Arthur D Little

2016 "Economics of Telecoms" Report – Update of key economic metrics

December, 2016

Fédération Française des Télécoms

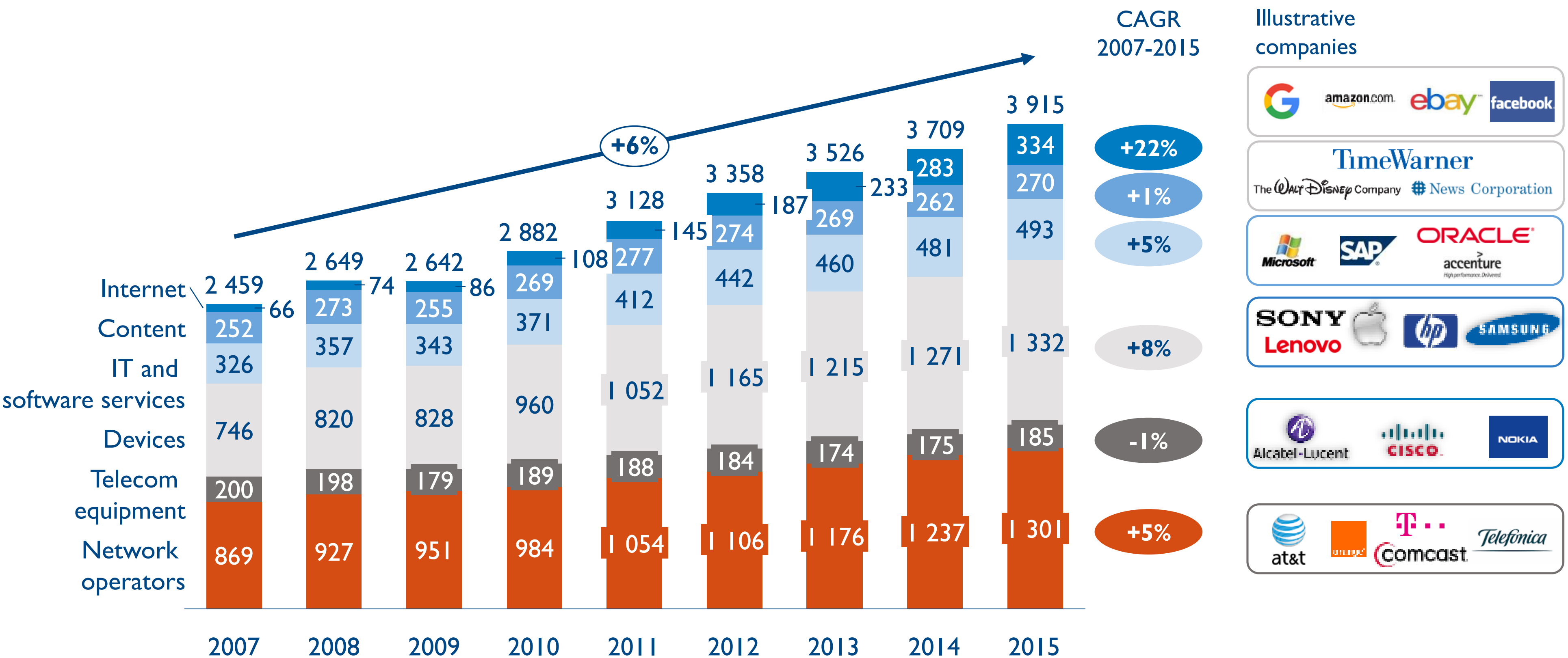
Agenda

FÉDÉRATION FRANÇAISE DES TÉLÉCOMS

Globally, the digital ecosystem has experienced a strong growth mostly driven by internet players and device manufacturers

Revenues of the digital ecosystem by sector[1]

World, 2007-2015, billions of constant euros[2]



Sector	2007	2008	2009	2010	2011	2012	2013	2014	2015	CAGR 2007-2015
Internet	66	74	86	108	145	187	233	283	334	+22%
Content	252	273	255	269	277	274	269	262	270	+1%
IT and software services	326	357	343	371	412	442	460	481	493	+5%
Devices	746	820	828	960	1 052	1 165	1 215	1 271	1 332	+8%
Telecom equipment	200	198	179	189	188	184	174	175	185	-1%
Network operators	869	927	951	984	1 054	1 106	1 176	1 237	1 301	+5%
Total	2 459	2 649	2 642	2 882	3 128	3 358	3 526	3 709	3 915	

Source: Thomson Reuters, Arthur D. Little analysis
[1]Top 30 per category by 2015 revenues
[2]Euro vs 2015 local currency, applied to the local current currency value

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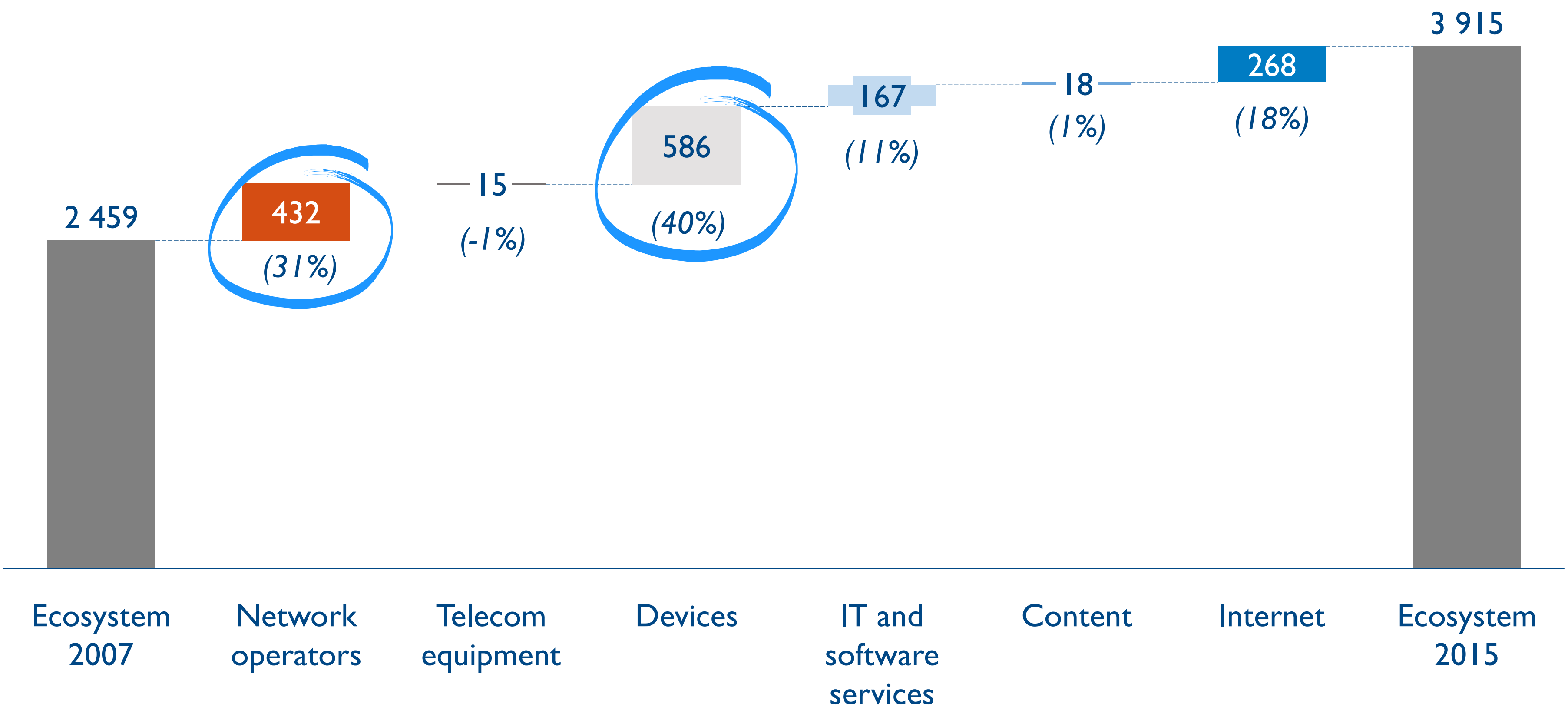
Network operators and device manufacturers have driven 70% of the world ecosystem's growth over the period

Revenues of the digital ecosystem[1]

World, 2007-2015, billions of constant euros[2]



Source: Thomson Reuters, Arthur D. Little analysis
[1]Top 30 per category by 2015 revenues
[2]Euro vs 2015 local currency, applied to the local current currency value

(x%) : weight in the growth of the digital ecosystem

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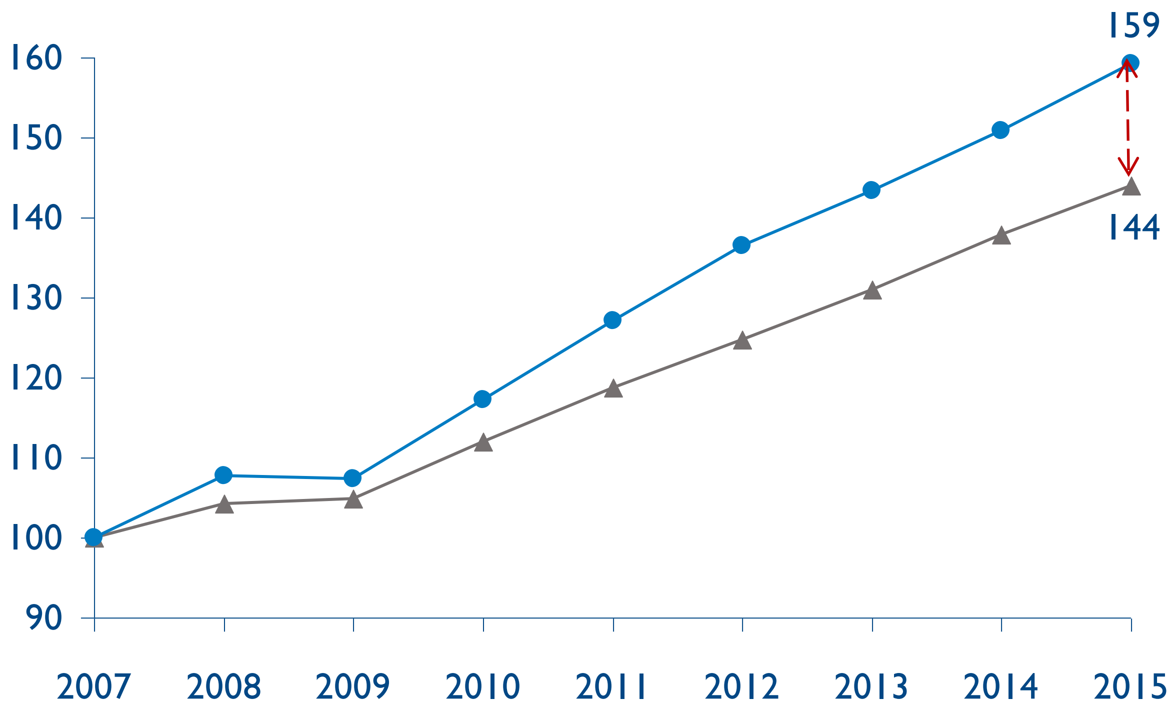
The digital ecosystem continues to grow at a slightly higher rate than the world GDP

GDP growth[1] vs revenues of the digital ecosystem

Monde, 2007-2015, base 100 in 2007



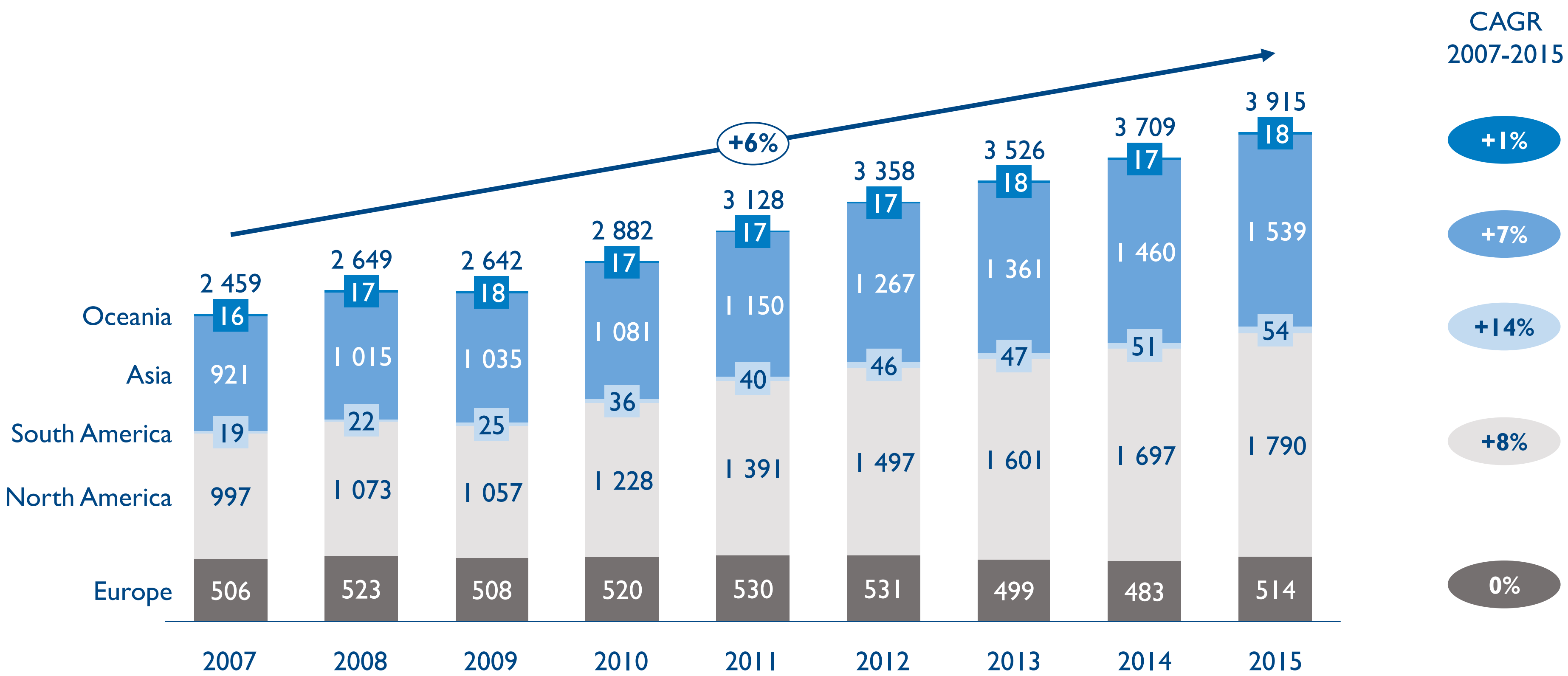
	CAGR 2007-2015
Growth of the digital ecosystem	+6%
GDP growth	+5%

Source: Thomson Reuters, Arthur D. Little analysis
[1]In PPP dollars

Europe is the only region which does not benefit from the growth of the digital ecosystem

Revenues of the digital ecosystem by sector

World, 2007-2015, billions of constant euros

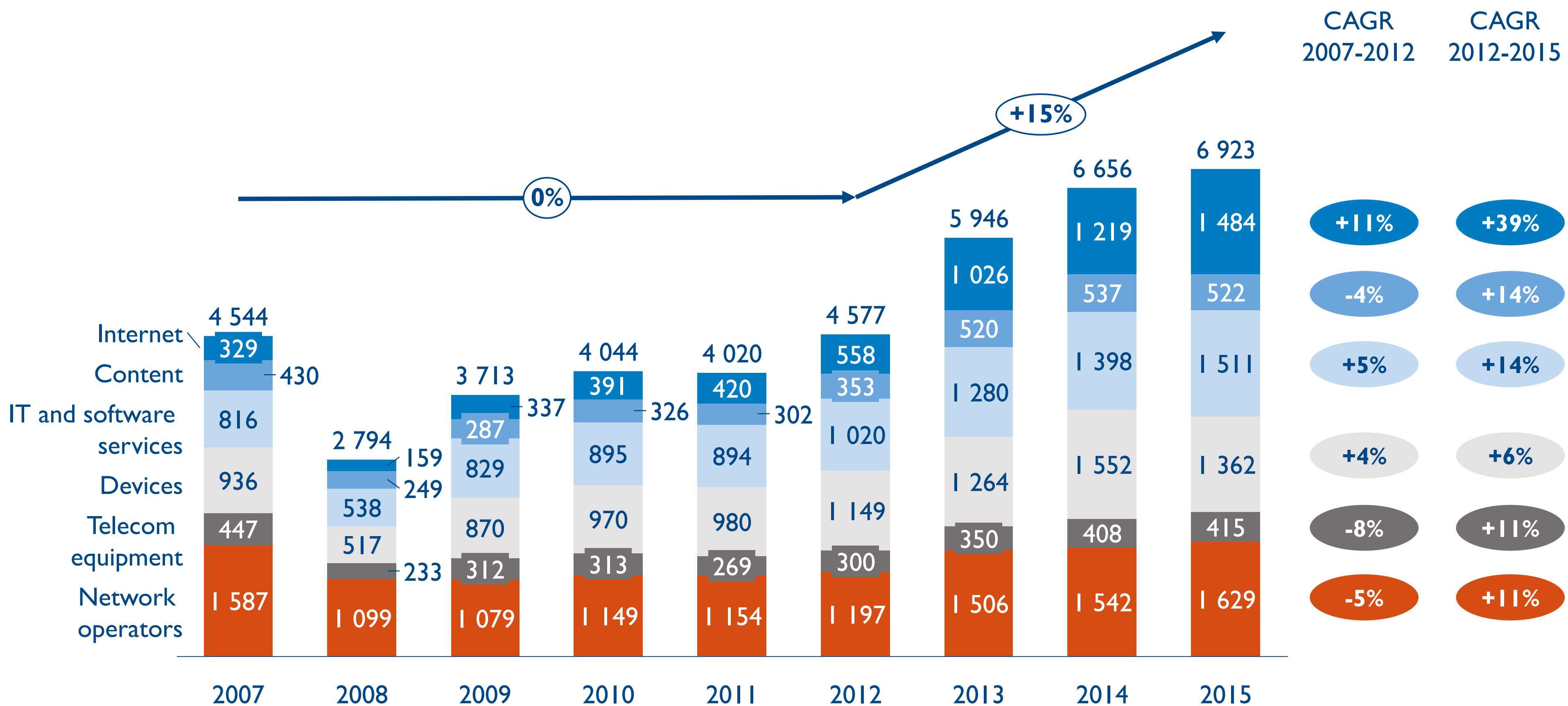


Source: Thomson Reuters, Arthur D. Little analysis

Apart from telecom equipment vendors, all other digital ecosystem players have exceeded their before-downturn capitalization levels

Market capitalization value by sector

World, 2007-2015, billions of constant euros



Source: Thomson Reuters, Arthur D. Little analysis

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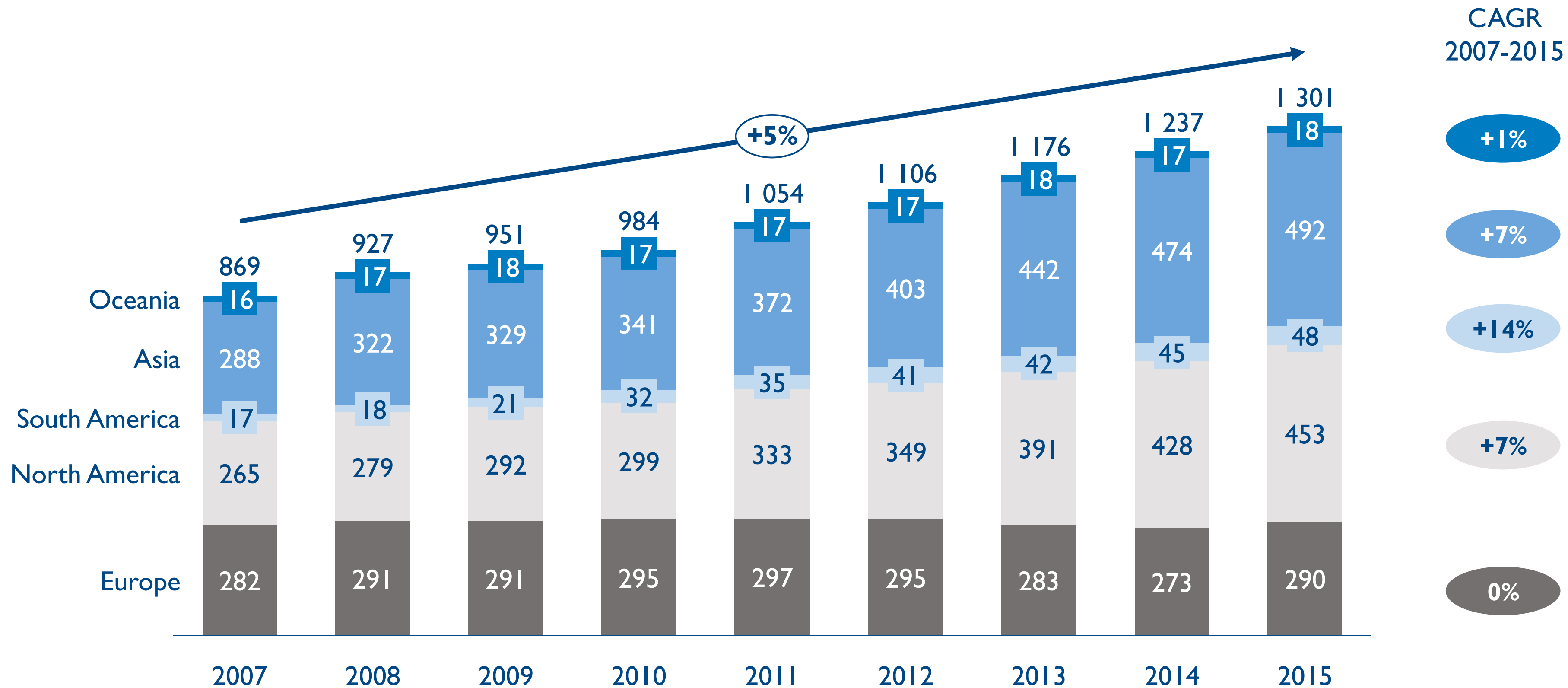
All telecom operators, except European ones, have benefited from a strong growth over the period

Evolution of telecom operator revenues per region[1]

World, 2007-2015, billions of constant euros



Source: Thomson Reuters, Arthur D. Little analysis

[1]Nationality according to HQ location

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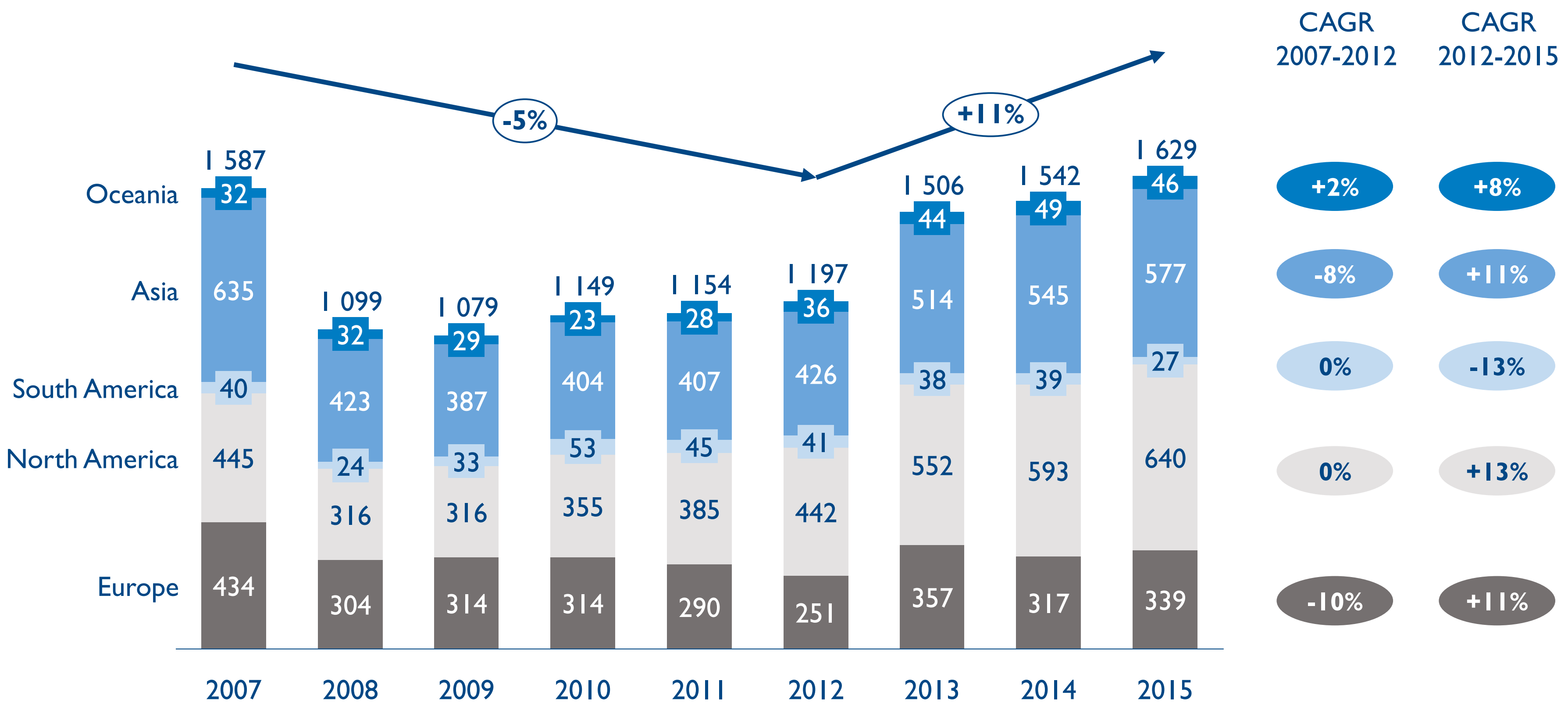
European telecom operators' capitalization is still far lower than pre-downturn level

Evolution of telecom operator market capitalization per region[1]

World, 2007-2015, billions of constant euros



Source: Thomson Reuters, Arthur D. Little analysis

[1]Nationality according to HQ location

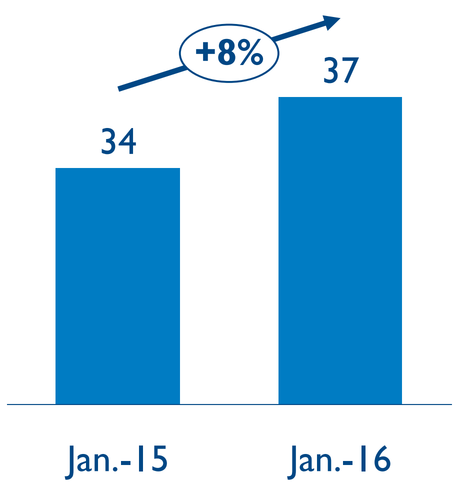
Agenda

The French mobile market is very dynamic in terms of equipment and data consumption

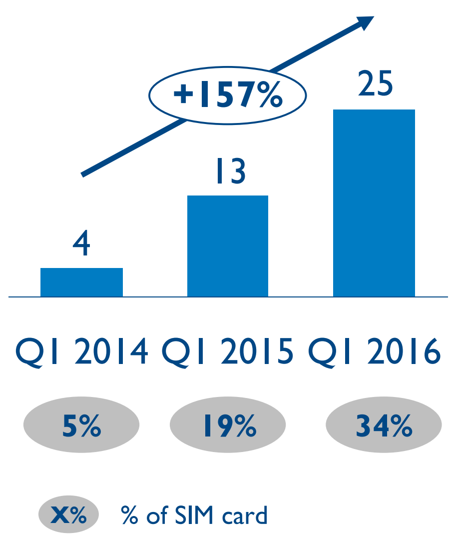
Connectivity and equipment in France – Mobile

France, 2014-2016

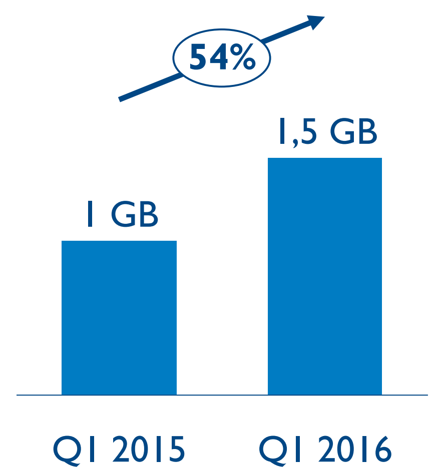
Smartphone installed base
(Millions de smartphones)



4G cards
(Millions of active cards)



Average monthly data consumption[1]



55h of music streaming or
6h of SD video streaming

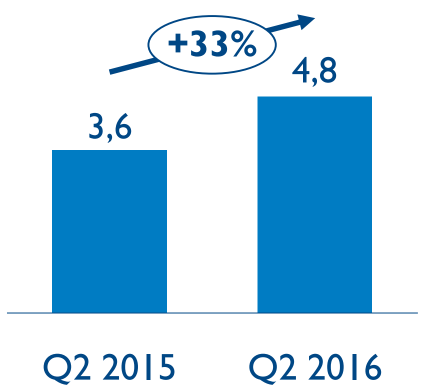
Source: comScore, ARCEP, network operator, AT&T, Arthur D. Little analysis
[1]Active 3G or 4G broadband clients

Broadband subscriptions are growing strongly in France, largely in the form of multiple play bundles

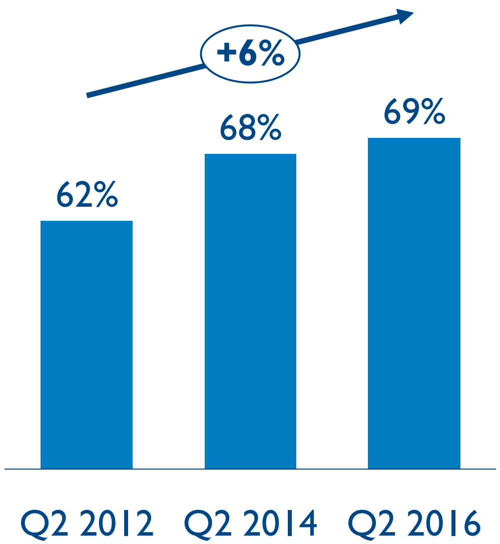
Connectivity and equipment in France – Fixed broadband

France, 2012-2016

Very High Speed[1] broadband subscriptions
(Millions of subscriptions)



Multiplay subscription[2]
(% fixed broadband subscriptions)



Source: ARCEP, Arthur D. Little analysis
[1]Speed >= 30 Mbps
[2]Fixed broadband and other subscriptions

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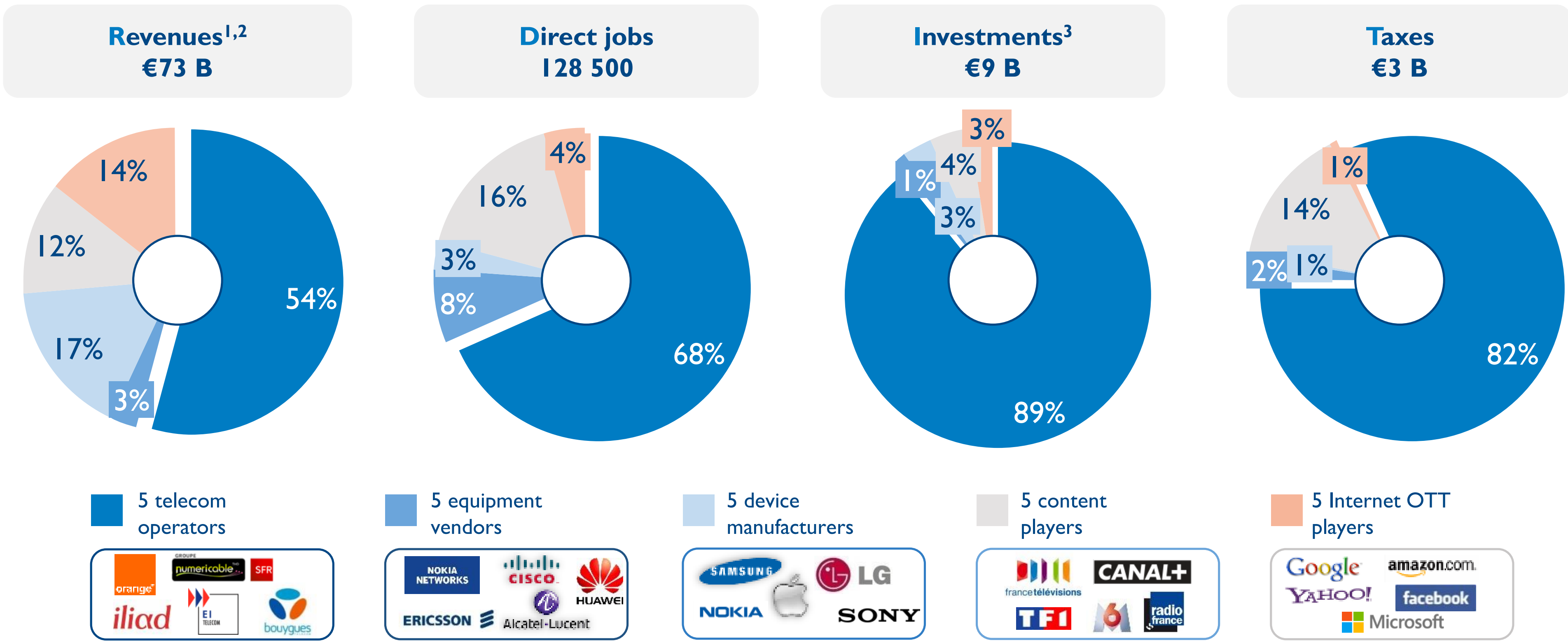
Network operators are essential to the French digital ecosystem

Relative size of sub-sectors in the digital ecosystem

France, 2015



Source: Diane, annual reports, Arthur D. Little analysis

[1]Revenues declared in France or released in the press

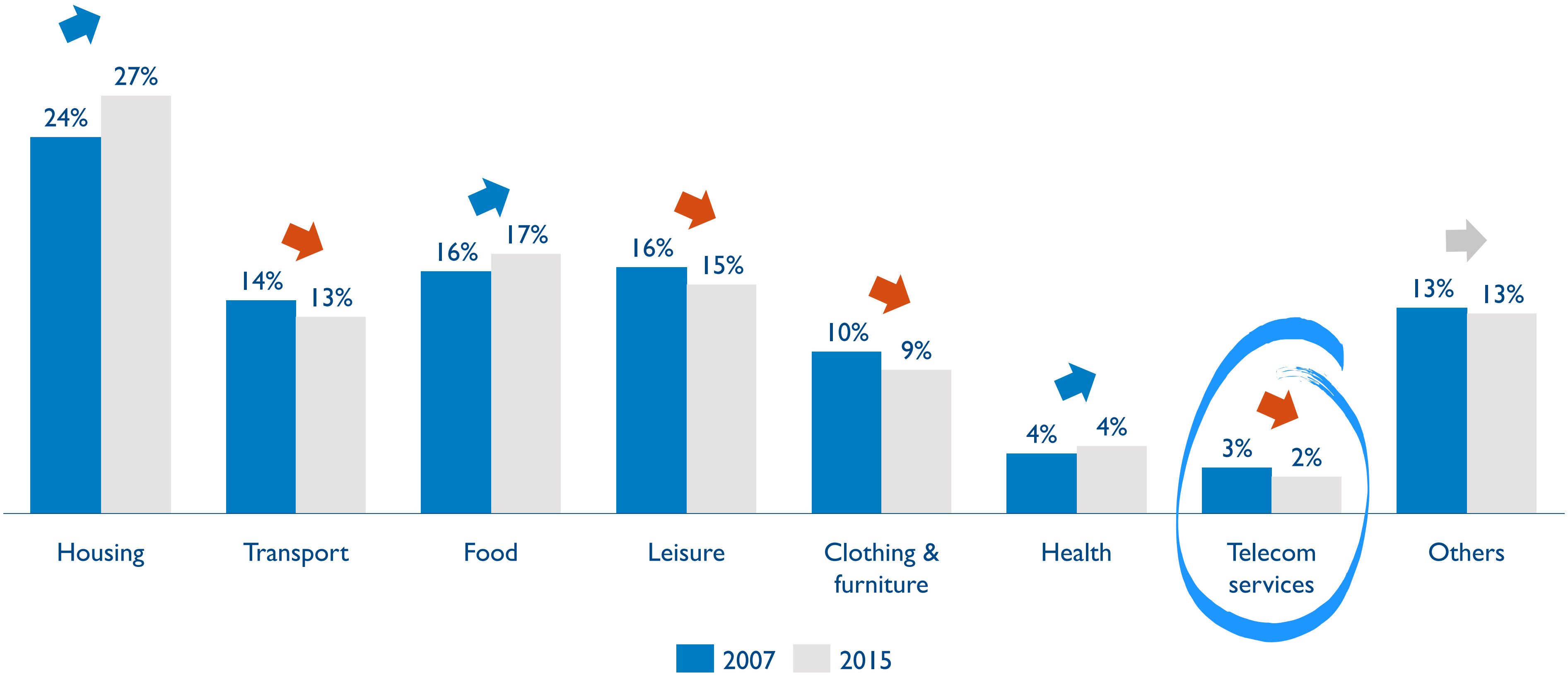
[2]Adjusted data to account for estimated revenues of international players in France

[3]Investments of Nokia's mobile business unit are reported with Microsoft following the acquisition of this unit by the latter in 2014

The share of telecom services in French household spending is low and has decreased over the past few years

Telecom share in total household spend

France, 2007-2015, % of household expense

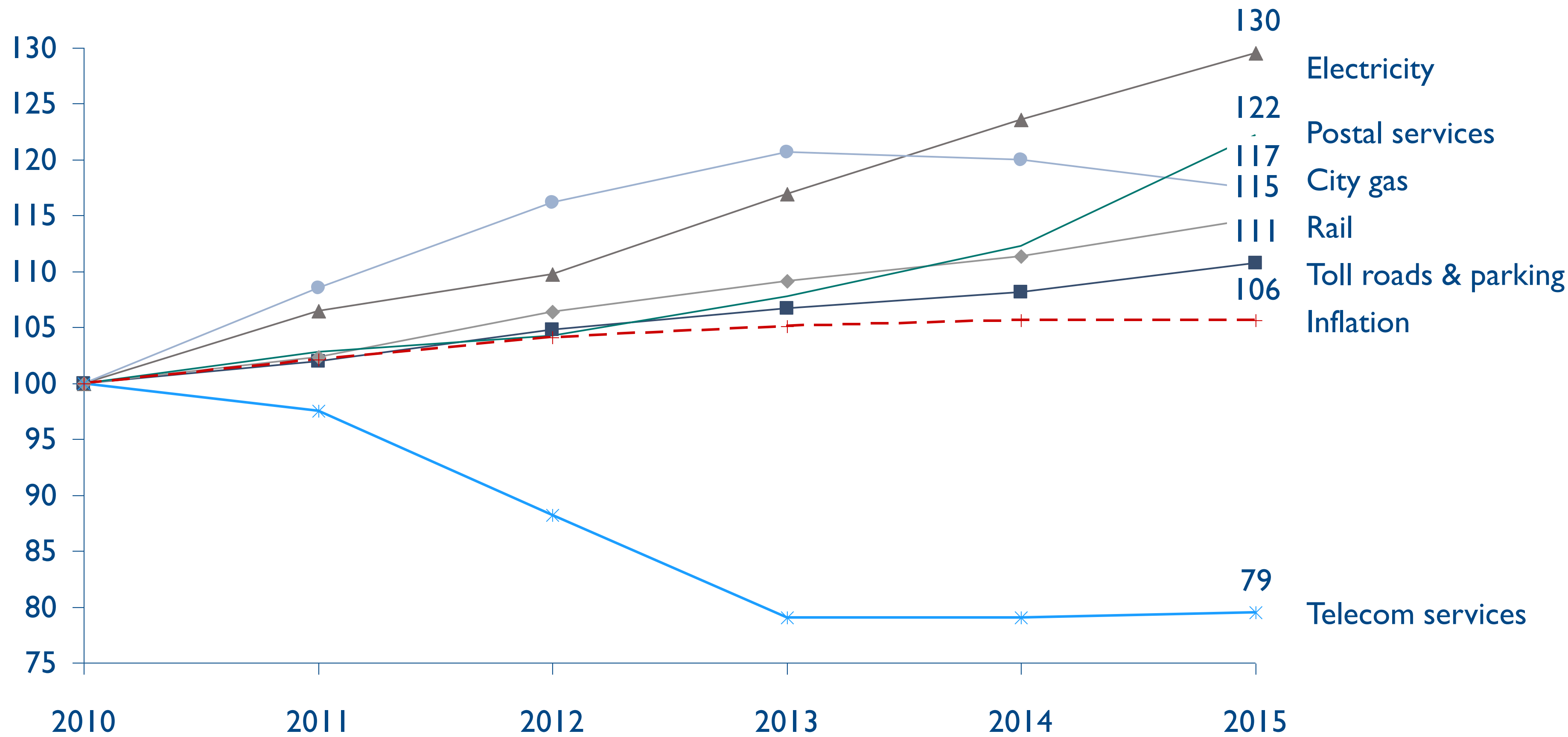


Source: Euromonitor, Arthur D. Little analysis

Contrary to other key regulated sectors, telecom services prices have dropped over the past 5 years

Consumer price index evolution on selected products

France, 2010-2015, Base 100 in 2010



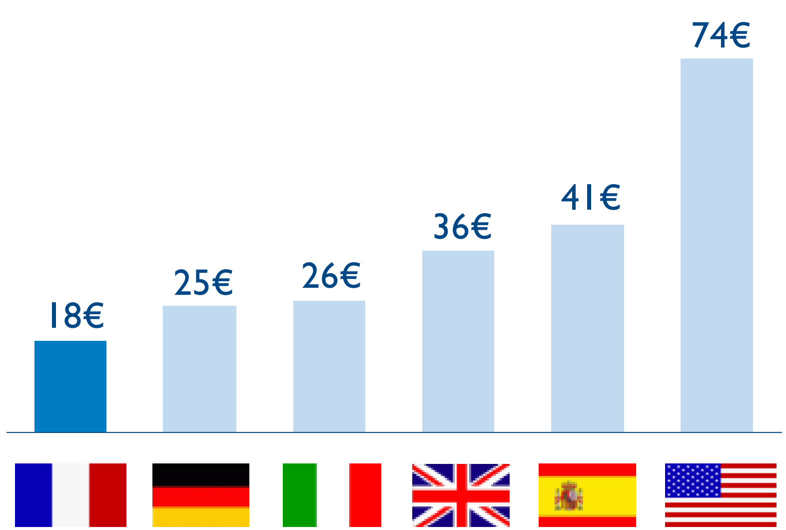
Source: Insee, Arthur D. Little analysis

Prices of telecom services in France are still lower than in other large Western countries

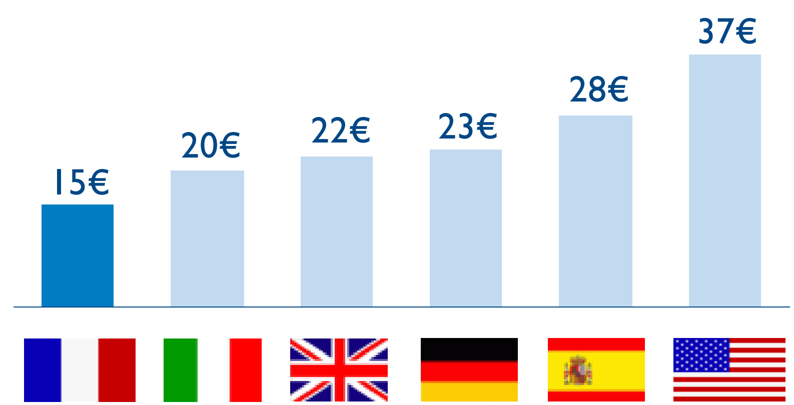
Offer benchmark – Main operators

Selection of countries, October 2016, € incl. taxes / month

Fixed (Triple Play)[1]



Mobile[2]



	Fixed						Mobile					
2015 ›	20 €	30 €	25 €	47 €	42 €	74 €	20 €	20 €	26 €	45 €	30 €	47 €

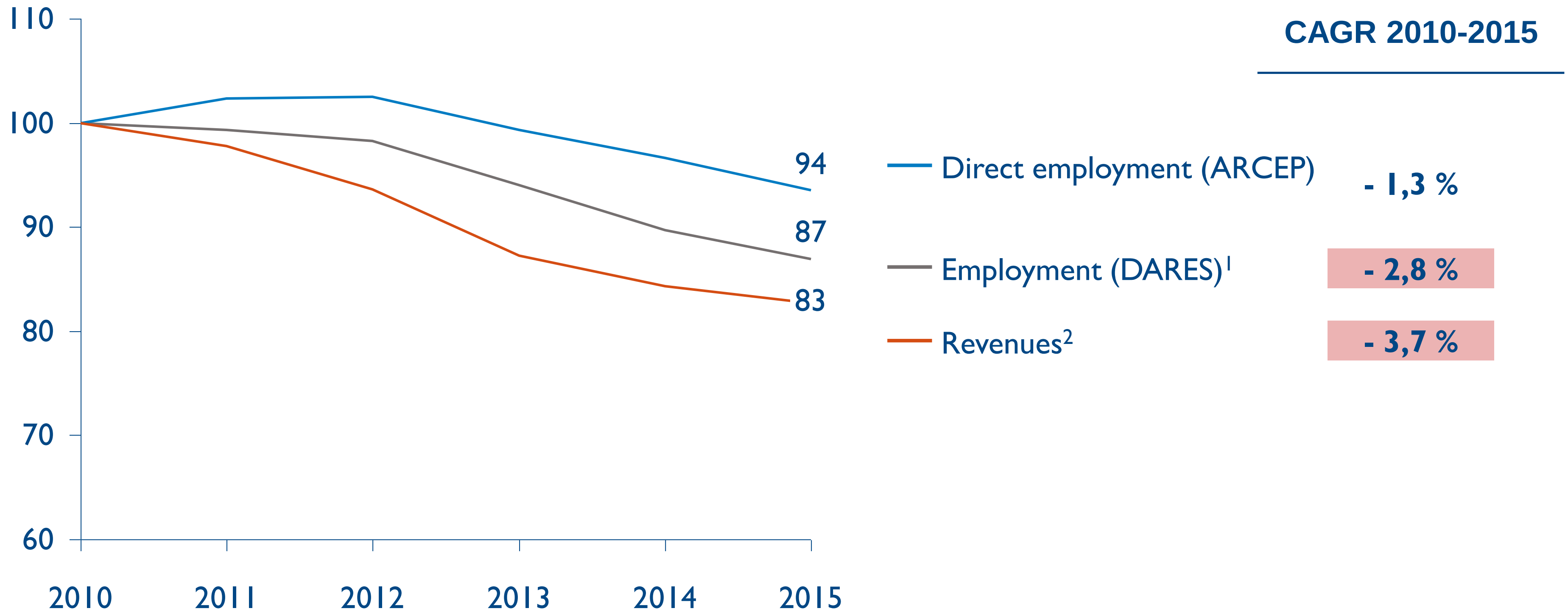
Source: network operators, Arthur D. Little analysis

[1]Triple play offers only; unlimited calls to fixed lines at least; unlimited high-speed Internet via xDSL or fibre; TV included, except for additional packages; operators with > 10% market share; [2] Unlimited calls when available (otherwise >500 minutes), unlimited SMS/MMS, 2 Go Internet at least; offers excluding device, free of engagement when available; operators with > 10% market share

The strong decline in revenues from network operators has had an important negative impact on level of employment of 2010

Direct employments and revenues of network operators in France

France, 2010-2015, Base 100 in 2010



Source: ARCEP, Insee, Arthur D. Little analysis

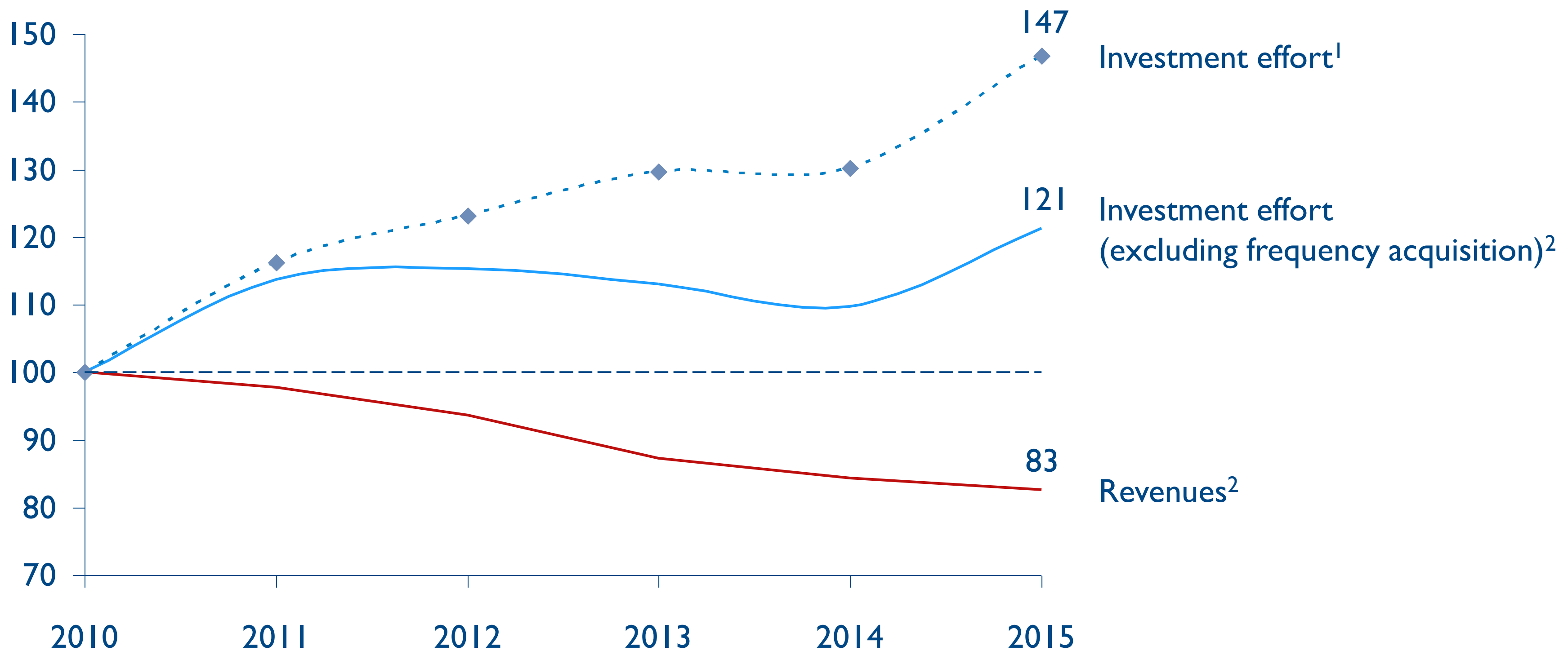
[1]Incl. a part of direct employments

[2]ARCEP figures (retail market)

Despite the drop in revenues, operators strongly raised their investments to meet the demand for very high speed broadband

Telecom operators investment and revenue evolution

France, 2010-2015, Base 100 in 2010



Source: ARCEP, Arthur D. Little analysis

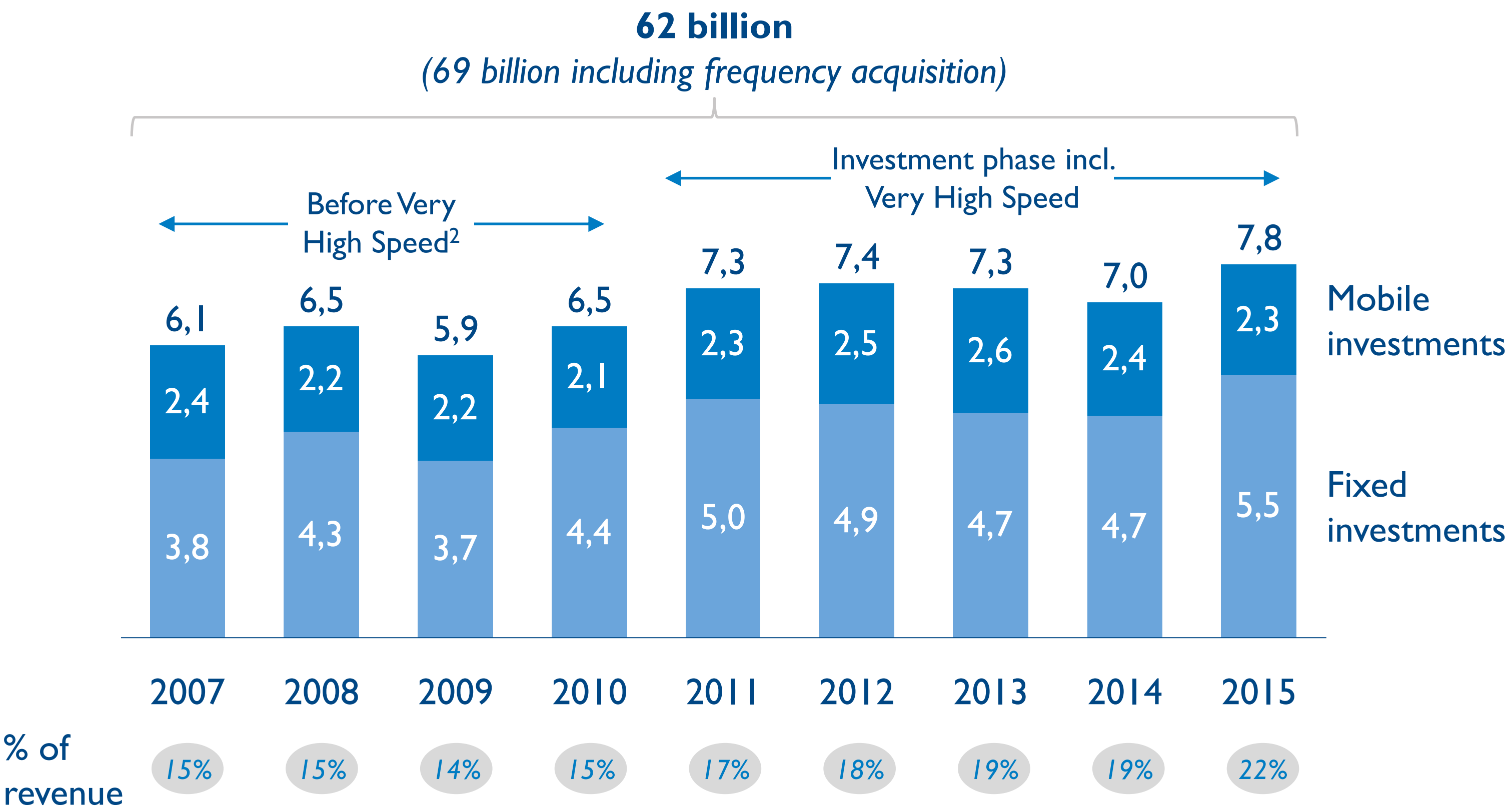
[1]Investment effort : operators investments (excluding frequency acquisition) / operators revenues

[2]Temporary ARCEP figures for 2015

Telecom operators' investments has remained very high – €62 billion were invested over the period

Investments of network operators[1]

France, 2007-2015, billions of constant euros



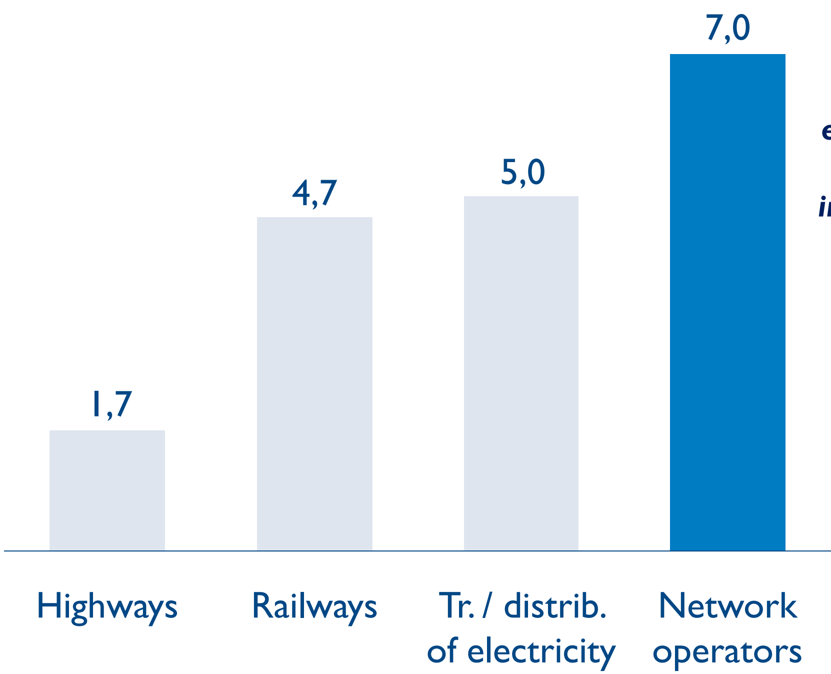
With ~7m of fiber connections, France benefits from a coverage of ~25% of households in 2016

Source: ARCEP, Arthur D. Little analysis
[1]Investments excluding frequency acquisition
[2]Speed >= 30 Mbps

The 7 billion euros invested each year by network operators represent a very significant weight in the economy

Telecom operators investments[1] vs. other sectors

France, 2008-2015, 8-year annual average



equivalent to the following investments, each year…

5 nuclear power plants

or

235 TGV trains

or

18 A380

or

17 Millau Viaducts

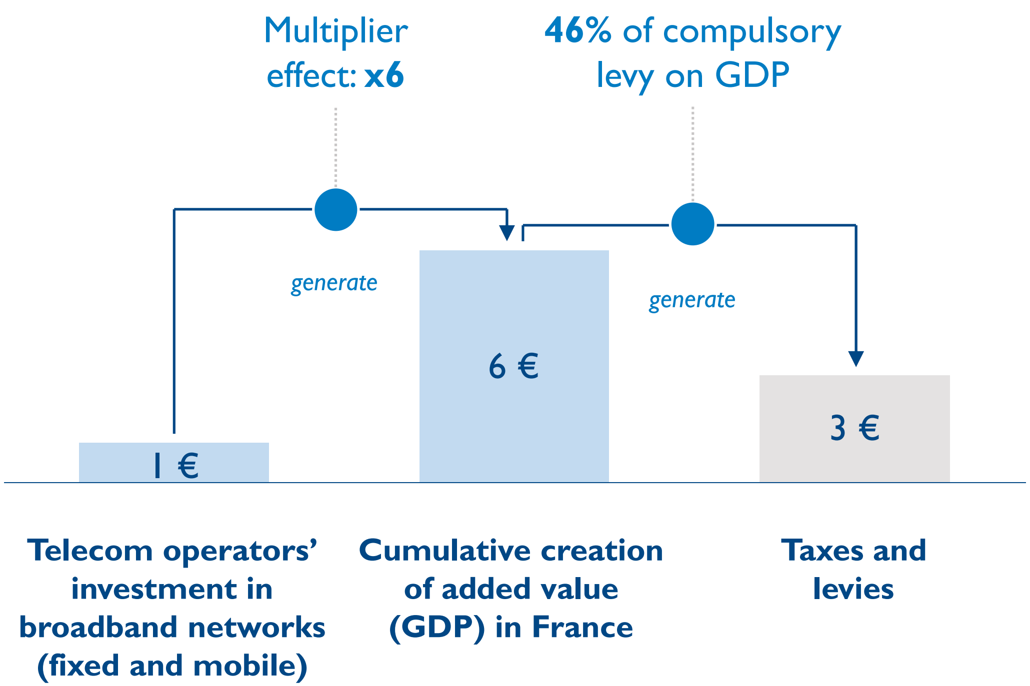
or

520 high school

Source: companies, desk research, Arthur D. Little analysis

[1]Network operators: ARCEP figures (excluding frequency acquisition); Electricity: RTE (2009 to 2014) and ERDF; RFF; Highways: ASFA (Sanef, SAPN, ASF….)

Telecom has a multiplier effect on the economy, as telecom investments yield 6 times the amount invested for the French economy



Examples of induced effects on the economy

- Time and productivity gains for enterprises
- Time savings and customer experience improvement
- Emergence of new sectors of activities and new players

Value creation of the telecom investments

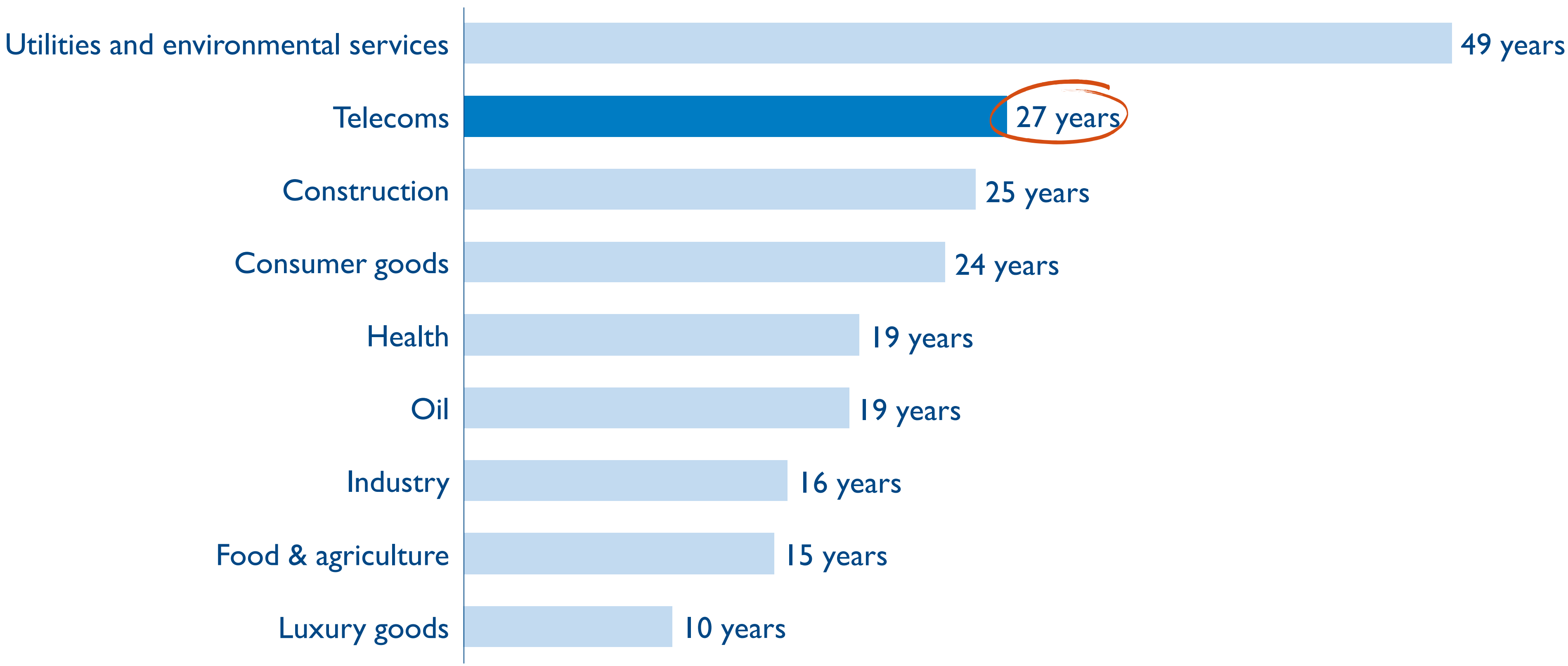
- 1 euro invested in broadband networks creates 6 euros of GDP which represents 3 euros of revenue for the State

Source: INSEE, IDATE, ARCEP broadband observatory, Arthur D. Little Ericsson Chalmers university of technology « Socioeconomic effects of broadband speeds », French State finance law project 2013 report on compulsory levy and their evolution, Arthur D. Little analysis

As a consequence, the telecom sector is based on heavy investments which are amortized on a long term basis

Return on investment timeframe[1] for various business sectors[2]

France, average 2012-2015, number of years



Source: company, Thomson Reuters, Bloomberg, Arthur D. Little analysis

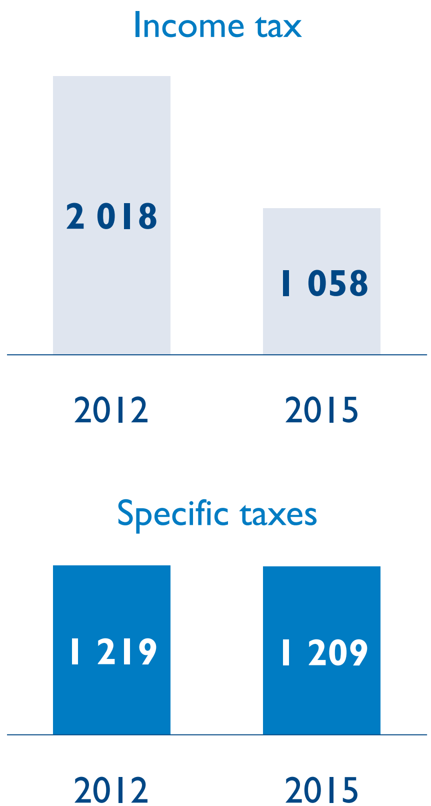
[1]ROALTC : return on average long term capital is calculated as follow : EBIT x (1 – Taxes) / (Total Equity + Total Long Term Debt, Deferred Income Tax and Total Other Liabilities)

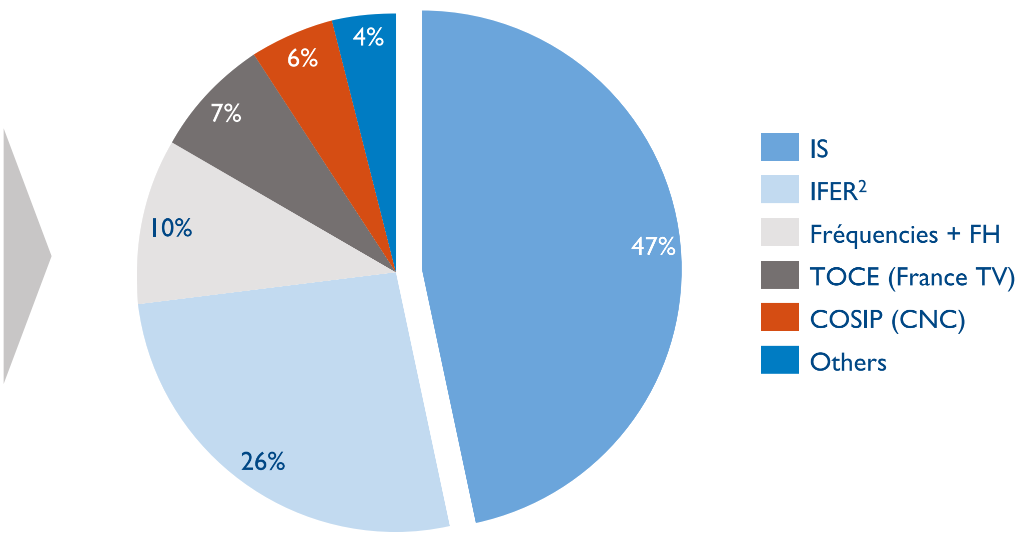
[2]Utilities and environmental services: EDF, Suez, Veolia ; construction: Saint Gobain, Vinci ; telecoms: Orange, SFR, Iliad, Bouygues ; consumer goods: Carrefour ; health: Sanofi ; industry: Renault, Michelin, Schneider Electric; luxury goods: LVMH, L'Oréal, Kering ; food & agriculture: Danone; oil: Total

Despite the decline in telecom operators' revenues, specific taxation remained stable in France

Telecom operators' taxation

France, 2012 and 2015, millions of euros and % of total taxes





Source: operators, FFT, Arthur D. Little estimations

[1] Perimeter : top 4 companies' taxes & FFT members specific taxes

[2]IFER antennas and copper

Telecom operators suffer from an asymmetric taxation, which is disadvantageous in comparison with other players of the digital ecosystem

Fiscal optimization mechanism in Europe of the GAFA

Country of final consumption

Establishment country
Place of fiscal registration

Examples

Ireland

Luxemburg

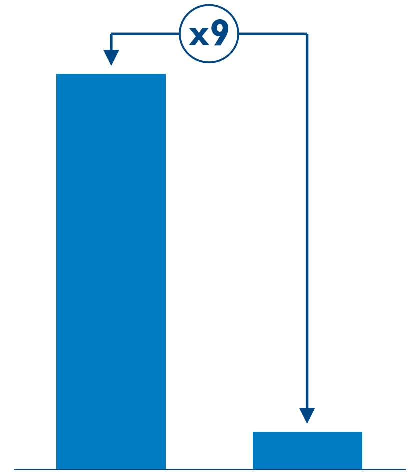
VAT

- €600 million of tax revenue on electronic services for France in 2014[1]

Income tax

- €14 million of income tax for the « GAFA[2] » in France in 2015

Income tax paid in France in 2015



Network operators

Internet players

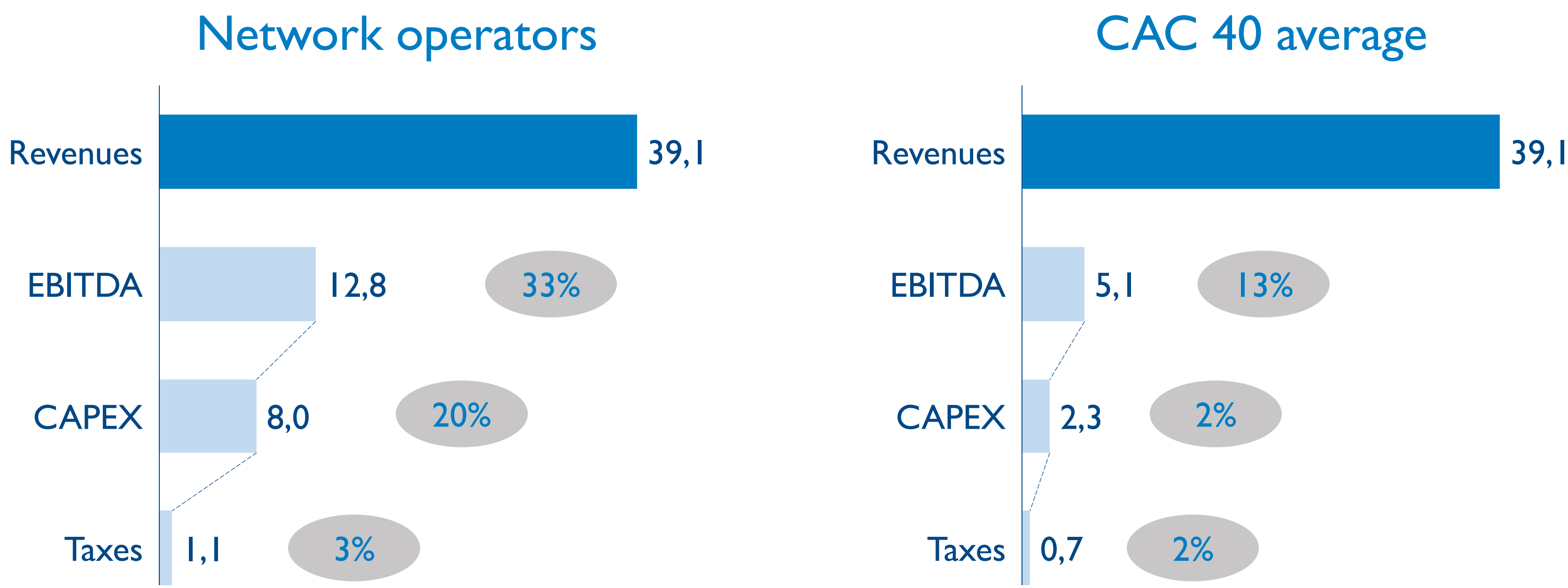
Google amazon.com YAHOO! facebook Microsoft

Source: Greenwich Consulting, Conseil National du Numérique, PPL Marini, desk research, Arthur D. Little analysis
[1]Forecast figures
[2]Google, Apple, Facebook, Amazon

Telecom operators' margins are used to finance strong investments

Comparison between KPIs of the telecom sector[1] and CAC40

2015, billions of euros



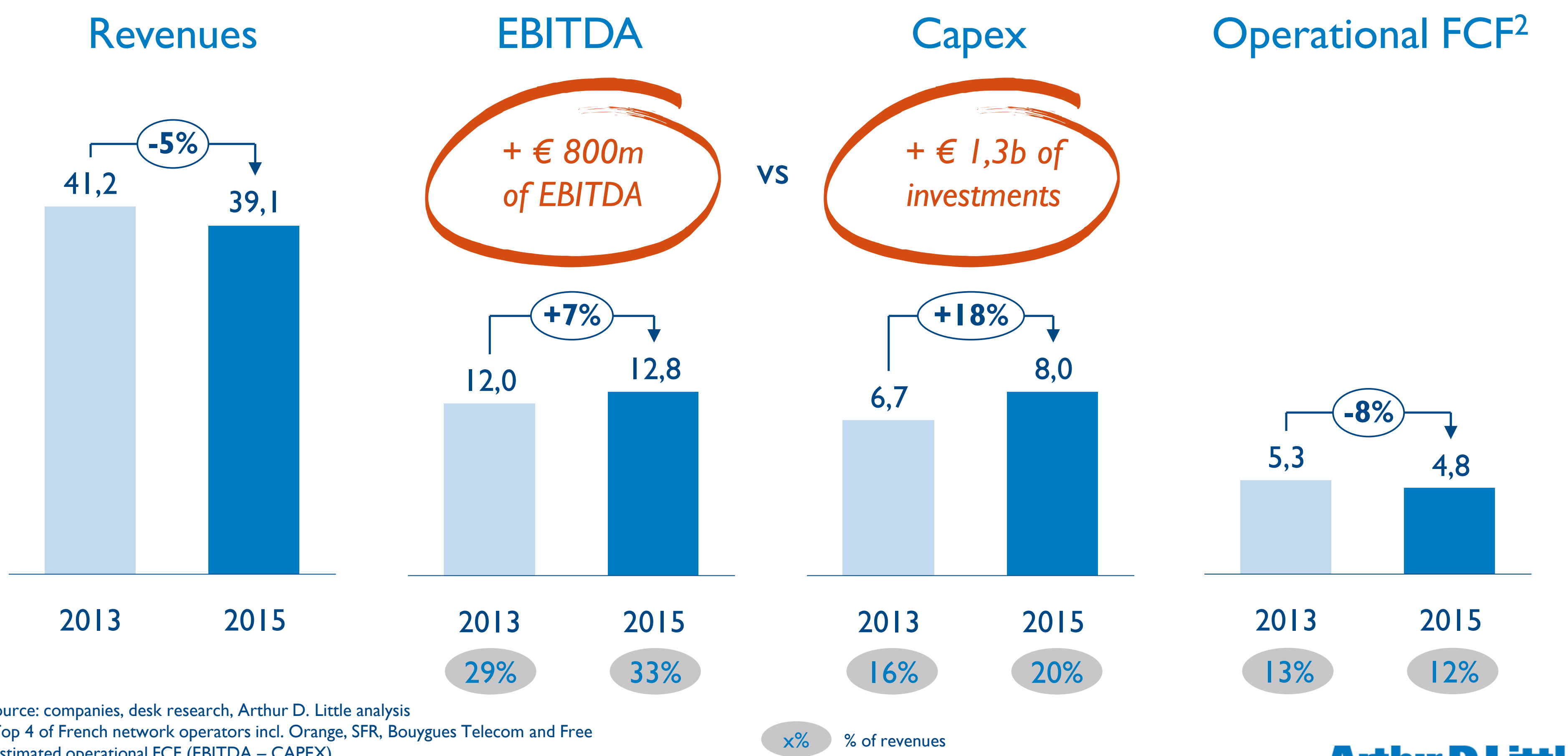
Source: companies, desk research, Arthur D. Little analysis
[1]Top 4 of French network operators incl. Orange, SFR, Bouygues Telecom and Free
[2]Estimated operational FCF (EBITDA – CAPEX)

x% % of revenues

Despite efforts made by operators to enhance their profitability, this was more than absorbed by the growth in investment

Economic performance of major French network operators[1]

France, 2013-2015, billions of euros



Source: companies, desk research, Arthur D. Little analysis

[1]Top 4 of French network operators incl. Orange, SFR, Bouygues Telecom and Free

[2]Estimated operational FCF (EBITDA – CAPEX)

Agenda

Key takeaways of the 2016 "Economics of Telecoms" Report

1. The digital ecosystem keeps growing in every region of the world, except in Europe

2. Appetite for digital services is very strong, especially in terms of connectivity and usage

3. As digital services and technologies rely on connectivity, there is an opportunity to rebuild a strong digital ecosystem in France

4. Telecom operators are the basis of the current digital ecosystem in France and are key players to develop the sector

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