT services market saw an acceleration of its growth, which amounted to about 3% in 2016. This growth, which was continually revised upwards during the year by analysts and industry associations such as Syntec Numérique, reflects the healthy state of the consulting, integration and outsourcing services markets.

In terms of the business market, the major trends are as follows:

- the boundaries between the various players, telecommunications operators, integrators, editors, etc. are blurring due to the commoditization of the networks and convergence: operators are offering advanced communication services that are increasingly integrated into businesses' information systems, and are entering into direct competition with integrators, editors and players from the Internet world (including OTT). At the same time, Internet companies are enhancing their IT services with network solutions to take advantage of the rise in new usages such as Cloud Computing; or providing value-added offers integrating an increasing number of communication components above the network (unified communications);
- confronted with new mobility-related usages within businesses (BYOD, *Bring Your Own Device* or BYOA, *Bring Your Own Application* for instance), both operators and integrators are updating their services line-up to meet customers' needs as regards administration, security, applications, and value-added services;
- regional expansion is another growth driver, both for operators in advanced economies that extend to emerging or developing countries and operators from these countries that secure market shares in advanced countries;
- lastly, companies may turn to acquisitions and partnerships to speed up their transition to new business models, whether *via* acquisitions or partnerships.

3.1.7.2 The competitive environment

Orange's main competitors on Enterprise market are:

- telecommunications operators:
  - **SFR Business**, the **Numericable-SFR** group entity operating the Enterprise business: SFR Business offers a range of fixed-line, mobile and Internet solutions, and now works in tandem with Completel, since the merger-acquisition of SFR by Altice/Numericable, and also provides IT services, in particular following the purchase of Telindus France,
  - alternative local loop operators like **Colt**, that can target French companies as well as multinationals,
  - global telecom services operators, such as **BT Global Services**, **Verizon Entreprises**, **AT&T Business Services**, **T-Systems**, **NTT Communications** and also **Telefónica Business Solutions** (which operates in France *via* Telefónica Global Solutions France, its joint-venture with Bouygues Telecom): they offer global distributed services for multinational companies worldwide. In addition to their international service offers, these operators can also carry local and national calls in France by using the Orange network's interconnection services,
  - national telecom operators expending internationally, such as the American **Zayo**, which made France the bridge to its growth in Europe and operates *via* **Zayo France**, created in 2014 with the acquisition of **Neo Telecoms**,
  - international carriers from emerging countries like **Tata Communications**, **PCCW**, **SingTel** and **China Telecom**, that build hybrid solutions based on their own networks and combined with third-party operators' solutions that they manage themselves,
  - incumbent operators in some countries;
- network integrators and managed service providers with which Orange works in "coopetition" (a combination of cooperation and competition) – especially for companies developing a multi-provider approach such as **Spie ICS** (previously Spie Communication) and **Dimension Data**;
- players such as **IBM**, **HP Enterprise**, **Atos**, **Capgemini**, **Econocom** as well as **Sopra-Steria**, which specialize in supporting companies through their IT transformation projects; the main service categories in which these companies are positioned include network integration, infrastructure management, outsourcing, third-party application maintenance (TPAM), consulting and engineering;
- Internet companies or niche market specialists that offer VoIP, messaging, and Cloud Computing services: **Microsoft Skype** or **Azure**, **Amazon Web Services**, **Google** or **Salesforce.com** which operate globally, and the American specialist in network virtualization, **Masergy**, or the French hosting services provider **OVH**. It should be noted that the competitive position of OVH improved in France, with the creation of the wholesale operator **Kosc Telecom**. The latter resulted from the purchase of Completel's DSL network, acquired by OVH through the Kosc consortium;
- major software suppliers that offer their applications online as services, like **Microsoft**, **Oracle**, **SAP**.

3.1.7.3 Orange Business Services activities

Orange Business Services is positioned as a reliable partner to support customers with their digital transformation in France and internationally. Orange Business Services activities focus on five key challenges for its customers:

- the need for good connectivity at the right time, whether fixed or mobile;
- evolving towards more mobile and effective working methods based on unified communication and collaboration solutions or the popularity of smartphones and tablets in the corporate world;
- the need for more flexible IT infrastructures, thanks to virtualization technologies and IT services provided upon request (as a Service);
- the use of the Internet of Things, data analytics and multichannel contact centers to improve business performance.

Orange Business Services meets these requirements with a particularly close eye to the security of its customers' data and information systems through its subsidiary *Orange Cyberdéfense*, which has more than 1,000 experts working on the topic.

Operating indicators

	2016	2015	2014
France + International (number of accesses in thousands)			
Number of IP-VPN accesses	352	349	345
France (number of accesses in thousands)			
Enterprise telephone lines (PSTN)	2,818	2,961	3,161
IP-VPN accesses	*296*	*294*	*294*
XoIP	95	89	87

Source: Orange.

Key operating indicators related to business communication services

Name	Definitions	Product lines
IP-VPN access (France + International)	Number of IP-VPN (IP Virtual Private Network) accesses marketed by Orange Business Services in France and internationally. These accesses allow companies to pool their applications and introduce new ways of using them (VoIP/IP Telephony).	IPVPN France, IPVPN International.
Enterprise telephone lines (PSTN)	Access to the Switched Telephone Network (STN), from analog lines or digital lines.	Analog lines, basic access, primary accesses.
Permanent access to data networks	This indicator essentially covers IP-VPN and some of the XoIP offer in France: – broadband Internet accesses combined with a set of ready-to-use services (*Business Internet Office* and *Business Internet*), mainly for SMEs; – broadband Internet and VoIP accesses (with or without Centrex, freeing customers from telephone switchboard maintenance and management constraints) for businesses with independent sites; – accesses to businesses' IP Virtual Private Networks in France.	*Business Internet*, *Business Internet Office*, *Business Internet* Voice, *Business Internet* Centrex, IPVPN France, Ethernet.
XoIP offers	This indicator covers: – broadband accesses offering a Voice over IP service, with or without Centrex, for companies developing on independent sites; – managed telephony over IP solutions that use an existing IP-VPN. These solutions enable networking of work stations, voice transfer and IP-STN connectivity.	*Business Internet* Voice, *Business Internet* Centrex, Business Talk IP, Business Talk IP Centrex.

Offers

Orange Business Services offers a wide range of products and services on the French market, from the market for professionals to major accounts, as well as for multinationals operating abroad. Orange Business Services' solutions, including those that are packaged or tailor-made and using different methods such as integrated, managed or Cloud, are aimed at accompanying businesses in their digital transformation. These solutions are based around five key challenges for businesses:

- connecting people, sites and machines at the right time, using a robust and secure high-performance network;
- fostering more mobile and effective working methods between employees of the Company, through unified and collaborative communication services;
- contributing to more dynamic company operations and processes *via* innovative, enduring solutions geared towards performance;
- offering free-flowing exchanges with business customers to ensure exemplary follow-up and support;
- working with an operator that is a reliable partner able to accompany the business in its development plans and objectives, with more flexibility thanks to Cloud infrastructures.

To meet these needs, Orange Business Services has structured its portfolio of offers around three main types of products and services:

- telephony (traditional and IP) and audio conference services;
- network offers, including certain service guarantee levels (mobile and fixed-line connectivity, data transfer, hybrid networks, fixed-line and mobile convergence offers);
- IT service offers and integration solutions, including:
  - unified communication and collaboration services (interoperability between telephony, messaging and video conference solutions, in *triple play* or *quadruple play*),
  - IT/Cloud solutions (virtualization, systems integration, business applications, API, building blocks for connected objects, Big Data and analytics),
  - managed and integrated or Cloud security solutions covering infrastructures and users (safe work environments and infrastructure, cyber defense, management and governance), supervised from a Cybersoc (security operations center),
  - consulting and customer services (analysis of needs, solutions architecture, deployment and installation support, user training, administration of services and solutions) in various areas: switching to "all-IP", adopting Machine to Machine and the Internet of Things, supervising and managing quality of service, switching to Cloud infrastructure solutions, digital transformation of businesses.

These offers are also used to develop cross-sector business solutions (finance, transport, energy, government and public sector, geolocation and fleet management, etc.).

Distribution, operations and partnerships

The market comprising professionals, very small companies and SMEs is managed by a country-wide commercial branch network which, *via* sales personnel dedicated to a portfolio of customers and/or telephone advisers, promotes and sells solutions, updates customers on the status of their orders, and endeavors to provide top-quality service.

In the large corporate accounts market, Orange Business Services canvasses, advises and supports its customers by providing a range of solutions and expertise to assist them in their development in France and worldwide. Dedicated sales teams work in close collaboration with customers in pre-sales, both during the sales process and after-sales, to ensure Orange Business Services represents a reliable partner in their digital transformation. They also promote partnership-based approaches. Lastly, companies can manage their contracts and place orders in real time using the Orange website.

Orange Business Services also relies on international partners to supplement its offer and geographical coverage in areas where its customers operate and where its presence does not offer a comprehensive solution. Orange Business Services is working to build this type of partnership in the most developed markets, preferably with the leading operator or its direct competitor, like NTT Communications in Japan or AT&T in the United States.

The Customer Service & Operations Division (CSO) is responsible for the production and maintenance of solutions worldwide. Backed by its geographical reach, the CSO supports customers in managing the rollout of their network and IT projects and in the daily operation of their services, including on-site call-outs. In some countries, CSO uses local partners for local rollouts and to supply equipment. CSO structures its operations using standardized processes and tools in order to monitor and support its customers round the clock: two Customer Service Units (CSU) for French customers, and five Major Service Centers (MSC) located in India, Egypt, Brazil, Mauritius and France, serving international customers. This system, together with network redundancy, ensures service continuity for customers, especially in the case of exceptional events (natural disasters, political events, or a cut of submarine cables).

Orange Business Services works in close cooperation and bilaterally with major technology players, such as Cisco, Microsoft, Alcatel-Lucent, EMC, Avaya, Juniper, Polycom, Netapp, VMWare and Genesys, or with members of the mobile industry, such as Samsung, Apple and Blackberry. Orange Business Services also forms partnerships with service companies, such as Akamai or GFI, to develop a joint sales approach and offer innovative solutions to its customers. 2016 saw the development of partnerships with French digital services companies such as Altran, CGI, Sopra-Steria and Proservia and IT integrators such as TechMahindra or Infosys. Also of note was the strengthening of the technology partnership with Huawei in the Cloud and Big Data spheres, and the expansion of the partnership with EMC across the consolidation scope of Dell (servers and workspaces).

3.1.8 International Carriers & Shared Services

3.1.8.1 International Carriers

The market

The global international voice market was estimated at 550 billion minutes in 2015. Its growth was slowed down by the increase in the "on-net" traffic of OTTs, but remains positive thanks to the development of mobile telephony (in particular in Africa and through the development of VoIP).

The wholesale of voice and data traffic, as well as the provision of transmission means, accounted for approximately 65% of the total international voice market and was estimated at 360 billion minutes in 2014 (source: Telegeography 2016).

There were over 1,400 operators in the mobile market in 237 countries (source: GSM Association), including 581 commercially operating 4G/LTE networks in 186 countries (source: GSA January 2017).

The competitive environment

Wholesale operators can be divided into three types – global wholesalers, multinational retail operators and regional or specialist players:

- global wholesalers have the critical mass needed to obtain the most competitive rates and to pass them on to their customers: TATA, BICS and iBasis are the main global wholesalers;
- multinational retail operators aim to optimize their end-customers' traffic and generate revenues and earnings in addition to those from their retail traffic. Orange, Vodafone, Telefónica, Deutsche Telekom and Telia Sonera are among the main ones;
- lastly, regional and specialist players focus on a particular geographical area or offer voice or data services, for which they generally offer competitive rates. These primarily include Interoute, Primus, Citic, and Calltrade.

The wholesale market's customer base comprises voice market specialists (call-shop, prepaid cards), domestic retail carriers (including MVNOs), and Internet service providers. International carriers also sell wholesale traffic to each other.

International Carriers' activity

Orange's International Carriers' activity is based on a major long-distance network infrastructure and offers a broad range of solutions on the international market.

Its presence in both the retail and wholesale markets means it can develop solutions that are particularly well adapted to the needs of the retail operators. Orange has more than 1,000 customers, which include fixed-line and mobile operators and Internet service, content and OTT providers.

The Orange group is unique in that it is very involved in the design, construction and operation of submarine cables. With its ownership or co-ownership of several submarine cable systems, the Group ranks among the world's largest owners of submarine lines. This has enabled it to satisfy the increase in transatlantic traffic.

The Group's wholesale activity is based on:

- a seamless global network and an IPX protocol network supporting voice and data with points of presence around the world;
- a global network of dedicated IP routes with end users in more than 220 countries, connections to more than 200 Internet service providers, and connectivity in over 100 countries in a single IP network hop (Autonomous System);
- 99.99% network availability, 24/7 centralized network supervision.

The volume of voice traffic in the International Carriers business decreased by around 4% in 2016, and there was also a sustained increase in data traffic.

Offers

Voice Services

Orange's voice network has switched or all-IP routes to 400 operators, coverage in more than 1,500 destinations, and 24/7 technical support.

Services to Mobile Operators

Orange helps 185 mobile operators worldwide by providing interconnection, roaming, SS7 signaling and Diameter services, together with value-added services and GRX/IPX transport. Orange also supplies Roaming Hub, 3G/4G voice and SMS Hub solutions and operates voice/data roaming.

Orange's International Carriers Division provided 4G roaming connectivity, on IPX, to a growing number of operators and continues to expand its coverage. This offer allows mobile operators to provide their customers with a 4G roaming service).

Orange is involved in the development of GSMA standards with the *Open Connectivity* offer. It has expanded its LTE connectivity directly and *via* peering agreements. The International Carriers Division provides secure OTA (Over The Air) mobile management and A2P (Application to Person) messaging solutions.

Internet and Transmission Services

Orange's adjustable solutions meet the specific needs of Internet service providers and content providers. The offer includes a wide range of connection options in Europe, Africa, America and Asia. Commissioning of the SMW5 (between Singapore and marseille) and ACE (along Africa's Eastern coast) submarine cables contributed to strengthening this offer.

In June 2016, Orange opened the first very high-capacity IP point of presence (PoP) in the Middle-East. This new service located in Amman (Jordan) offers better Internet connectivity in the region by providing faster connection speeds and enhanced security.

To provide customers with enhanced security, the Transit Internet solution offers as an optional service a protection against denial of service attacks (OTI DDOS protection).

Convergence Services

Orange provides IPX solutions through its *Multiservice IP eXchange* offer. This service gives operators access to voice and mobile data services over a single connection. It can also optimize quality of service and network costs.

Anti-fraud Services

The *@first (anti fraud interconnect roaming & security of transactions)* offer is a comprehensive anti-fraud system, which protects traffic and interconnection revenues. The offer includes by-pass anti-fraud services, revenue assurance services and quality of service improvements as well as securing financial transactions. Initially based on test calls, the offer was enhance at the end of 2015 with a Big Data type profiling solution and, at the end of 2016, with a by-pass anti-fraud shield to bypass fraudsters' countermeasures. *@first* is designed not only to combat voice fraud, but also SMS fraud, in addition to the SMS Control solution.

Orange Marine

Orange Marine is a major player in submarine cables, from the early research and engineering stage through to the setting up of intercontinental connections and the maintenance of existing cables. Orange Marine has installed a total of more than 160,000 kilometers of fiber optic submarine cables across all oceans. The vessels carried out close to 540 repairs on defective cables, some of which were performed 5,500 meters deep. The Orange Marine fleet currently comprises six vessels, which represents 15% of the worldwide fleet. It is one of the world's most proven fleets.

3.1.8.2 Shared services

Orange continues to develop new growth activities, related to its core business line, that add value, in the fields of content distribution and audience monetization.

Content

Orange's content strategy is primarily based on developing partnerships with rights holders and service publishers. Orange is mainly focused on its role of aggregator and distributor by referencing the best entertainment services on offer to its customers through its broadband networks.

The Group focuses on picture and sound quality, as well as on multi-screen on-demand uses. Hence in 2016, Orange launched a new *Livebox* in France, offering an richer content experience through access to ultra-high-definition content and several virtual reality services.

In Europe, the Group is pursuing its rollout strategy for content services, including around TV, a key element of convergence offers. In Spain, Orange is marketing TV channel selections, including football offers, the distribution rights for which have been renewed since the 2016/2017 season. This TV strategy is also being developed in other regions in Europe.

In Africa, Orange launched the IPTV in Ivory Coast at the end of 2016 and secured in mid-December a paying TNT license *via* a joint venture with its partner Canal+ Overseas.

As regards edition, Orange focuses its efforts on France with its OCS premium service (e.g. Orange Cinéma Series), whose new and exclusive programs are available on linear broadcasting form and on demand across all screens. OCS is offered by most distributors in France and is now available in direct distribution on the Internet (OTT) beyond the traditional distribution *via* FAI or satellite operators.

In the video on-demand (VOD) segment, Orange offers the programs of the main rental and permanent download (EST) catalogs.

For music, Orange continues to innovate in the music streaming segment, in partnership with Deezer since 2010 and through the rollout of its Orange Radio service in the OMEA zone. 2016 was marked by the growth of the number of Orange's paying customers in France using the Deezer service.

In the highly innovative gaming sector, the streaming game offer on Orange TV confirmed its growth. Over 200 games are now available on an unlimited basis as part of the *Pass Famille* offer in France, with no need to have any terminal other than the Orange box and a game controller.

On mobile, the success of the unlimited contract and *Freemium* games is growing with the opening of a new service in Spain and a very sustained growth in African countries.

For the fifth year running, Orange presented major innovations in video games at the *Paris Games Week*. Orange's activities in the fields of virtual reality and eSport were also presented during the event.

Content services helped to promote very high-speed broadband, fiber and 4G offers.

Viaccess Orca

Viaccess Orca, a subsidiary of Orange, designs and markets innovative solutions for distributors of digital content (pay TV, video on demand), enabling them to monetize premium content and the user experience in a multi-network and multi-screen environment. Its portfolio includes the protection of content rights, service platforms, and user commitment management solutions (introductory and recommended content solutions).

3.1.9 Orange Bank

In October 2016, Orange acquired 65% of Groupama Banque, which became Orange Bank at the start of 2017. The Orange Bank services will be marketed in France in the first half of 2017. This offer will gradually provide a full range of banking services (means of payment, current account, savings, credit facilities) and will be accessible *via* mobile phone, online and in the Orange France distribution network.

3.2 Network and real estate

3.2.1 Network

3.2.1.1 Overview

At the end of 2016, Orange operated networks in almost 30 countries to serve its customers in the consumer market and in approximately 200 countries or territories to serve its business customers. These networks enable Orange to provide its customers with ever greater and enhanced connectivity wherever it operates.

In order to provide this enhanced connectivity, investment in networks is designed to improve the Orange networks in a number of respects:

- the development of very high-speed broadband (FTTH and 4G), increased data transfer volumes and reduced connection latency;
- implementation of the program to switch all services over to the IP infrastructure ("all-IP" program);
- preparation of the gradual virtualization of network control functions ("programmability");
- automation of network operation and implementation of mechanisms to personalize the quality of service provided to each customer in line with his or her expectations.

The network architecture is broken down into:

- access networks (fixed or mobile);
- national and international transmission networks;
- IP transport networks;
- service control networks.

3.2.1.2 Fixed access networks

Analog access and ADSL/vDSL broadband access

Orange is a copper access network operator in France, Poland and various countries in Africa (Ivory Coast, Jordan and Senegal).

Analog voice access services are provided to more than 12 million customers in these countries.

Fixed broadband ADSL/vDSL access (for voice applications, Internet access and television) is available:

- in France and in Poland, with cover approaching 100% on the incumbent local loop;
- in MEA countries where Orange is the operator on the copper local loop;
- in other countries (for example Egypt, Spain and Slovakia), using the local loop of the incumbent operators, whether unbundled or *via* bitstream-type offers;
- in Belgium, broadband offers are marketed using the cabled network of third-party operators.

FTTH very high-speed broadband access

FTTH fiber optic access can extend the available broadband ADSL/vDSL service offer to include upstream and downstream very high-speed broadband (of 100 Mbits/s and more), with improved performance, in particular response time.

In France, for several years Orange has deployed point-to-multipoint FTTH architecture that uses GPON technology, which can pool several very high-speed broadband accesses on a single fiber without affecting each access point's capacity for increasing speed.

FTTH rollout started in 2007 in several major French cities and was then expanded to other large cities. During the years 2011 and 2012, Orange entered into sharing arrangements with other telecoms operators to speed fiber optic rollout. At end-2016, Orange's fiber had been rolled out to 1,000 municipalities, including about ten with 100% fiber, and more than 6.5 million eligible homes.

In Spain, the FTTH network offered connectivity to over 9.6 million households. A FTTH fiber network was also rolled out in Poland, with connectivity offered to some 1.5 million households at the end of 2016, as well as in Slovakia, where connectivity was offered to some 349,000 households at the end of 2016. The FTTH rollout also began in Jordan and Ivory Coast.

Fixed Radio Access

In a number of different countries, fixed services are available through UMTS, Wimax (Romania and Africa), and CDMA (Poland and Senegal) radio access. These services are migrating to the 4G (LTE) technology.

3.2.1.3 Mobile access networks

The GSM (2G), UMTS (3G) and LTE (4G) access networks support faster data and voice communication services of up to several dozen Mbits/s that can be used to send and receive large files (audio, photo and video). The group operates a mobile network (2G/3G/4G) in each of the countries where it offers consumer telecommunications services.

2016 was marked by:

- increased growth of uses and traffic, across the group's networks. To anticipate this growth, which will continue over the coming years, the group invested in its networks to increase their capabilities and performance;
- continued rollout of 4G/4G+ networks in Europe to increase the coverage of the population and speeds. For example, Orange Belgium and Orange Polska offer a 4G coverage to 99% of the population;
- continued rollout of 4G networks in the MEA zone, with commercial openings in about ten countries in 2016;
- the start of the rollout of a radio network for the Internet of Things, using the *LoRa* (Long Range) technology, in 18 urban areas in France.

3.2.1.4 Transmission networks

Domestic networks

This infrastructure is primarily made up of fiber optic, but it also contains microwave links, especially for alternative or purely mobile networks in MEA countries.

Optical links offer a bandwidth of up to 100 Gbits/s per wavelength, and Dense Wavelength Division Multiplexing technology (DWDM) makes it possible to have 80 wavelengths per fiber. Orange is one of the world leaders in the use of advanced optical functions in order to have a more flexible transmission network. For example, the first of its kind worldwide, it deployed a 400 Gbits/s per wavelength optical link between Paris and Lyon in 2013.

Furthermore, Orange offers direct connections by fiber optic to business customers, providing them with very high-speed broadband services.

WidE Long-distance Domestic Optical Network (WELDON) in France

Rollout of the WELDON network (WidE Long distance Domestic Optical Network) began in April 2012 and aims to upgrade the entire existing long-distance network, while extending its scope to serve Frankfurt, London, Barcelona and Madrid to submarine cable stations, and other areas neighboring France as needed in future.

WELDON uses the latest WDM technology and offers enhanced connectivity at speeds of at least 100 Gbits/s per wavelength and up to 88 wavelengths per cable.

International transmission network

This international network is based on two networks connected to the WELDON network: the North-American backbone served by the two arms of the TAT-14 transatlantic cable system and the Asian backbone in Singapore served by the SEA-ME-WE3 and SEA-ME-WE4 submarine cables.

Satellites

Satellite communications are used by Orange to support global network connections for the French overseas territories, IP or voice connectivity with other carriers, and VSAT (Very Small Aperture Terminal) services for Orange Business Services' terrestrial or maritime business customers. To provide those services, Orange purchases space segment from satellite operators (such as Eutelsat, Intelsat, SES and Arabsat).

Submarine cables

In order to accommodate the increase in international telecommunications traffic, Orange has invested in a number of submarine cables through:

- participation in a consortium to build a cable that Orange will co-own;
- purchase of usage rights or transmission capacity leasing on other cables.

As with terrestrial networks, higher speeds systems on submarine cables are being implemented and 40 Gbits/s then 100 Gbit/s systems are already operational on several cables within the Orange group.

Cable name	Start – End	Number of landing stations	Number of countries	Kilometers	Commis-sioning	Last upgrade
TAT-14	United States – Europe	7	6	15,400	July 2001	2013
SAT3-WASC-SAFE	Portugal – Malaysia	17	15	27,850	Apr. 2002	2014
SEA-ME-WE3	Germany – Japan/Australia	39	33	39,000	August 2009	2015
SEA-ME-WE4	France – Singapore	15	14	19,000	Dec. 2005	2015
SEA-ME-WE5	France – Singapore	18	17	20,000	Dec. 2016	
Americas-II	United States – Brazil	11	9	8,300	July 2000	2015
ECFS	Tortola – Trinidad & Tobago	14	10	1,600	July 2005	2015
LION	Mauritius – Madagascar	3	3	1,050	Nov. 2009	2015
LION2	LION extension to Mayotte and Kenya	2	2	2,700	Apr. 2012	2015
CBUS	United States – United Kingdom	3	2	3,200	Sept. 2009	2015
IMEWE	India – France	10	8	12,000	Dec. 2010	2012
ACE (phase 1)	France – Gabon/Sao Tomé	16	18	11,500	Dec. 2012	2016
(phase 2)	ACE extension to South Africa	4	4	5,500	2018	
EASSy	South Africa – Sudan	9	9	10,500	July 2010	2014

Europe-Asia

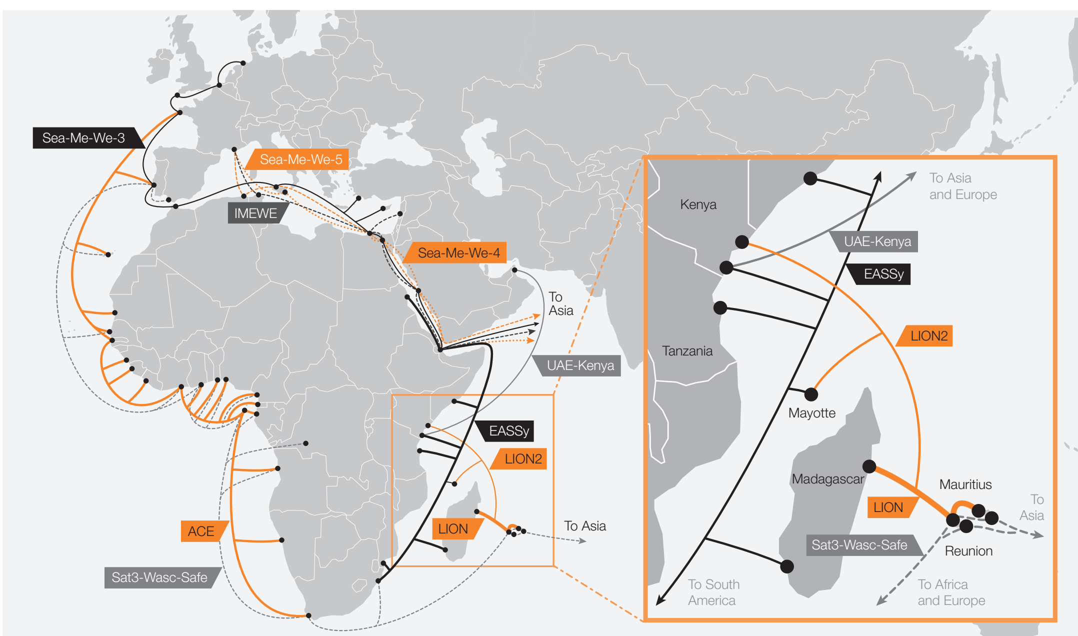
The migration to 100 Gbits/s technology on the SEA-ME-WE3 and SEA-ME-WE4 cables completed in 2015 enables Orange to support growth in traffic on the Europe-Asia route.

In the longer term, Orange is participating in SEA-ME-WE5, a cable linking Singapore to Europe, with connectivity towards the Indian Ocean, which became operational at the end of 2016. Also built using 100 Gbits/s technology, it significantly increases Orange's capacity on the Asia-Europe route and provides new connectivity towards the Indian Ocean *via* Djibouti to improve speeds to Reunion and Mayotte, while preparing the switch from the older SEA-MEA-WEA3 and SEA-MEA-WE4.

West Africa

Working as part of a consortium, Orange commissioned the first phase of the ACE (Africa Coast to Europe) cable in December 2012. Around 17,000 kilometers long, its potential capacity will reach 5.12 Tbits/s thanks to the use of 40 Gbits/s transmission technology. ACE currently extends from France to Gabon and Sao Tomé and Principe. The extension work to South Africa started at the end of 2015 and is scheduled to become operational in early 2018.

At the same time, in order to guarantee the security of its traffic by diversifying its routes, Orange's capacity on the SA3T3-WASC-SAFE cable was increased in 2014.



Indian Ocean

Orange is a co-owner of the LION (Lower Indian Ocean Network) cables connecting Madagascar to the global broadband network *via* Reunion and Mauritius, and LION2, the LION extension to Kenya serving Mayotte. To meet the sustained growth in traffic, the Group has repeatedly invested in a capacity upgrade of both LION and LION2, the most recent of which was operational at the end of 2015. Orange decided to co-invest in a new cable for Mayotte, with a view to commissioning it in 2018.

Atlantic Ocean and Caribbean/Guyana

Orange is also active in the Caribbean, where it has capacity on three major cables: Americas-II, ECFS, and CBUS. The Group took part in capacity increases on these three cables to support the surge in broadband use in France's overseas departments. The additional capacity was delivered in 2015.

3.2.1.5 IP transport networks

National IP networks

In each country in which it provides consumer services, Orange operates a national IP network, supporting voice and data traffic, for fixed, mobile, enterprise and wholesale services.

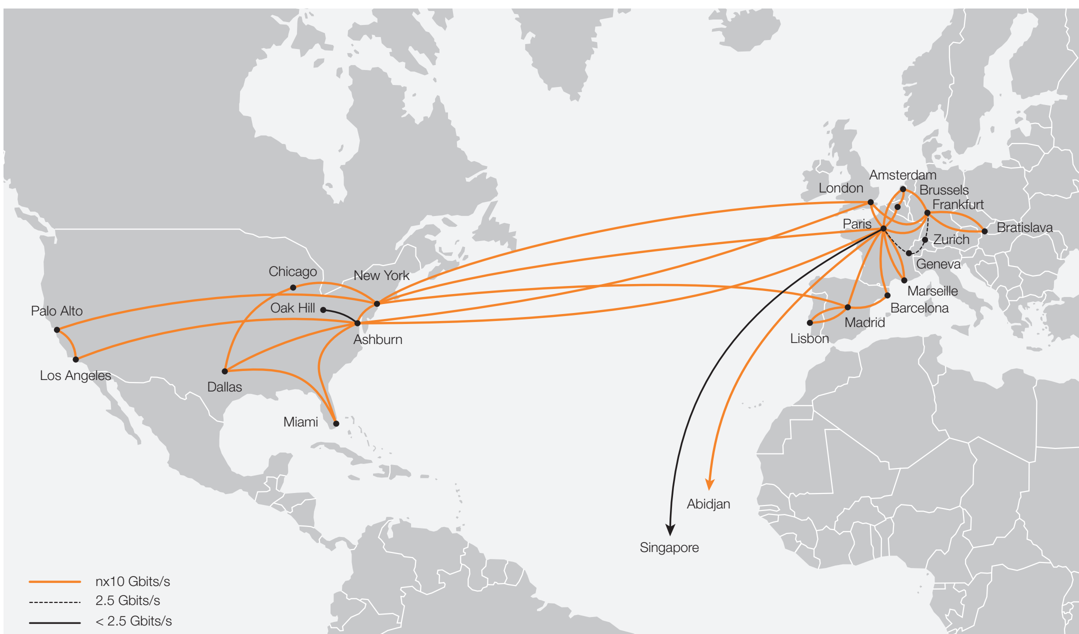
The international IP network

Orange international IP Transit network, known as Open Transit Internet (OTI), aims to provide global Internet connectivity to Group subsidiaries' domestic IP networks, operator customers, Internet Service Providers (ISP) and content providers. It is based on the latest IP transmission and switching technologies.

As of end-2016, the OTI connected 24 cities (12 in Europe, two in Asia, eight in North America and one in the Middle-East) through broadband connections at speeds of 155 Mbits/s to 100 Gbits/s, with several hundred Gbits/s of traffic at peak times. At the end of 2016, the traffic hit 5 Tbits.

The *Multiservice IP eXchange*

The IMN network (Multiservice IP network) is a dedicated network, using the IPXGSMA IR.34 standard, tasked with transporting sensitive and high value-added data of mobile operators, as well as transporting Orange's International VoIP traffic.



3.2.1.6 Service support networks and network control layer

The national service control networks

Fixed-line voice network

In the countries in which it has fixed-line operations, Orange operates a switched telephone network (STN) to deliver analog voice and ISDN digital services. These networks are continually being optimized because of declining usage.

Orange also rolled out fixed-line VoIP networks using IMS technology (IP Multimedia Subsystem) in many countries for residential and business uses.

Mobile voice network

Until 2015, all mobile voice traffic was managed in switch mode by the mobile network in each country. In 2015 and 2016, Orange rolled out mobile IMS infrastructure in Europe to offer VoLTE services (VoIP over LTE) and WiFi calling (mobile *Voice over WiFi*). The first commercial application of this technology was in Romania, with the launch of VoLTE in September 2015 and 2016. Other VoLTE and VoWifi commercial launches followed in 2015 and 2016. At the end of 2016, VoLTE and/or VoWifi services were commercially available in several European Countries: France, Spain, Poland and Romania.

The International voice network

Voice network

Orange has three international switching nodes in France (CTI 4G) to manage traffic to and from France in the fixed-line and mobile markets (TDM) for consumers, businesses and operators, and to centralize the transfer of international traffic for its subsidiaries. These exchanges have developed into hybrid NGN nodes to carry Voice over IP (VoIP) traffic. The architecture of the international voice network underwent a major change in 2013 with the installation of four SBC softswitches (Session Border Controllers) with routing functionality dedicated to Voice over IP (VoIP). In December 2016, over 80% of VoIP traffic was fully supported by this new infrastructure. The CTI4G will remain in place to manage the decline in TDM.

Orange has two softswitches in the United States and a media gateway in Hong Kong to manage in TDM or VoIP mode customers and operators from the Americas and Asia.

Signaling network

The Signaling System 7 (SS7) of the international networks is provided by two *Signal Transfer Points* (PTS), which support the signaling associated with voice traffic, roaming and SMS of 2G and 3G mobile operators. A growing number of links serving roaming and SMS customers are supported by SIGTRAN signaling over IP.

With the arrival of 4G (LTE) networks, the signaling used for international roaming is supported by IP (Diameter-type routers). Two DRF (Diameter Router Function) have been added to the international network for the roaming traffic of Orange subsidiaries and non-Group customers.

Several centralized platforms have been rolled out on the international transit points to provide value-added services to mobile operators.

3.2.1.7 Networks dedicated to Enterprise services

X.25 Networks

X.25 was taken off the market in mid-2010 and the technical aspects of the service were discontinued in June 2012. X.25 still supports one customer in France and its overseas territories, for backup payment points, connected with "intelligent network" services.

The migration of this last customer into an IP network will be completed by the end of the first quarter 2017. As at this date, X.25 will be permanently closed.

Frame Relay/ATM Networks

In France, the activity on the FR/ATM network is declining, and businesses' need for increased speed is increasingly met by the IP/MPLS services available on the Network for Business Access to IP (RAEI). A FR/ATM network optimization program was launched.

However, the Frame Relay/ATM network is maintained as a network to access enterprise services *via* the TDSL (Turbo Digital Subscriber Line) aggregation offers. Therefore, this network maintains points of presence in France, in the five overseas departments and in two overseas territories (New Caledonia and French Polynesia) to assist in transiting the TDSL aggregation to GE (Gigabit Ethernet) aggregation as part of the All-IP program.

The Network for Business Access to IP (RAEI) in France

The main purpose of the RAEI is to connect a company's sites for internal data exchange on the Virtual Private Network (VPN) and to provide it with Internet connectivity. It also provides Voice over IP transport for companies.

It is made up of a core infrastructure of around 60 transit routers that are interconnected by multiple 10 Gbits/s links, or 100 Gbits/s links.

On *this backbone* all components and routers with network functions are connected, which also provide the interconnection with the Backbone and IP Aggregation Network (RBCI) for Internet traffic and for business aggregation traffic coming from NAS and BAS.

The ring of approximately 900 PE (Provider Edge) routers gives companies access to xDSL and Ethernet technologies, at speeds of 75 Kbits/s to 10 Gbits/s, under standard offers. The routers are located in major cities and business areas.

This network is connected to the IP Global Network through four gateways (located in Paris, Lille and Lyon) to connect international business customers.

The international MPLS/IP VPN network (IP Global Network IGN and AGN access network)

Like the IP network in France (RAEI), this network is designed to supply Virtual Private Network (VPN), Internet and Voice over IP services. At the end of November 2016, the network comprised 633 points of presence (including partner MPLS networks) across 110 countries. Direct presence in the countries decreased (141 countries in 2015) as Orange is developing a partnership strategy (Network to Network Interface or NNI) in order to cover certain regions and countries more effectively. 93 additional countries are covered by such partnerships.

To strengthen an "all-IP" network (IGN+), a service virtualization program was initiated in 2016 with the SDN-NFV project rolled out in six points of presence outside France (two in Europe, two in North America, two in Asia).

The international business voice network (NEO)

NEO is a network supplying voice services for international businesses. Based on the international MPLS IP network (IGN), this business voice network has approximately 70 points of presence in 38 countries, and is connected to some 60 operators worldwide.

In 2016, a new network architecture was implemented for SIP protocol interconnection in six new points of presence.

3.2.2 Real estate

At December 31, 2016, the real estate assets recorded in Orange's balance sheet had a net carrying value of 2.7 billion euros, compared with 2.7 billion euros in 2015.

The buildings are very varied in terms of sizes and destinations: if some service campuses such as Orange Gardens in France, which was inaugurated on June 8, 2016, have surface areas of more than 50,000 sq.m. for thousands of employees, many small technical kiosks have a very small floor surface area and are not occupied.

At end-2016, Orange occupied 25,327 sites (including 217 with a surface area greater than 5,000 sq.m.), covering a total area of 5.6 million sq.m. including 2.2 million sq.m. of leased space and 3.5 million sq.m. of fully-owned space.

In France, more than 82% of the technical buildings are fully-owned while service buildings are close to 58% rented.

The Real Estate Division manages all properties in France, whether they are office buildings, technical buildings or points of sale.

It pursues a real estate investment optimization policy by addressing the needs related both to the telecommunications network's evolution and the implementation of innovative working environments. Buildings are always conceived in terms of their uses and as a service.

Many points of sale within the distribution network were upgraded to the "Smart Store" concept. The Paris Opéra store, which was opened on November 8, 2016, is the Group's iconic front-window in its new customer experience approach.

In accordance with the principles of the *Essentials2020* plan, the Real Estate Division is actively involved in improving the workspaces of Group employees as well as in the environmental transition goals by improving the environmental quality of the building stock.

In Poland, the properties held by Orange Poland at the end of 2016 represented 1.7 million sq.m. The total surface area of developed and undeveloped land represented 12.8 million sq.m.

3.3 Research and innovation

The information and communication technology (ICT) sector in recent years has gone through major changes in its value chain, significantly increasing the number of players. New economic models developed by large Web players are coming into existence, while manufacturers of consumer electronics are moving towards value-added services. In this context, innovation will be a major source of growth for the Orange group.

3.3.1 Research and innovation

In order to achieve its goals in research and innovation, Orange has established a network of expertise spanning four continents.

The Orange Labs, which carry out the Group's technical research, design and deployment activities, are located in eight countries around the world: France, China, Japan, Poland, Romania, Tunisia, India and Egypt. Each Orange Lab is immersed in a specific environment that enables it to anticipate and take advantage of technological breakthroughs and changes in user patterns worldwide and to facilitate partnerships, thereby accelerating the Group's capacity for innovation.

The Orange Labs network is supplemented by so-called Technocentres, located in France, the United Kingdom, Jordan and Ivory Coast. Their objective is to design and market new products and services that meet customer requirements as far as possible in all the countries where the Group is present. They are also tasked with ensuring consistent user interfaces for the Group's various products and services (design strategy).

In response to new waves of technology and helping to create the applications of the future, Orange group's research covers nine areas:

- digital personal life: designing new personal and interpersonal services to communicate, produce, manage and exchange enriched digital content;
- digital society: mapping the outline for a new society, from education to health, from nomadism to connected transport, from civic life to the industry or agriculture of the future, gradually and deeply transformed by digital technologies which have become a real social challenge;
- emerging digital countries: implementing digital ecosytems which address the challenges and constraints of emerging countries to offer accessible mass connectivity to as many emerging countries as possible, as well as services tailored to available infrastructure and local needs;
- digital enterprise: supporting the digital transformation of enterprises to make them human, responsible and efficient by considering more flexible, collaborative and empowering tools, organizational structures and ways of working;
- ambient connectivity: developing new connectivity technologies for both humans and things and helping to create 5G, focusing on its ability to become a global connectivity standard for the Internet of Things;
- software infrastructure: preparing the technical blocks, platforms and virtualized and automated IT systems, for the communication, calculation and storage of information distributed across networks, data centers, boxes, and terminals, by establishing a dependable software environment embedded in the hardware;
- Internet of Things: studying the manner in which users, surrounded by these connected objects within cyber-physical systems, will change the way in which they interact with services, *via* connected objects or their "digital avatars";

- data and knowledge: developing algorithms, technical building blocks, and platforms to ensure privacy in the spheres of Big Data and artificial intelligence;
- trust and security: researching new user-enriched architectures offering a high level of trust, assurance and protection of personal data.

3.3.2 *Open Innovation*

More than ever, *Open Innovation* is a crucial strategy for research and innovation to capture trends and benefit from partners' skills in a balanced and win-win mode. This also makes it possible to draw on ecosystems that promote long-term growth.

The main modalities are as follows:

- supporting start-ups and SMEs. Orange has launched a network of start-up accelerators known as *Orange Fab*, with a presence in 12 countries across four continents. Created in March 2013 in Silicon Valley, the *Orange Fab* program was rolled out internationally that same year in France, and then in 2014 in Japan (followed by South Korea and Taiwan), Poland, Ivory Coast, Israel and Jordan. The *Orange Fab* network was extended to Spain in 2015 and to Senegal and Cameroon in 2016. Orange helps selected start-ups grow their businesses, and in certain countries also provides financial and logistical support. Over 220 start-ups were or are being accelerated by *Orange Fab* as at end-2016. In order to foster the growth of these start-ups, Orange and Deutsche Telekom announced (in June 2014) their collaboration on their respective *Orange Fab* and hub:raum acceleration programs. To address the increasing international ambitions of start-ups, in September 2015 Orange created the alliance Go Ignite with Deutsche Telecom, Singtel and Telefónica. The selected start-ups can have access to the resources and markets of these partners, representing over a billion potential clients, with complementary locations in Europe, Africa, Latin America, South Eastern Asia and the Middle East, thus contributing to the emergence of new European or even global leaders. Ultimately, France Orange is an active player in the French Tech network which makes it possible to better identify the start-ups which could become partners;
- the Orange Developer program, through which the Group opens its service platforms to application developers to provide more innovative services to its customers. At end-2016, Orange had a catalog of around 40 Application Programming Interfaces (APIs) in self-service mode, grouped into three categories: i) APIs for identification, payment, communication and the Cloud, ii) APIs for the Internet of Things and proximity, and iii) APIs connected with the development of services in Africa and the Middle East;
- a strong involvement in the research and innovation ecosystems. Orange is a major player in research programs developed in partnership with more than 80 collaborative projects, both in France (FUI, ANR and Future Investment Program projects) and at the European level (7th framework program of the European Commission, EUREKA-CELTIC, Horizon 2020, PPP FI, PPP 5G, PPP Big Data). As part of the Future Investments Program, the Group is a member of two Technology Research Institutes. It chairs the B-com Technology Research Institute, which works on ultra-high-speed broadband fixed-line and mobile networks and the content of the future and also contributes to the SystemX institute, which works in the area of digital systems engineering. In addition, Orange participates in 10 competitiveness centers in France, set up to foster local synergies for innovative projects. Notably, it chairs the *Images et Réseaux* (Image and Networks) center, where it is the lead for the augmented reality plan. Lastly, Orange contributes to several of the nine solutions developed as part of the *La nouvelle France industrielle* (New Industrial France) program unveiled by the French government in May 2015 to accelerate research and innovation;
- a policy of strategic partnerships with universities and public laboratories in France and abroad. Thus, in France, the Group is a founding member of a series of foundations at the Institut Mines-Télécom, Supelec, Université de Cergy-Pontoise, Université de Rennes 1 and Université Joseph Fourier de Grenoble. The Orange group is also financing several Research Chairs. Lastly, Orange has an active policy of forming strategic partnerships with leading industrial players worldwide, which allows it to enhance its portfolio of products and services and open itself to new ecosystems.

3.3.3 Investment-capital

The Orange group plays a key role in financing innovation in the IT industry, drawing on various investment vectors, which are now grouped under Orange Digital Investment:

- mono-corporate ventures (fully-owned investment companies) such as, in particular:
  - Orange Digital Ventures, which is the Group's investment vehicle for young start-ups. It supplements Orange's *Open Innovation* range, particularly in the following areas: new connectivity, digital enterprise services (SaaS, Big Data, Security, process digitization), mobile banking & mobile payment (fintech), Internet of Things, and digital services for Africa & Middle East,
  - French holding company Orange Technologies Investissements (OTI), initially established to monetize Orange's intellectual property in exchange for stakes in high-tech start-ups;
- multi-corporate ventures (joint investment companies), in which Orange generally invested with other partners-inverstors, generally industrial companies, but occasionally also involving financial firms. These multi-corporate ventures include:
  - three Orange Publicis Ventures funds (Growth, Global, and Early-stage) set up through a partnership with Publicis and managed by Iris Capital Management, and in which the Group purchased a 24.5% stake,
  - the Écomobilité Ventures funds, created in collaboration with SNCF, Total, Air Liquide and Michelin, and managed by Idinvest,
  - the Technocom 2 fund, financed jointly with Alcatel-Lucent, the SEB group, Soitec, and France's National Seed Money Fund (*Fonds national d'amorçage*) and managed by Innovacom Gestion,

- the Robolution Capital fund, financed jointly by Bpifrance, the European Investment Fund, EDF and Thalès, and managed by the 360 Capital Partners management company;
- and more traditional private equity funds attracting a wide range of investors (financial and non-financial companies as well as private investors) and managed by independent asset management firms in Europe, the United States and Canada;
- lastly, financing of more mature or late stage start-ups, which can be carried out through direct strategic investments made by the Group, as part of its Corporate Development Digital activity, such as Dailymotion, Deezer or, more recently, Jumia.

3.4 Patents and trademarks

3.4.1 Patents

At December 31, 2016, the Orange group had a portfolio of 6,844 patents in France and abroad (issued or filed) with the goal of protecting its innovations. In order to maximize their value, some of these patents are licensed through patent pools for patents corresponding to industry standards (e.g. NFC, MPEG Audio, WiFi, HEVC). Value maximization also concerns software such as engineering tools for the mobile network.

207 new patents were filed in 2016. These patents mainly relate to the Orange Labs network in France.

3.4.2 The Orange brand

The Orange brand is protected in 200 countries. It is ranked as 51st in the TOP 100 international brands by Brand Finance "Global 500 2017" that values it 21.5 billion euros.

The Orange brand belongs to Orange Brand Services Limited, a wholly owned subsidiary of Orange SA, which has entered into brand license agreements with of the group's subsidiaries operating under the Orange brand (see Section 7.5 *Related party transactions*).

Since the termination of the brand license agreement with the Israeli company Partner Communications Company Limited in February 2016, the Orange brand is no longer used outside the Group's subsidiaries, except by Altice Hispaniola (formerly Orange Dominicana) and Telekom Kenya which were sold in April 2014 and June 2016 respectively (see Note 3 to the consolidated financial statements, Gains (losses) on disposal and main changes in the scope of consolidation).