DIGITAL ECONOMY OUTLOOK 2023
THE PIVOTAL ROLE OF TELECOM OPERATORS

Economic study - Synthesis
January 5th, 2024
Digital economy outlook 2023 – the pivotal role of telecom operators

01 In France, the telecom operators play a leading role in the digital economy: the French telecom sector shows an outstanding performance among major Western markets.

02 Towards a sustainable digitalisation: French telecom players are fully committed to contain the environmental impact of the digital sector.

03 The global digital sector returned to its fundamentals after a correction in 2022: in this context, the gap between Europe and other regions is widening again.

04 “Fair Share”: it is time to rethink how the network investment effort and value is shared between telecom operators and other digital players.

Source: Arthur D. Little
**Digital economy outlook 2023 – the pivotal role of telecom operators**

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04. **“Fair Share”**: it is time to rethink how the network investment effort and value is shared between telecom operators and other digital players.
In 2022, telecom operators maintained their pivotal role in the French digital ecosystem in terms of investment, employment and direct tax contribution

Weight of the different players in the digital ecosystem in 2022
France, 2022, analysis on the 5 main players in turnover by category

- **Revenue**: €124bn (€+12bn vs 2021)
  - Telecom Operators: 31%
  - 5 Telecom equipment manufacturers and infrastructure: 11%
  - 5 Device Manufacturers: 15%
  - 5 Content Providers: 3%
  - 5 Internet players: 39%
- **Investments**: €12bn (€-0,4bn vs 2021)
  - Telecom Operators: 79%
  - 5 Telecom equipment manufacturers and infrastructure: 7%
  - 5 Device Manufacturers: 7%
  - 5 Content Providers: 5%
  - 5 Internet players: 8%
- **Direct employment**: 155,000 (-4,000 vs. 2021)
  - Telecom Operators: 66%
  - 5 Telecom equipment manufacturers and infrastructure: 10%
  - 5 Device Manufacturers: 3%
  - 5 Content Providers: 14%
  - 5 Internet players: 1%
- **Direct tax contribution**: €3,7bn (€+0,5bn vs 2021)
  - Telecom Operators: 83%
  - 5 Telecom equipment manufacturers and infrastructure: 3%
  - 5 Device Manufacturers: 1%
  - 5 Content Providers: 12%
  - 5 Internet players: 1%

Note: 1) Declared or estimated turnover in France or desk research, 2) Data adjusted to take into account the estimated effective turnover of international actors in France, 3) Corporate taxes and taxes, taxes, and similar payments – excluding fines/agreement/adjustments paid by Internet actors; excluding 5G royalties, 4) Based on gross investments made in France (excluding asset disposals), 5) EIT integrated into BT from April 2021

Source: Thomson Reuters Eikon, Diane, annual reports, Arthur D. Little
In a context of high inflation, telecom services are the only regulated service in France to not increase over the last 10 years.

Evolution of consumer price indices for a sample of products and services

France, 2013 - 2022, Base 100 in 2013

- Between 2013 and 2022, the price index for telecommunications services decreased by 1.5%
- Telecommunication services grew >6 times less than inflation between 2021 and 2022 (1pt for telecoms, 6pts for inflation)

Note: 1) The differences observed with previous editions of the report (2021 and earlier) can be explained by a change in the series taken into account by INSEE following the discontinuation in 2021 of the series previously used
Source: INSEE, Arthur D. Little
The weight of telecoms services in total household budgets has been declining for the past 10 years

### Evolution of the weight of telecoms in the household consumption budget compared to other items

<table>
<thead>
<tr>
<th>Item</th>
<th>2013</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>24.1%</td>
<td>23.2%</td>
</tr>
<tr>
<td>Transport</td>
<td>10.1%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Food</td>
<td>13.2%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Hobbies</td>
<td>11.1%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>3.2%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Clothing</td>
<td>3.0%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Telecommunications equipment</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Telecom services</td>
<td>1.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Other</td>
<td>8.3%</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

**Note:**
1) Leisure: including digital entertainment, 2) Telecommunications: Telecommunications services, 3) Other: Education, miscellaneous goods and services, postal services and fax; 4) Housing taking into account water, gas, electricity and other fuels related to housing

**Source:** INSEE, Arthur D. Little
Prices for telecom services in France were among the lowest of major Western countries in 2022, and the cheapest when adjusted by purchasing power parity

Comparison of offers from leading operators
Country selection, September 2023, € incl. VAT / month, PPP adjustments via OECD coefficients

Excluding discounts, Excluding connection fees
By country, selection of the most competitive package in terms of price among operators with >10% market shares

Note: 1) based on operators with a market share > 10%; Triple play offers only; unlimited telephony, at least to landlines; Unlimited high-speed fiber-only internet; TV included, excluding add-on packs; , excluding promotions, xDSL rates excluded from the benchmark, 2) Unlimited calls (when available otherwise >500 minutes), unlimited SMS/MMS, internet at least 100 GB; offers without terminals, non-binding offers when available; operators whose market share > 10%, 3) Choice to favour abundance offers to obtain a comparable price base per Gb and to obtain the lowest possible price per GB – unlimited data offers excluded;
Source: Operator Sites, Arthur D. Little
Investments from the telecom sector far exceeded those of other major French infrastructure networks

Weight of investments¹ in the telecoms sector vs. other sectors
France, 2018 - 2022, 5-year annual average, billion euros

<table>
<thead>
<tr>
<th>Sector</th>
<th>Annual Average (billion euros)</th>
<th>Equivalent Investments (Yearly)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways</td>
<td>1.6</td>
<td>1.7x the budget of Olympic Games</td>
</tr>
<tr>
<td>Railways</td>
<td>5.1</td>
<td>Paris 2024</td>
</tr>
<tr>
<td>Electricity transport/distribution</td>
<td>6.2</td>
<td>726 offshore wind turbines</td>
</tr>
<tr>
<td>Telecom</td>
<td>13.1</td>
<td>24 rugby stadiums</td>
</tr>
<tr>
<td></td>
<td></td>
<td>970 high schools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.8 million free float city bikes (x250 current fleet of “Velib”² in Paris)</td>
</tr>
</tbody>
</table>

Note: 1) Telecoms: Arcep figures (excluding the purchase of frequencies); Electricity and ERDF; RFF; Highways: ASFA (Sanef, SAPN, ASS, etc.). 2) Paris’ shared public city bikes
Source: Companies, desk research, Arthur D. Little
France continues to be a telecom market with one of the highest investment efforts in Europe when compared to revenue and capex per inhabitant.

<table>
<thead>
<tr>
<th>Country</th>
<th>Capex/CA (% of turnover)</th>
<th>Capex/Inhabitant</th>
<th>€/inhabitant</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>11.4%</td>
<td></td>
<td>€25/inhabitant</td>
</tr>
<tr>
<td>France</td>
<td>14.0%</td>
<td>€81/inhabitant</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>16.8%</td>
<td>€96/inhabitant</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>17.9%</td>
<td>€98/inhabitant</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>18.0%</td>
<td>€149/inhabitant</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>19.4%</td>
<td>€146/inhabitant</td>
<td></td>
</tr>
</tbody>
</table>

Note: Turnover, CAPEX and EBITDA of telecom operators with a mobile or landline market share >10%
Source: Rapports annuels, Arthur D. Little
The deployment of fiber in France continues: ~19 million premises have been passed over last 4 years. More than 84% of premises are now eligible for fibre.

Deployment of very high-speed broadband in France Eligible premises in FttH/B¹

<table>
<thead>
<tr>
<th>Year</th>
<th>Less dense areas - Public initiative (RIP &amp; AMEL)</th>
<th>Less dense areas - Private initiative</th>
<th>Very dense areas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>3.4</td>
<td>9.2</td>
<td>5.8</td>
<td>18.4</td>
</tr>
<tr>
<td>2020</td>
<td>5.3</td>
<td>12.5</td>
<td>6.3</td>
<td>24.1</td>
</tr>
<tr>
<td>2021</td>
<td>8.7</td>
<td>14.2</td>
<td>6.7</td>
<td>29.7</td>
</tr>
<tr>
<td>2022</td>
<td>12.4</td>
<td>15.2</td>
<td>7.1</td>
<td>34.5</td>
</tr>
<tr>
<td>2023 T3</td>
<td>14.2 (38%)</td>
<td>15.6 (42%)</td>
<td>7.2 (19%)</td>
<td>37.0</td>
</tr>
</tbody>
</table>

That’s 78% (That’s 84%)

Number of households eligible for FttH/B optic fibre

| European countries with more than 35M inhabitants, September 2022, million households |
|--------------------------------|---------------------------------|---------------------------------|-----------------|
| Household Eligibility for Fiber | 76%                            | 87%                            | 56%             |
| Added in 2022²                  | 42%                            | 24%                            | 55%             |
| Added before 2022³              | 78%                            | 87%                            | 24%             |

Note: 1) FttH/B: Fiber-to-the-Home/Building 2) Before September 2022 3) Between September 2021 and September 2022
Source: Arcep (Market Observatory, Q3 2023, provisional results), Data.gouv.fr, FttH Council of Europe Panorama 2022, Arthur D. Little
The specific taxation applied to telecom operators in France increased in 2022 and remains at a high level

Amount of taxes and fees for telecom operators
France, 2017 and 2022, million euros and % of total taxes and duties

Specific taxation reached €1,532bn in 2022, an increase of +3% compared to 2021, in particular due to spectrum related fees, including those related to 5G and the mobile IFER (also linked to the deployment of 5G antennas)
In 2022, telecom operators paid 1.9x more tax than the average of top 40 French companies while investing three times more relative to their revenue.

Comparison of key indicators in the telecoms sector and the Top 40 largest French corporate, 2022, based on 100 on turnover, Top 40 measured based on the CAC40 stock market index.

<table>
<thead>
<tr>
<th></th>
<th>Telecom operators (average)</th>
<th>Top 40 largest French companies (average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>100,0</td>
<td>100,0</td>
</tr>
<tr>
<td>EBITDA</td>
<td>24,3</td>
<td>21,7</td>
</tr>
<tr>
<td>CAPEX</td>
<td>19,4</td>
<td>5,4</td>
</tr>
<tr>
<td>FCF Operational</td>
<td>4,9</td>
<td>16,3</td>
</tr>
<tr>
<td>Taxes (CIT &amp; Specific)</td>
<td>6,3</td>
<td>3,3</td>
</tr>
</tbody>
</table>

Note: 1) France figures of the Top 4 French operators including Orange, SFR, Bouygues Telecom, Free 2) Estimated operational FCF (EBITDA – CAPEX)

Source: Thomson Reuters Eikon, desk research, Arthur D. Little
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Source: Arthur D. Little
Although marginal, the weight of digital technologies in the overall carbon footprint of France is growing rapidly, mainly due to devices and the increase of data usage.

- **Share of the digital technologies in France’s carbon footprint**: The weight of digital emissions is marginal but growing (~2.8%).

- **Share of networks in the French digital ecosystem**: The contribution of telecom networks to the carbon footprint of digital is low (5%).

- **Share of operators’ direct emissions (scope 1 and 2)**: Most of the eqCO2 emissions generated by the activity of telecom operators come from the activity of other players (~15%).

Note: 1) ADEME-ARCEP study on the environmental footprint of digital technology, based on the carbon footprint with imported emissions; 2) INSEE analysis based on national carbon emissions in 2022 (scopes 1 & 2 of telecom operators); 3) Based on the 2021 and 2022 environmental reports of the four French national operators.

Source: Senate Report 2020 - Citizing, Arcep, ADEME, INSEE, operators’ ESG reports, Arthur D. Little.
French operators have taken on the environmental challenge: they all commit to ambitious objectives for a sustainable digitalisation

**Environmental commitments of French operators**

Based on 2022 ESG reports from Orange, Altice, Bouygues Telecom and Iliad – as a % of operators

- **Reduction of carbon emissions**
  - 100% of French Telcos committed to reduce their scope 1, 2 and 3 emissions by 30% by 2030

- **Green Energy**
  - 100% of French Telcos target over 50% renewable energy supply in their energy mix by 2030

- **Device Recycling & Reconditioning**
  - 100% of French Telcos offer recycling and refurbishment services for electronic devices (boxes, TV set-top boxes, mobile handsets)

- **Promotion of responsible uses**
  - 100% of French Telcos have engaged employee awareness actions (climate fresco, training in eco-responsible gestures, etc.)

- **100%** of French Telcos have engaged actions to raise end-users’ awareness for sustainable digital behaviours and all offer solutions to optimise energy consumptions

Note: 1) compared to 2020
Source: ESG reports of French telecom operators, Arthur D. Little
French telecom operators have initiated their transition towards a sustainable model with already tangible outcomes

**Key environmental indicators of French telecom operators in 2022¹**

<table>
<thead>
<tr>
<th>Reduction of direct carbon emissions</th>
<th>Green Energy</th>
<th>Device Recycling &amp; Reconditioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon emissions Scope 1 &amp; 2, market based kTeqCO₂</td>
<td>Share of renewables in the energy mix² - %</td>
<td>Share of refurbished phones sold by the telecom operators in France - %</td>
</tr>
<tr>
<td>363</td>
<td>26%</td>
<td>1,9%</td>
</tr>
<tr>
<td>326</td>
<td>45%</td>
<td>4,1%</td>
</tr>
<tr>
<td>286</td>
<td>43%</td>
<td>4,2%</td>
</tr>
<tr>
<td>2020</td>
<td>2021</td>
<td>2022</td>
</tr>
</tbody>
</table>

-21% of scope 1 and 2 market based emissions since 2020

The share of renewables in the energy mix x1.7 compared to 2020

The share of refurbished phones sold by operators has increased by a factor of 2

The share of phones collected from phones sold has increased by 1.7 times compared to 2020

Note: 1) The analysis of French operators is based on the top 4 operators in sales, 2022, that is Orange, Bouygues Telecom, SFR and Iliad; (2) Energy consumption of landline and mobile networks; Source: Arcep, 2021 and 2022 ESG reports by telecom operators, Arthur D. Little analysis
French operators' environmental commitments are among the most ambitious in the industry, in Europe and globally

Level of environmental commitment of telecom operators by market
Based on the environmental commitments of the four largest operators in each country - # number of operators committed

<table>
<thead>
<tr>
<th>Country</th>
<th>Carbon emissions reduction</th>
<th>Green Energy</th>
<th>Device Recycling &amp; Refurbishment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scope 1 &amp; 2</td>
<td>Scope 3</td>
<td>Net zero²</td>
</tr>
<tr>
<td>France</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Germany</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>UK</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Spain</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Italy</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Poland</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Korea¹</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Australia</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>USA</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: 1) 3 operators only; 2) Net zero target set, undifferentiated deadline
Source: 2021 and 2022 Operator ESG Reports, Arthur D. Little
French telecom operators are among the most virtuous in terms of carbon emission levels relative to revenue

**Methodology**

- Benchmark carried out on the top 4 telecom operators by revenue in 9 countries
- The carbon emissions considered are market-based
- The average per country is calculated by weighting the turnover contribution of each operator
- Turnover data are adjusted by the purchasing power parity
- The analysis is based on publicly available data extracted from operators’ ESG reports

**Carbon intensity of telecom operators in terms of revenue**

TeqCO₂/m€ of revenue generated adjusted in purchasing power (PPP), 2022

This analysis measures scope 1&2 (market based) carbon emissions generated for €1m of revenue in 2022

Note: Carbon emission data on market-based basis, due to the lack of exhaustive location-based emission data published by telecom operators

**Average of major European markets**

6.3 TeqCO₂/€m turnover

Note: 1) Consideration of operator-specific renewable energy; 2) Adjusted value in PPA different from the value without PPA reprocessing, where France = 6 TeqCO₂

Source: Operator ESG Reports, Arthur D. Little
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Source: Arthur D. Little
In 2022, the global digital ecosystem maintained its solid growth, despite the slowdown of the growth of Internet players

Source: Refinitiv (Thomson Reuters), Arthur D. Little
Note: 1) Panel of 600 companies: By sector, selection by their turnover of the top 100 companies in 2022, 2) Constant euros as of Dec. 31st 2022, 3) Huawei (accounted for in Terminals & Equipment Manufacturers according to annual report data) is not listed, so both branches of the company have been included in the rankings of their respective sectors
4) Equipment and Infrastructure including REIT infrastructure providers (Datacenters and Towerco)
The European digital ecosystem is dominated by telecom operators, a sector whose contribution to the revenues of the digital ecosystem is decreasing steadily.

Digital Ecosystem Revenue Growth¹ by Sector and Region
By Region, 2013-2022 Revenues in €2 Billion², Top 100 Players by Category

- **North America**
  - 8.5% growth
  - 2013: 1,586 billion
  - 2022: 3,305 billion
- **Asia**
  - 8.7% growth
  - 2013: 1,381 billion
  - 2022: 2,924 billion
- **Europe**
  - 3.9% growth
  - 2013: 619 billion
  - 2022: 875 billion
- **Other³** (LATAM, MEA, Oceania)
  - 4.1% growth
  - 2013: 145 billion
  - 2022: 208 billion

Note: 1) Panel of 600 companies: By sector, selection by their turnover of the companies in the top 100 in 2022, 2) In constant euros 2022, 3) South America, Africa, Oceania and the Middle East

Source: Thomson Reuters Eikon, Arthur D. Little
European telecoms operators increased their revenues in 2022, but their growth over the last 10 years is significantly lower than the global digital sector average

**Telecom operator revenues by region**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>1,211</td>
<td>1,247</td>
<td>1,323</td>
<td>1,379</td>
<td>1,400</td>
<td>1,595</td>
<td>1,611</td>
<td>1,576</td>
<td>1,633</td>
<td>1,682</td>
</tr>
<tr>
<td>Asia</td>
<td>307</td>
<td>337</td>
<td>353</td>
<td>362</td>
<td>366</td>
<td>524</td>
<td>507</td>
<td>510</td>
<td>547</td>
<td>583</td>
</tr>
<tr>
<td>North America</td>
<td>385</td>
<td>402</td>
<td>430</td>
<td>463</td>
<td>479</td>
<td>509</td>
<td>536</td>
<td>494</td>
<td>510</td>
<td>507</td>
</tr>
<tr>
<td>Europe</td>
<td>388</td>
<td>373</td>
<td>399</td>
<td>405</td>
<td>402</td>
<td>401</td>
<td>403</td>
<td>413</td>
<td>410</td>
<td>423</td>
</tr>
</tbody>
</table>

Note: 1) Nationality according to the location of the head office, 2) Panel of 600 companies: By sector, selection by their turnover of the companies in the top 100 in 2022, 3) Constant 2022 Euros 4) Includes the top 100 players outside Asia, North America and Europe (only Oceania, Middle East, Africa and South America)

Source: Thomson Reuters Eikon, Arthur D. Little
Structurally, the investment effort of telecom operators is >2x higher than any other players in the digital ecosystem

Investment intensity of players\(^1\) in the global digital ecosystem

CAPEX/Revenues, World, 2013-2022, billion euros\(^2\), top 100 players by category

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Source: Refinitiv (Thomson Reuters), Arthur D. Little

Note: 1) Panel of 600 companies: By sector, selection by their turnover of the top 100 companies in 2022, 2) Constant euros at 31.12.2022
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Source: Arthur D. Little
The growth in usage is accompanied by a 5 to 6-fold increase in the volume of monthly data consumed per end-user.

**Mobile - Data Usage Per User**

GB/month/user

- Average annual growth 2022-30: +26% p.y.

**High speed landline - Data Consumption per Household**

GB/month/household


Source: Arthur D. Little
Most of the data traffic on networks is generated by a limited number of global Internet and media players

Internet traffic is concentrated around a few players who drive increasing usage

![Share of global internet traffic generated by actor, 2022](chart1)

- Google: 48%
- Netflix: 14%
- Facebook: 14%
- Amazon: 6%
- Other: 4%

The top 5 Internet players in France represent +38% of global Internet traffic

![Share of French traffic generated by the top 5 Internet players, 2022](chart2)

- Général: 54.0%
- Peak hour: 80.0%

![“The Attention Economy” - the major Internet players keep on promoting an increase in data usage](chart3)

**Objective**: Launch videos by default to increase the content delivery and consumption

**Impact**: Facebook: +200% of fixed data traffic and +60% of mobile traffic due to autoplay

![Pre-loading ads](chart4)

**Objective**: increase the monetization of the platforms’ audiences by preloading videos

**Impact**: ads that display faster to improve the experience, despite it generates mostly unnecessary data traffic on networks

Source: Sandvine, Arcep, Facebook, Arthur D. Little
The concentration of traffic-generating players in a context of growing data usage exacerbates the imbalances of the digital ecosystem

Impacts of the ‘Attention Economy’ on telecom networks

1. Increased data traffic
   - Data consumption in France GB/Month/Subscription
   - Mobile: Per user (2022: 14, 2030: 89), Per household (2022: 222, 2030: 1035)
   - Landline: Per user (2022: 22, 2030: 1035)
   - The growth in usage is accompanied by a 5 to 6-fold increase in the volume of data usage per user

2. Increased investment in network infrastructure
   - Investment in telecom networks 1 bd€, France
   - Fixed: 2013: 4.7, 2022: 10.8
   - The level of investment by operators has doubled in 10 years, reaching historically high values in 2022

3. Increase in the environmental impact of digital technology
   - Share of digital technology in France’s carbon footprint, as a percentage of total greenhouse gas emissions
     - 2020: 6% (Telecom networks), 20% (Connected Devices), 7% (Data Centers)
     - 2030: 26% (Telecom networks), 66% (Connected Devices), 7% (Data Centers)
     - 2040: 26% (Telecom networks), 67% (Connected Devices), 7% (Data Centers)
     - A 3x environmental impact of digital by 2040 driven by Big Tech players

Note: 1) Excluding spectrum purchases; all investments in the sector measured by Arcep
Source: Senate Report 2020 – Citizing, ETNO, Thomson Reuters, Senate, Arcep, Arthur D. Little analysis
A change is required – it is necessary to rethink the parameters of the digital equation

1. The ‘Attention Economy’ drives exponential growth in usage
2. "Zero-cost economy" where Internet players do not bear the costs associated with their use of networks to deliver their services
3. Environmental costs, included in the scope 3 of telecom operators, are assumed by the society and not by the economic players who generate them
4. Telecom operators bear all network investment costs

Source: Arthur D. Little
ARThUR LITTLE

THE DIFFERENCE