Arthur D Little

2017 "Economics of Telecoms" Report – Update of key economic metrics

December 2017

FÉDÉRATION FRANÇAISE DES TÉLÉCOMS

Agenda

1 Global digital ecosystem: what dynamics?

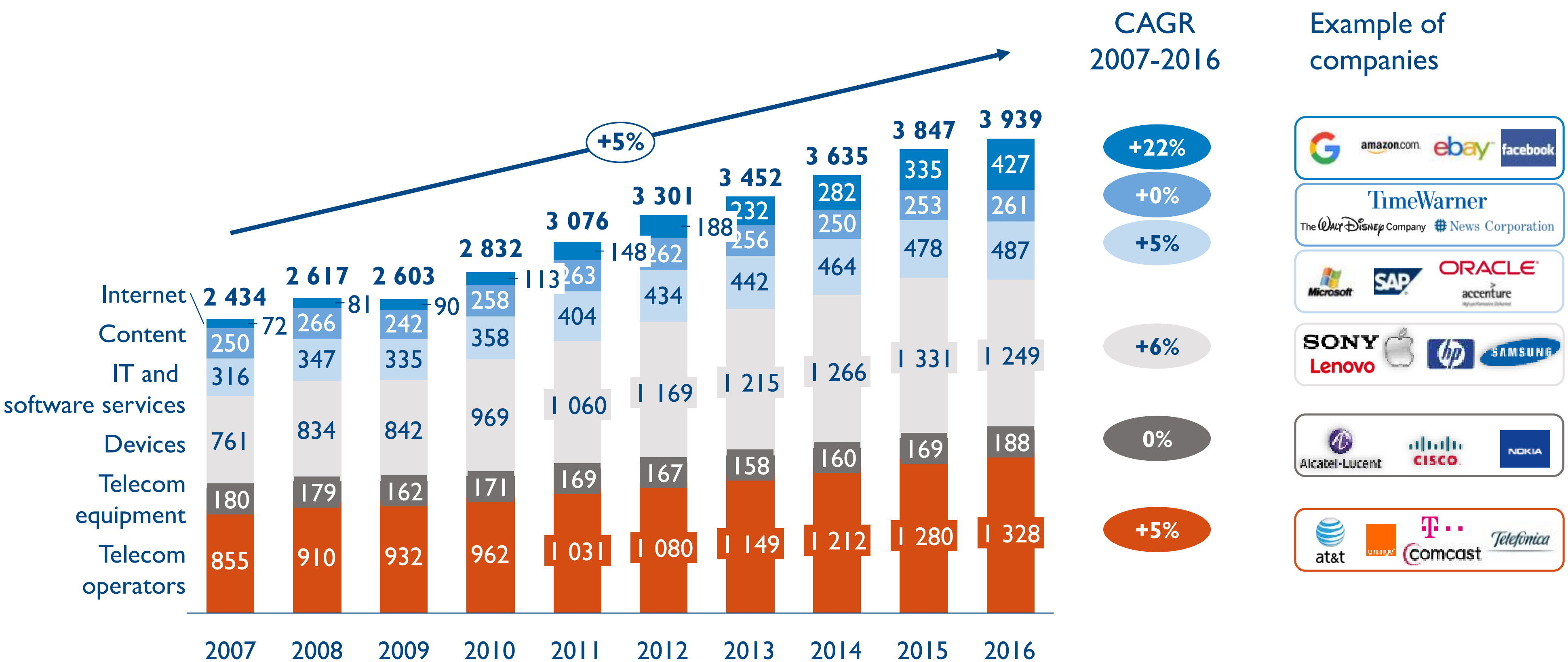
2 French digital ecosystem: what dynamics?

FÉDÉRATION FRANÇAISE DES TÉLÉCOMS

The global digital ecosystem pursues its strong growth, mostly driven by internet players

Revenues of the digital ecosystem[1]

World, 2007–2016, billions of constant euros[2]



Source: Thomson Reuters, Arthur D. Little

Note: 1) Panel of 180 companies corresponding to the top 30 by sector in terms of turnover 2) Constant exchange rate 2016

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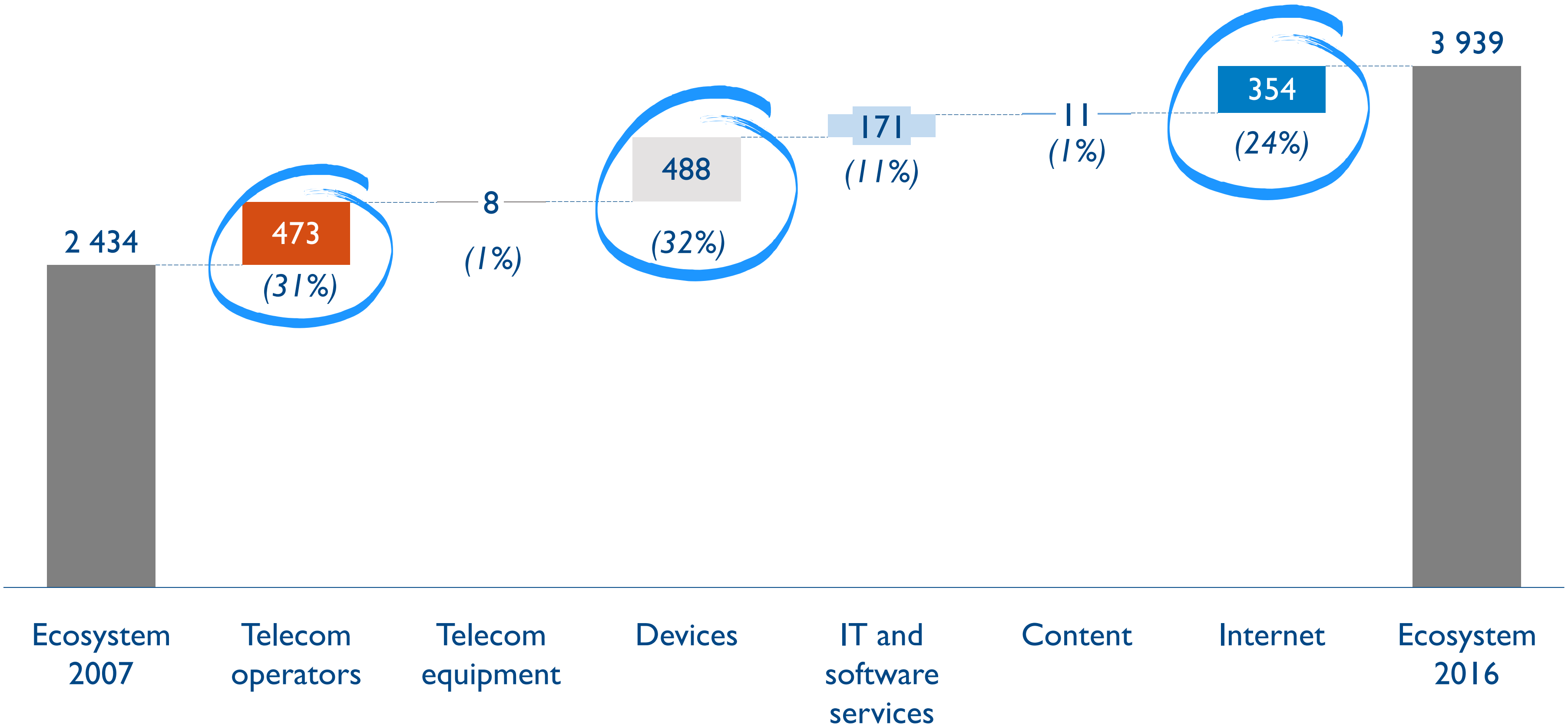
Telecom operators, device manufacturers and internet players have driven ~90% of the world ecosystem's growth over 2007–2016

Revenues of the digital ecosystem[1]

World, 2007–2016, billions of constant euros[2]



Source: Thomson Reuters, Arthur D. Little

Note: 1) Panel of 180 companies corresponding to the top 30 by sector in terms of turnover 2) The exchange rate euros vs local currency 2016 is applied to the current value of the local currency

(x%) : contribution to the digital ecosystem's growth

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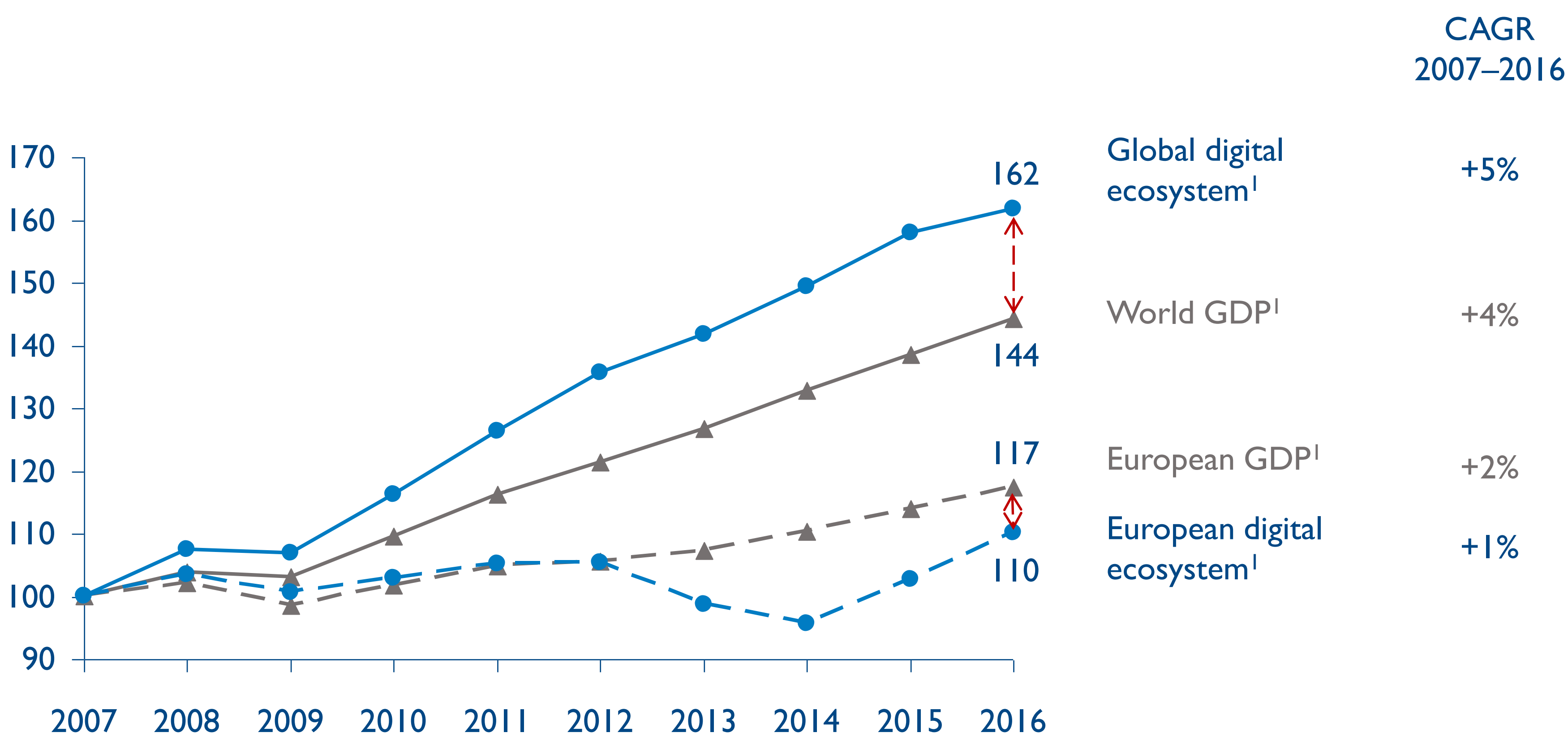
The global digital ecosystem continues to grow at a higher rate than the world GDP growth, with a restart reboot in Europe

Global digital ecosystem revenues vs. world economy

World, 2007–2016, Base 100 in 2007



Source: Thomson Reuters, World Bank, Arthur D. Little

Note: 1) In constant 2016 dollars for the set of countries considered in the digital ecosystem (accounting for 75% of world GDP, or 70% of the European GDP for European data)

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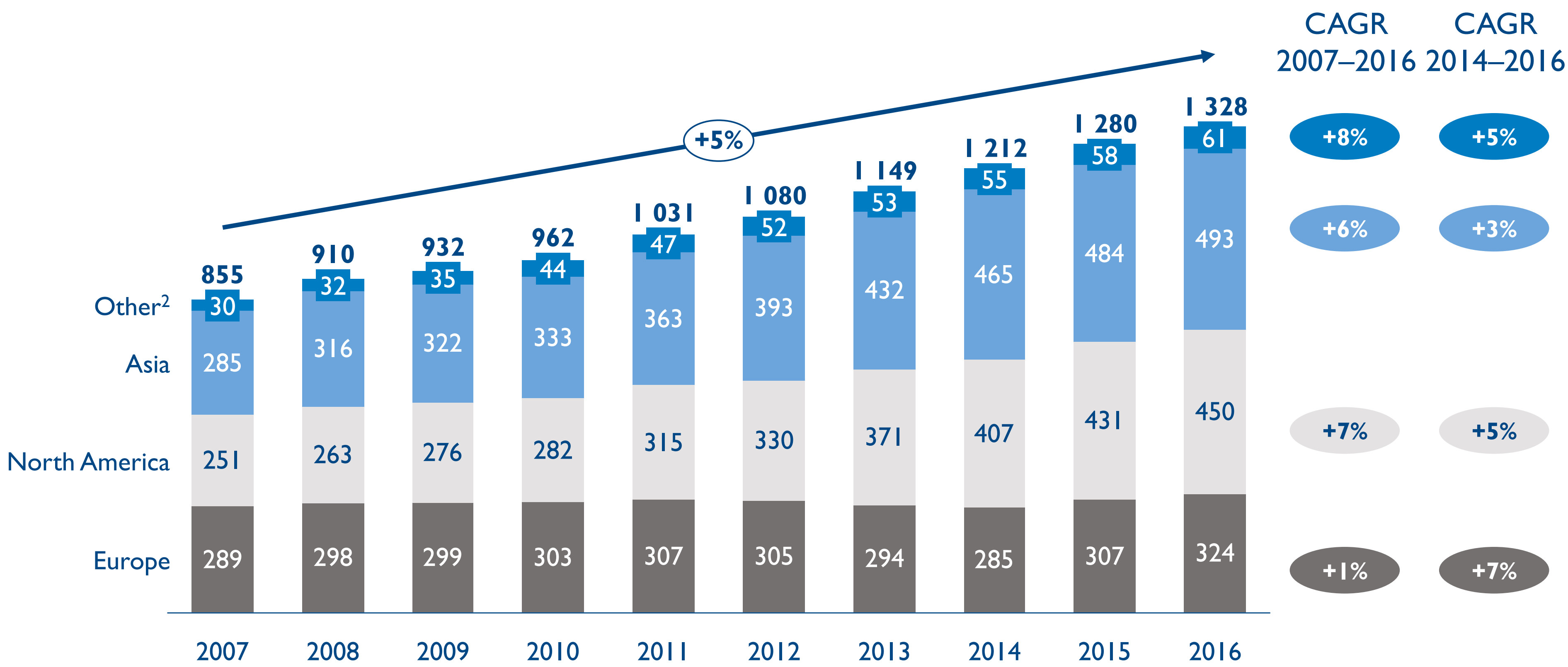
European operators have witnessed the lowest growth over 2007–2016, with a rebound in the last two years

Revenues of network operators by region[1]

World, 2007–2016, billions of constant euros



Source: Thomson Reuters, Arthur D. Little

Note: 1) Nationality according to the location of the head office 2) Includes top 30 players outside Asia, North America and Europe (only Oceania and South America)

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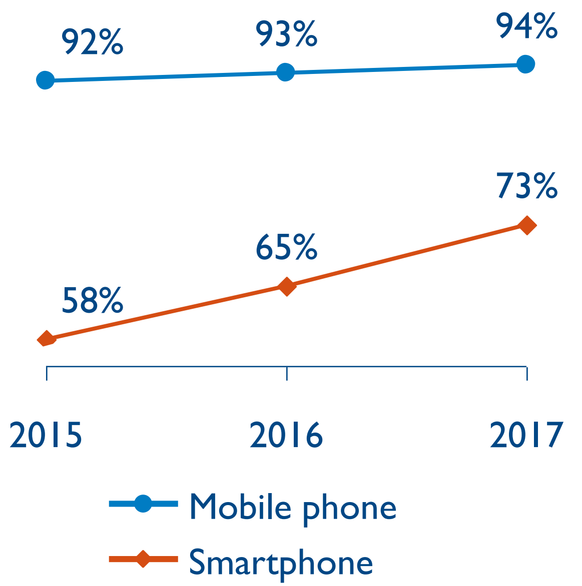
The French mobile market remains dynamic in terms of equipment and data consumption

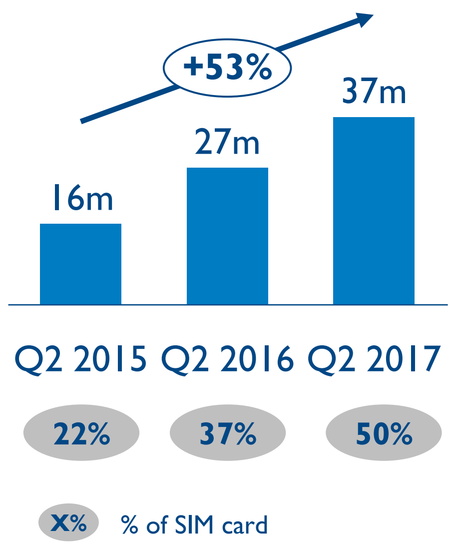
Connectivity and equipment in France – Mobile

France, 2015–2017

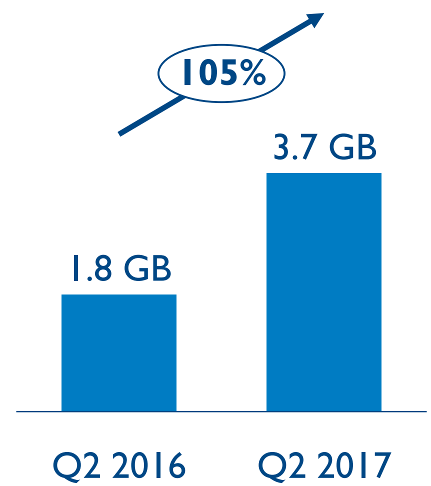
Mobile phone penetration rate[1]



4G cards
(Millions of active cards)



Average monthly data consumption[2]



Illustrative: 136h of music streaming or 15h of SD video streaming

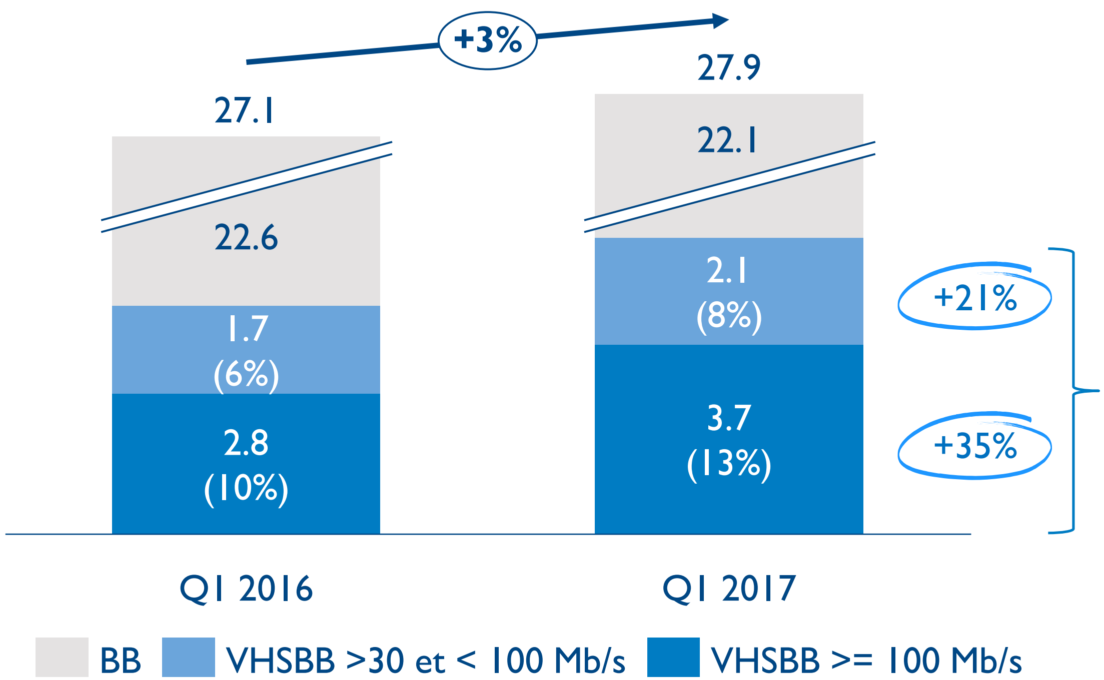
Source: ARCEP, Operators, AT&T, Arthur D. Little
Note: 1) Total population aged 12 and over 2) Active 3G or 4G internet client

France is experiencing strong growth in broadband subscriptions and a high level of multiplay[2] subscriptions

Connectivity and equipment in France – Fixed

France, 2016–2017

Fixed broadband (BB) and very high-speed broadband (VHSBB) subscriptions[1] (Millions of subscriptions)



In Q1 2017, **70%** of fixed Internet subscriptions were **multiplay[2] subscriptions**

4K Movies

Telemedicine

Video game streaming

Connected house

Source: ARCEP, Arthur D. Little

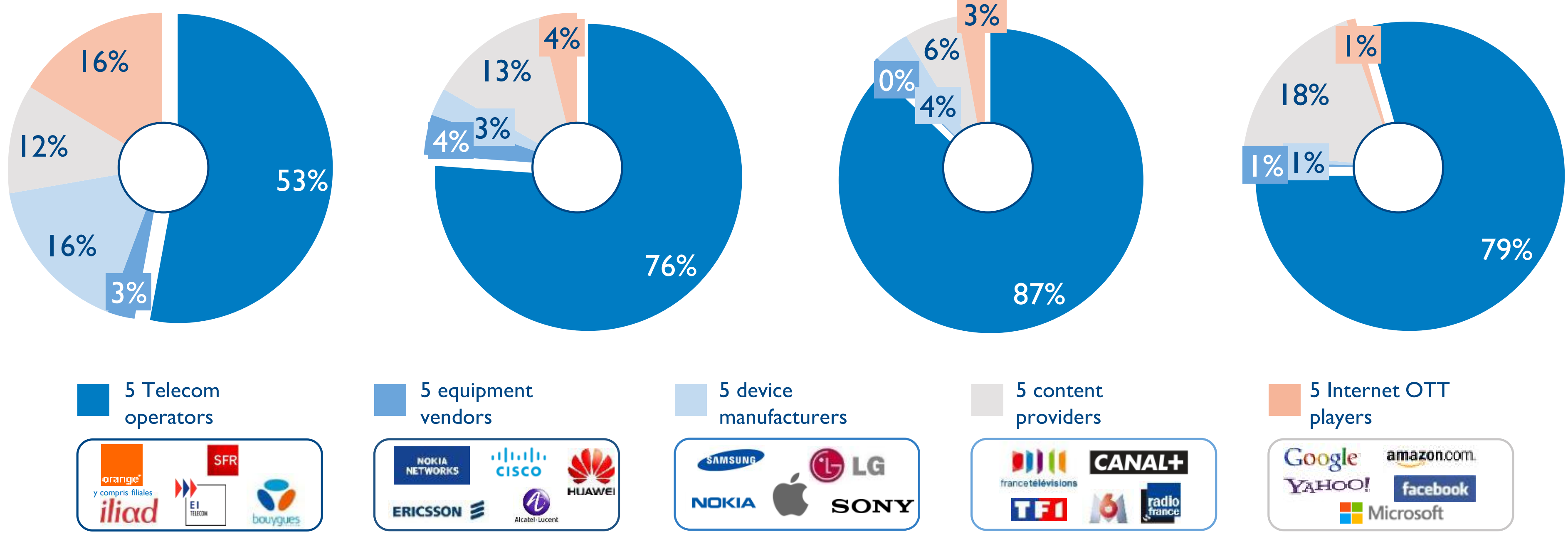
Note: 1) Bandwidth >= 30 Mbps 2) Subscriptions considered are "multiplay" subscriptions that include Internet access or several services in addition to television

Telecom operators are essential to the French digital ecosystem

Relative size of players in the digital ecosystem

France, 2016

Revenues[1,2]	Direct Employment	Investments[3]	Taxes[4]
€75 billion	166 000	€10 billion	€3 billion



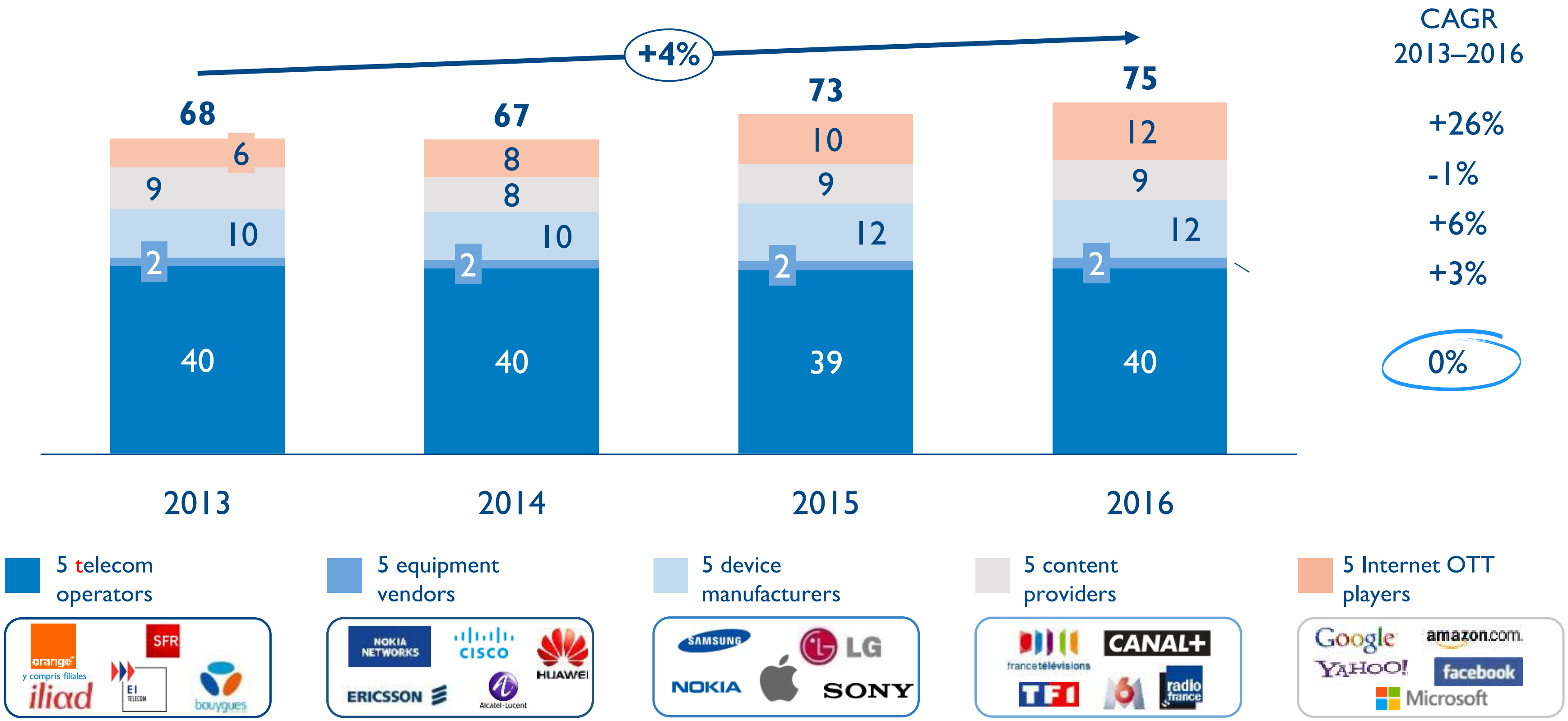
Source: Diane, annual reports, Arthur D. Little

Note: 1) Revenues declared in France or from literature search 2) Data adjusted to take into account the estimated actual turnover of international players in France 3) Nokia's mobile division investments are integrated into Microsoft following the acquisition of the mobile division in 2014 4) Corporation tax, taxes and similar disbursements

While the French digital ecosystem has experienced average annual growth of 4% over 2013–2016, revenues of telecom operators have stagnated

Revenues[1,2] of players in the digital ecosystem

France, 2013–2016, billions of euros



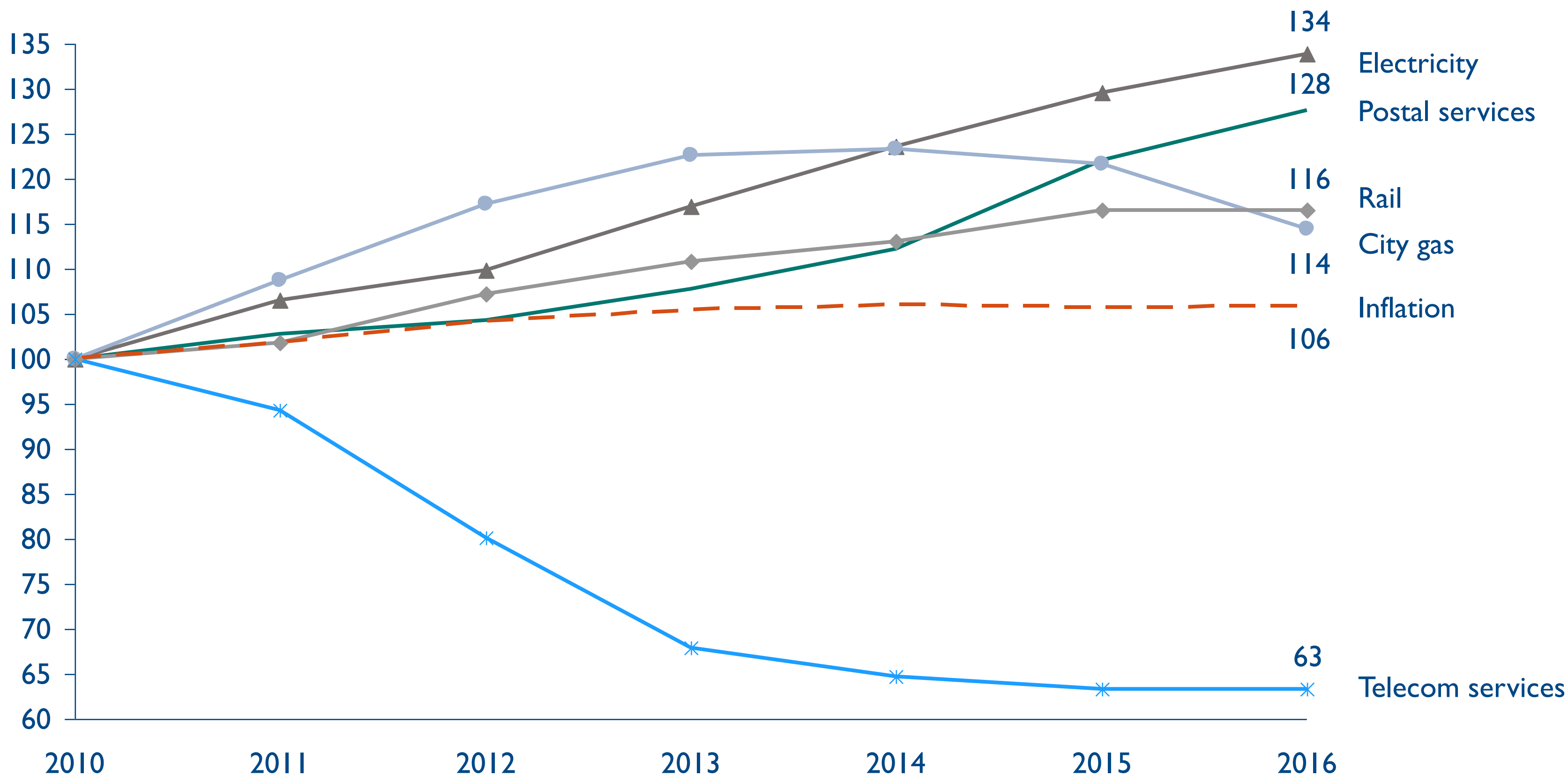
Source: Diane, annual reports, Arthur D. Little

Note: 1) Revenues declared in France or from literature search 2) Data adjusted to take into account the estimated actual turnover of international players in France

Contrary to other key regulated sectors, telecom services have witnessed a sharp fall in prices over 2010–2016

Consumer price index evolution on selected products

France, 2010–2016, Base 100 in 2010



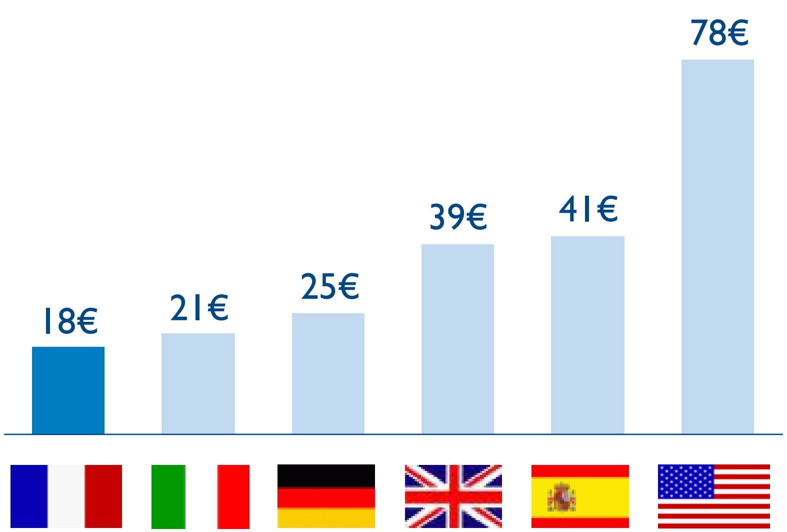
Source: INSEE, Arthur D. Little

Prices of telecom services in France remain the lowest among large Western countries

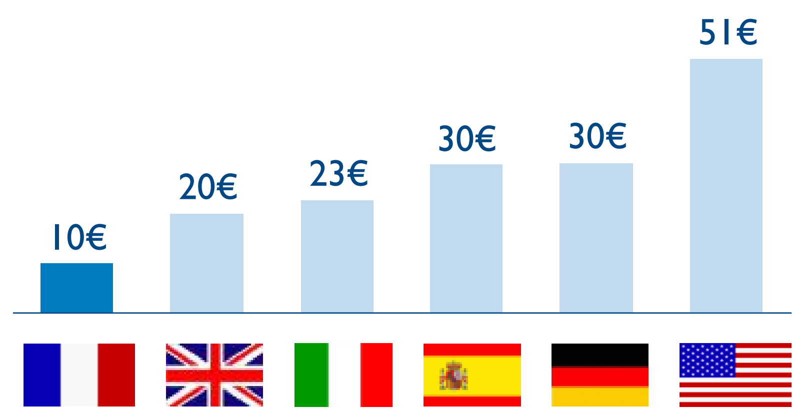
Offer benchmark – Main operators

Selection of countries, November 2017, € incl. taxes/month

Fixed (triple play)[1]



Mobile[2]



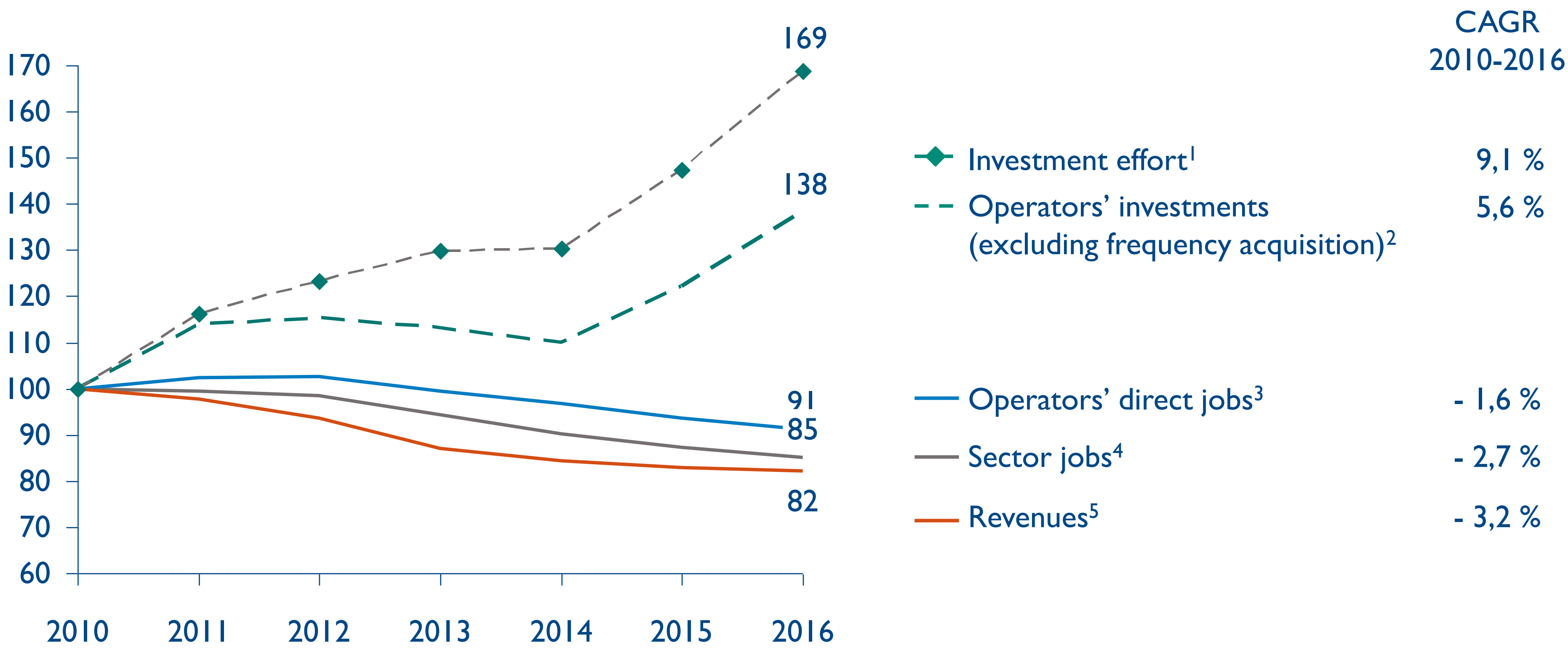
Source: Operators, Arthur D. Little

Note: 1) Triple play offers only; unlimited calls to landline at least; unlimited broadband internet through xDSL or fibre; television included, excluding additional packs; operators with market share > 10%, 2) Unlimited calls (whenever possible or else >500 minutes), unlimited SMS/MMS, at least 5 GB Internet; packages without devices, packages without commitment; operators with market share > 10%

Operators increased their investments despite lower turnover, but could not maintain employment levels

Employment, revenues and investments of French telecom operators

France, 2010–2016, base 100 in 2010



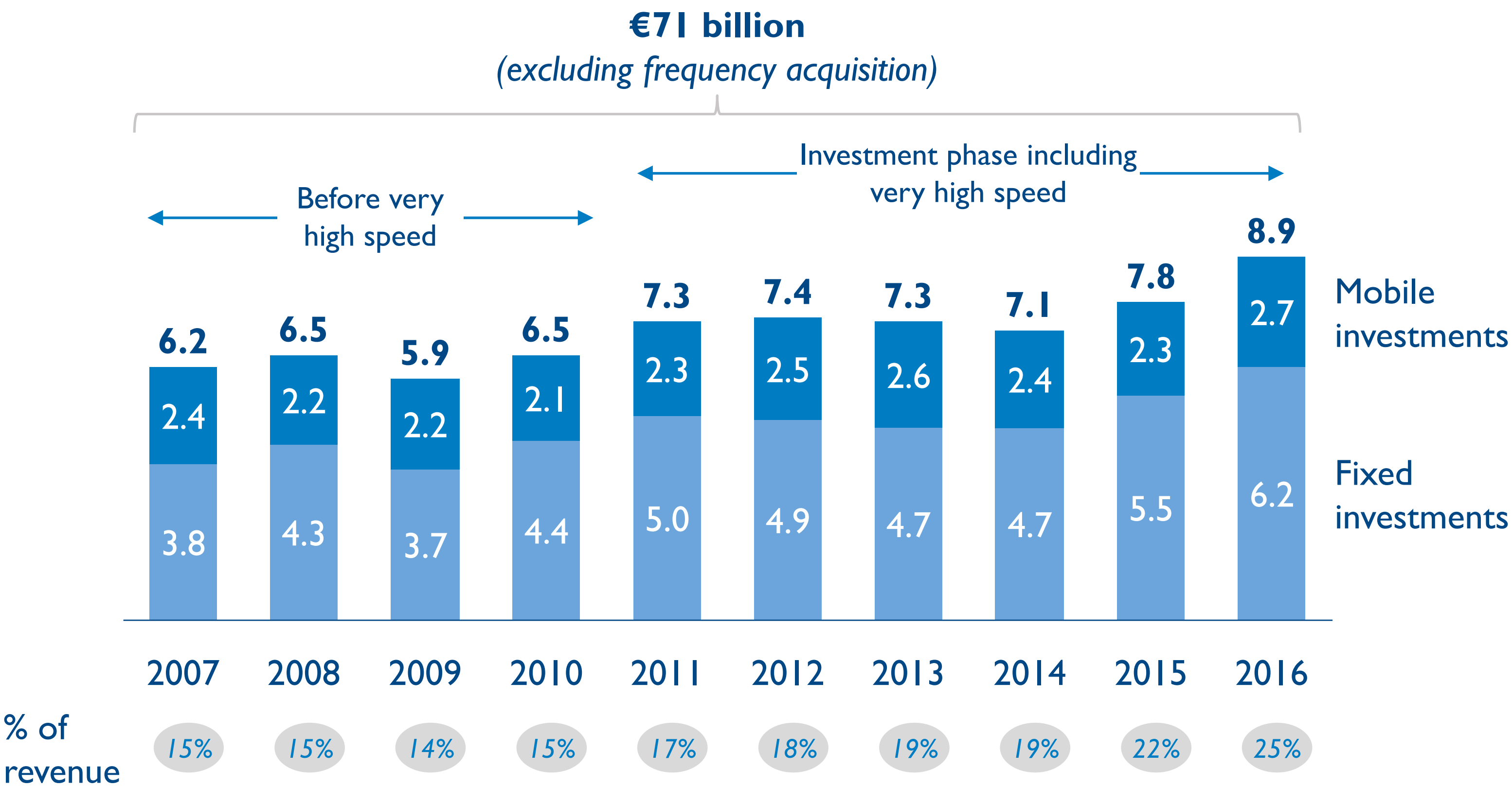
Source: ARCEP, DARES, Insee, Arthur D. Little

Note: 1) Investment efforts: operators' investments (excluding frequency acquisition)/revenues of operators 2) Provisional ARCEP figures for 2016 3) ARCEP figures 4) ARCEP figures including part of indirect jobs 5) Provisional ARCEP figures for 2016 corresponding to revenues collected from final client

Telecom operators' investments have peaked in 2015 and 2016 – €71 billion were invested over the period

Investments of network operators[1]

France, 2007–2016, billions of euros



+ €7.2 billion of frequency acquisition over the period

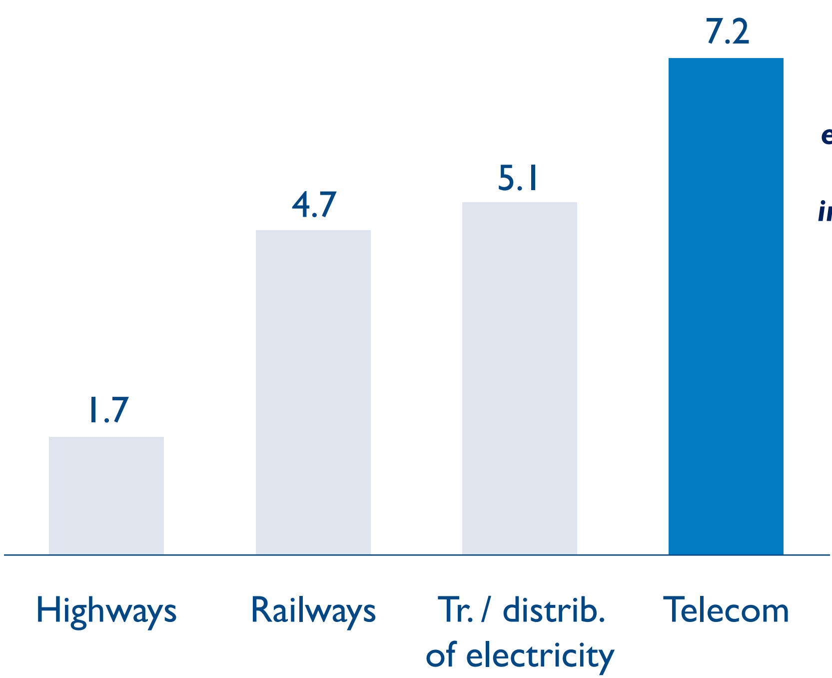
0.9 in 2010
0.9 in 2011
2.6 in 2012
2.8 in 2015

Source: ARCEP, Arthur D. Little
Note: 1) Investments excluding frequency acquisition

The 7.2 billion euros invested every year by telecom operators represent significant economic activity

Investments[1] in telecom vs. other sectors

France, 2008–2016, billions of euros (annual average over 9 years)



equivalent to the following investments, each year…

5 nuclear power plants

ou

20 Stade de France

ou

208 TGV trains

ou

536 high schools

ou

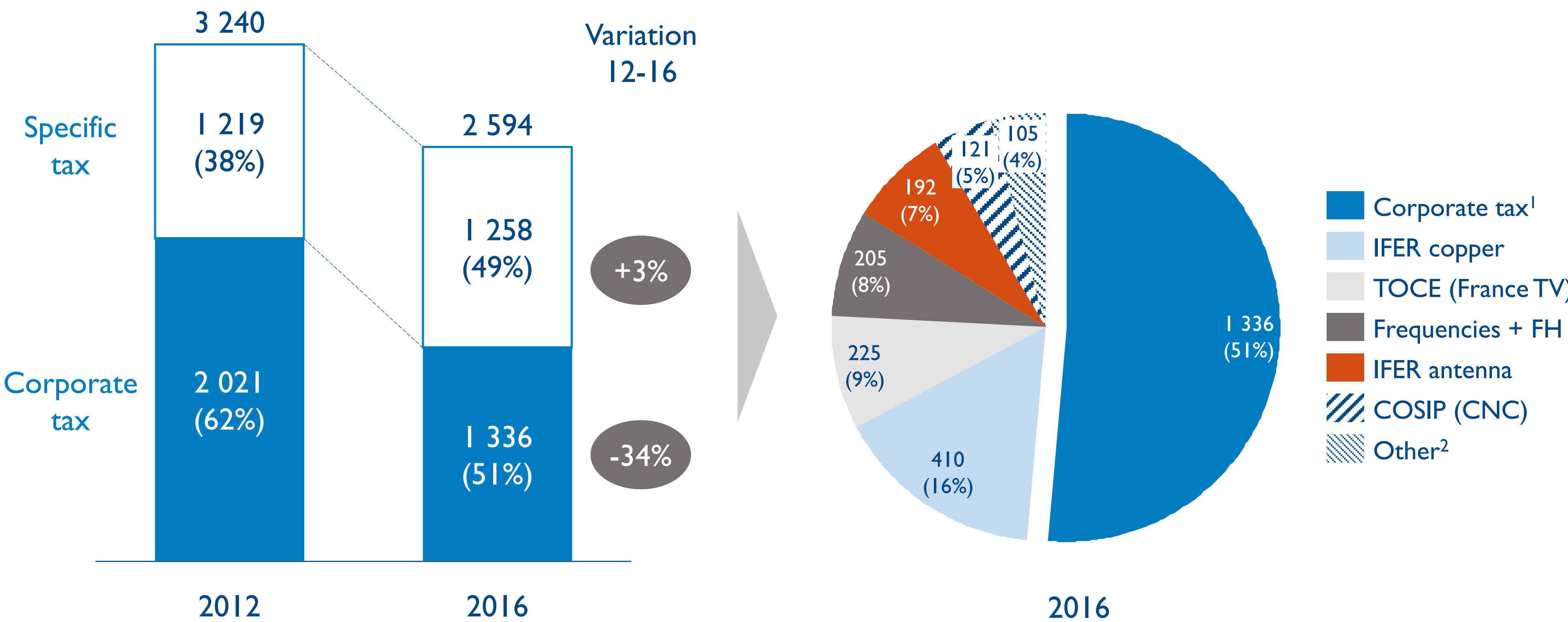
1100 km of highways
(i.e. Paris - Berlin)

Source: Companies, literature search, Arthur D. Little
Note: 1) Telecom: ARCEP figures (excluding frequency acquisition); Electricity: RTE (2009 to 2016) and ERDF; RFF; Highways: ASFA (Sanef, SAPN, ASF….)

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

Telecom operators' taxation

France, 2012 and 2016, millions of euros and % of total taxes



Source: Operators, FFT, Arthur D. Little

Note: 1) Perimeter: corporate tax on top 5 companies (set reconfigured in 2012 with corporate tax corresponding to Numéricable + SFR) & FFT members specific taxes 2) VOD & private copy

Telecom operators suffer from asymmetric taxation, which puts them at a disadvantage in the digital ecosystem

Fiscal optimization mechanism in Europe of the GAFA

Country of final **consumption**

Establishment country
Place of ***fiscal registration***

Examples

Ireland

Luxembourg

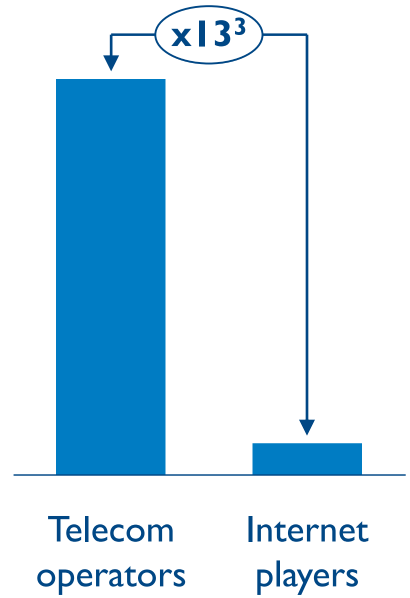
VAT

- €600 million of VAT loss on electronic services in France in 2014[1]

Corporate tax

- €26 million of corporate tax paid by GAFA[2] in France in 2016

Corporate tax paid in France in 2016

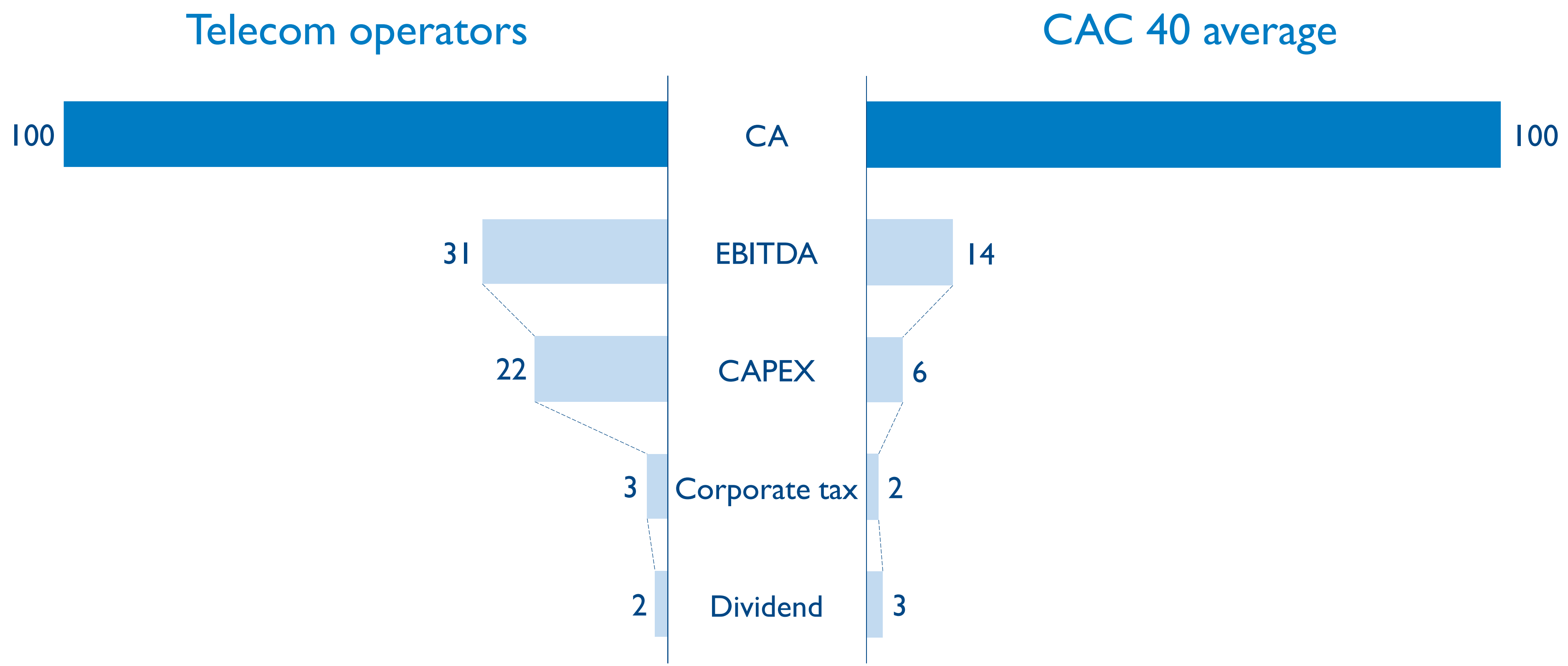


Source: Greenwich Consulting, Conseil National du Numérique, PPL Marini, literature search, Arthur D. Little analysis
Note: 1) Forecast figures, 2) Google, Apple, Facebook, Amazon, 3) as % of revenues

Telecom operators' margins are used to finance strong investments

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

2016, base 100 on revenues



Source: Companies, literature search, Arthur D. Little analysis

Note: 1) Figures for top 5 French telecom operators including Orange, SFR, Bouygues Telecom, Free and El Telecom

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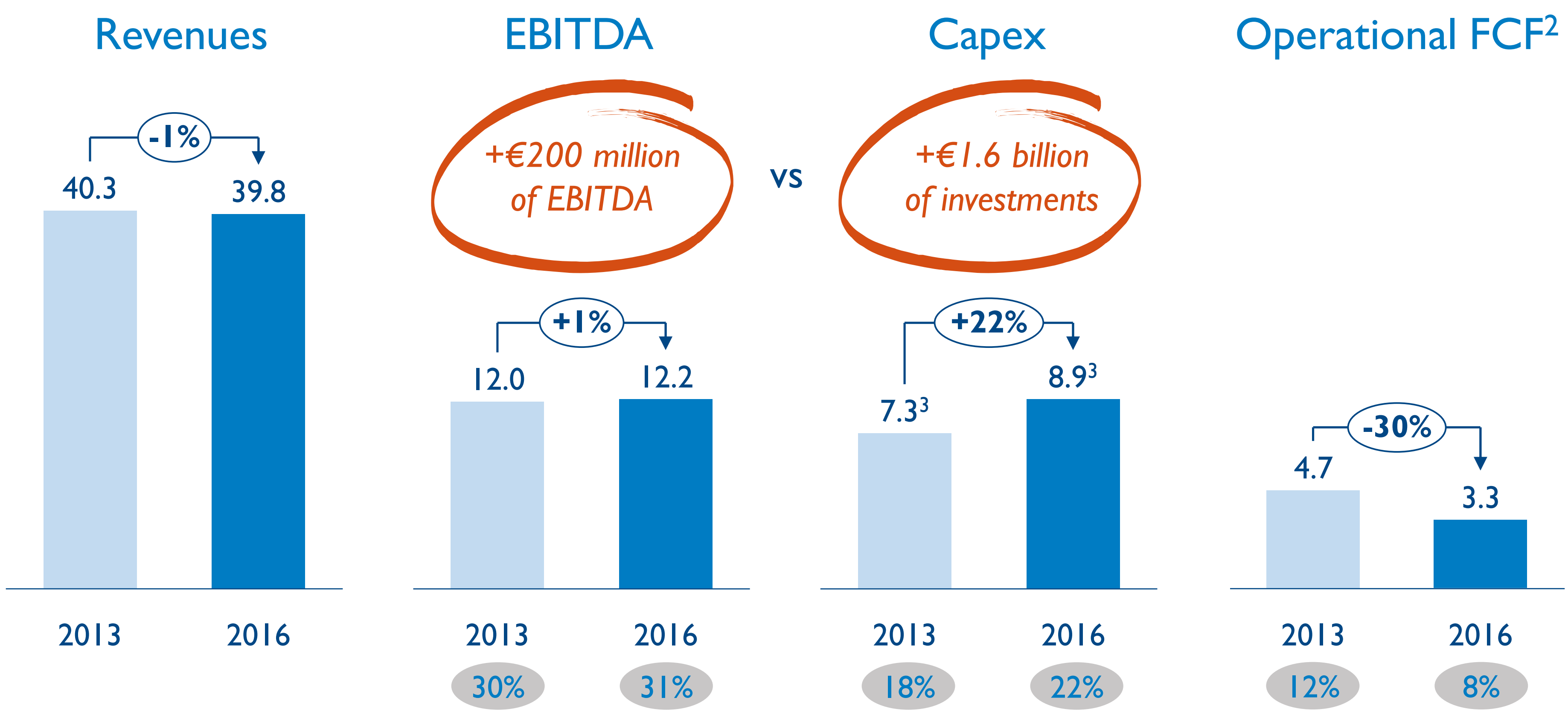
Increased investment is leading to lower cash flow despite productivity efforts

Economic performance of major French telecom operators[1]

France, 2013–2016, billions of euros



Source: Companies, literature search, ARCEP, Arthur D. Little

Note: 1) Top 5 French telecom operators including Orange, SFR, Bouygues Telecom, Free and El Telecom 2) Estimated operational FCF (EBITDA – CAPEX) 3) ARCEP figures representing sector investments, excluding frequency acquisition

x% % of revenues

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