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BREKO
Bundesverband
Breitbandkommunikation e.V

BREKO
Market Study 2023

Bonn, Germany, 30 August 2023
Prof. Dr. Jens Böcker

Agenda

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Management Summary

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BREKO Market Study 2023 shows:

- The fibre roll-out in Germany remains on track, despite numerous challenges: With a fibre-availability of 35.6% as of 30 June 2023, more than a third of all households and businesses have access.
- Alternative network operators support Germany as a business location: investments by Deutsche Telekom's competitors with 8.4 billion euro at highest level ever (64% of total investments).
- 223 municipalities are affected by duplication of fibre networks. This could jeopardize the roll-out targets of the German Government. Existing open access agreements demonstrate a functioning alternative to building parallel fibre networks.
- In a comparison of the federal states, Schleswig-Holstein remains the front-runner, Brandenburg has made the most progress, and Baden-Württemberg is at the bottom of the list among the non-city-states.
- Publicly funded fibre projects complement privately funded projects but do not accelerate roll-out overall. Privately funded fibre connections are economically viable for more than 90% of German households.
- Telecommunications companies continue to focus on sustainability measures.

Stichprobe

Survey of 184 network operators in Germany in May and June 2023. Executives (e.g. managing directors) were interviewed.

BREKO Market Study23

- BREKO's market analysis is representative for the German telecommunications and fibre market.
- Validation of the survey results by including additional sources
- There are approx. 270 active telecommunications companies in Germany
- Out of these, 241 are BREKO members
- Based on roll-out figures from all relevant companies involved in the fibre roll-out in Germany

1. Telecoms services turnover of network operators in 2022: **€ 59.1 bn**
2. Investments by network operators in 2022: **€ 13.1 bn**
3. Fibre optic connections (homes passed) by **30 June 2023: 17.3 m**
4. Fibre coverage (homes passed) by **30 June 2023: 35.6%**

Market data

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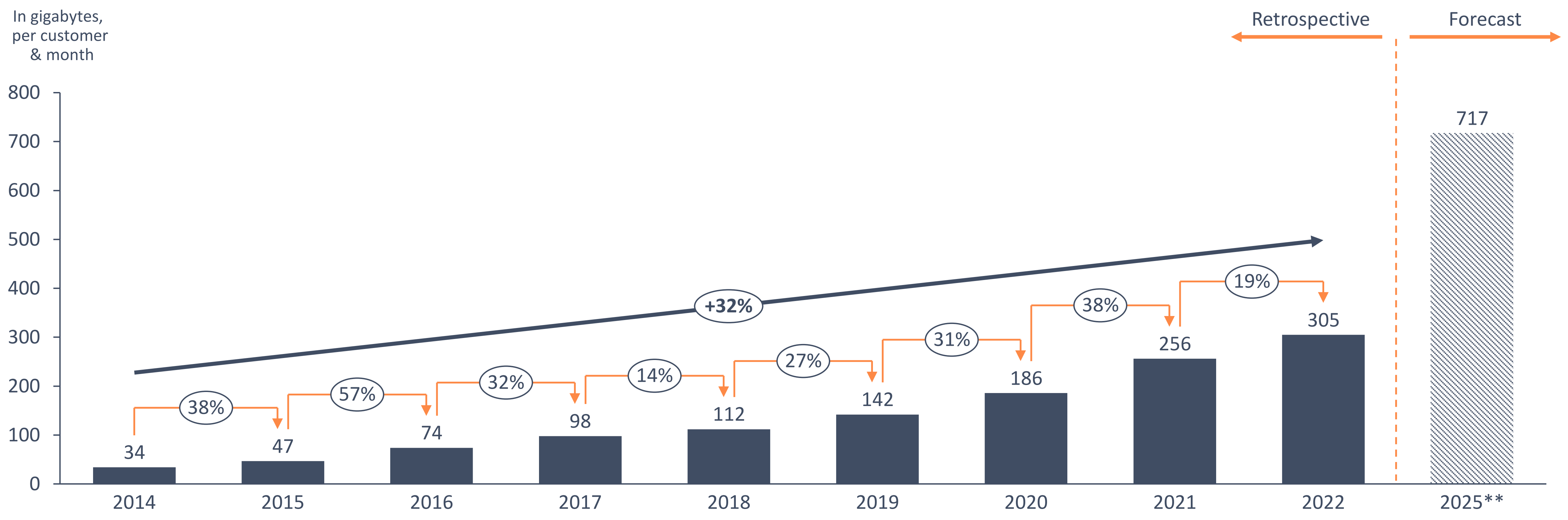
Development of the amount of data in fixed networks

2014 to 2025, the amount of data transferred through fixed networks will grow by an average of 32% per year.

Average amount of data on fixed networks*



Source: Federal Network Agency, Annual Report 2022, p. 17; *incl. TV and streaming services; ** BREKO forecast.

Ratio of data consumption, mobile vs. fixed networks

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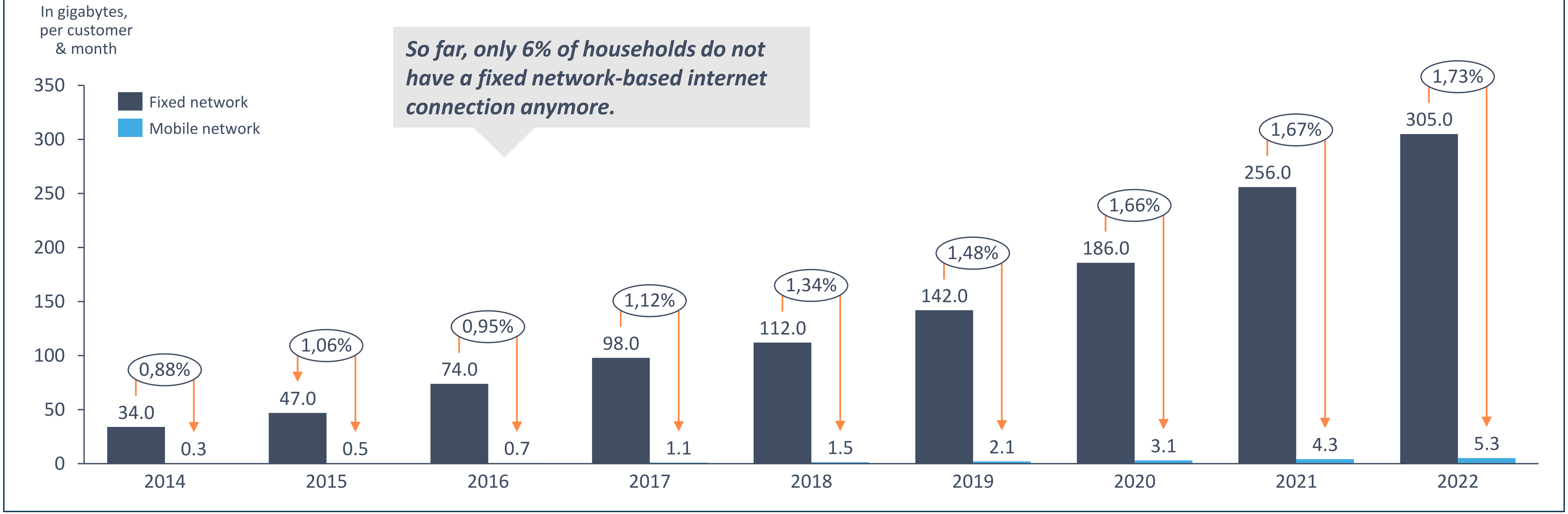
Fixed and mobile networks continue to complement each other – no significant substitution effects are discernible so far. The number of fixed network connections increased by 300,000 over the last three years.

Average amount of data on fixed/mobile networks



Source: Federal Network Agency, Annual Report 2022, p. 17, p. 19, p. 23.

Distribution of customers by speed subscribed

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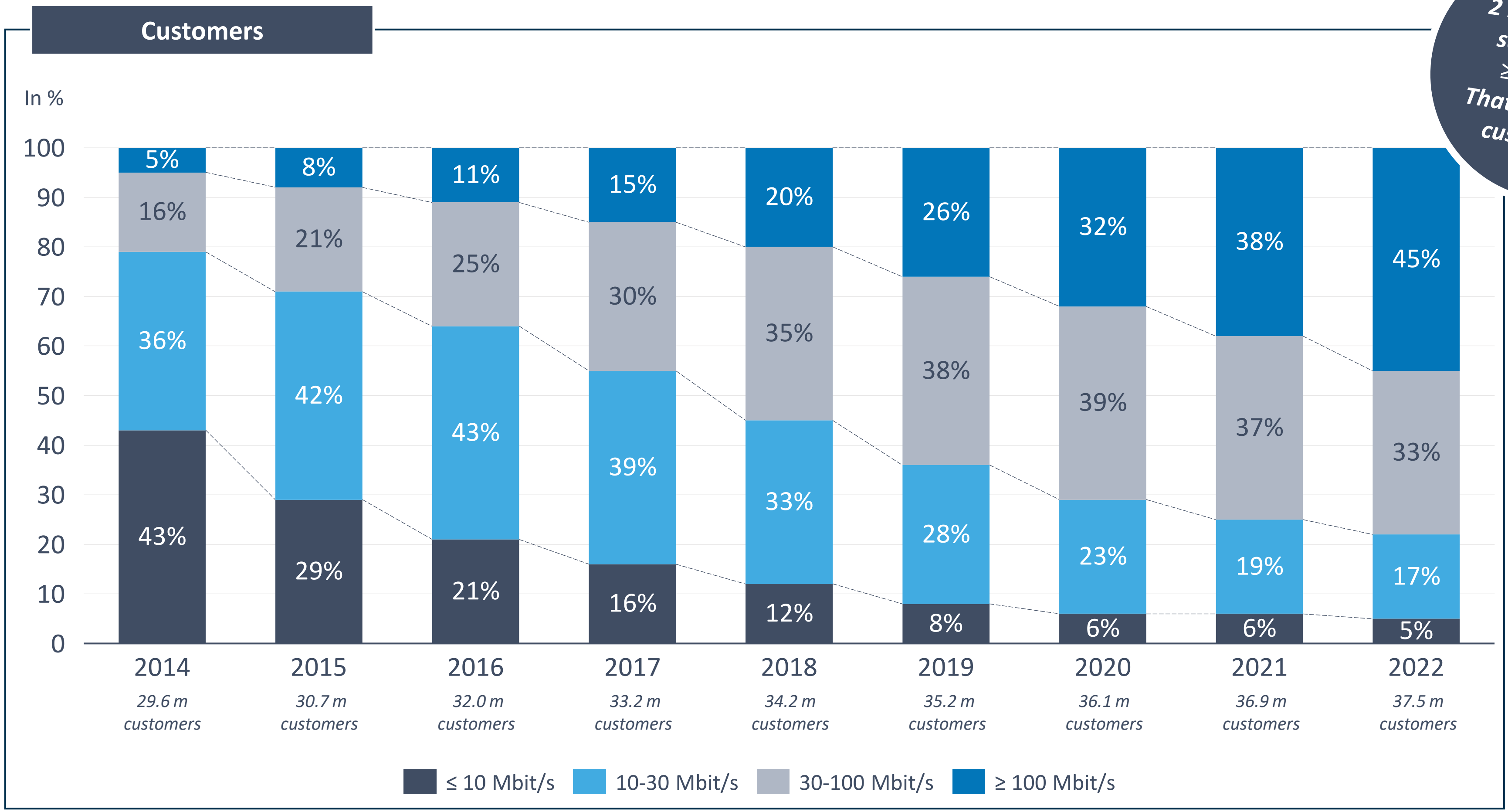
High bandwidths are becoming more important – 45% of customers subscribe to bandwidths ≥ 100 Mbit/s.



*2 m customers subscribe to ≥ 1 Gbit/s. That is 5 % of all customers. **

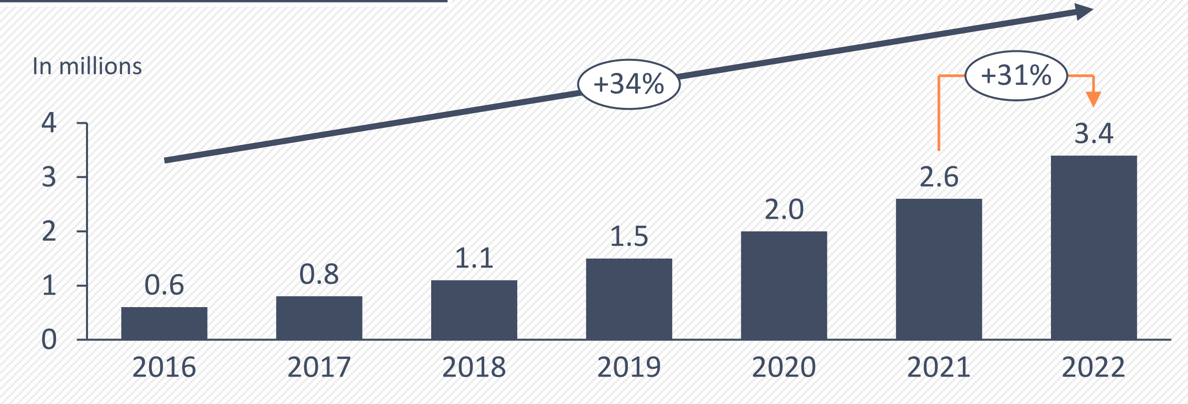
Speed	Customer growth
≥ 100 Mbit/s	+1.9 m
30-100 Mbit/s	-1.0 m
10-30 Mbit/s	-0.5 m
≤ 10 Mbit/s	-0.4 m

Source: Federal Network Agency, Annual Report 2022, p. 12, 13; *For network operators who are members of BREKO the share is 9.6%.

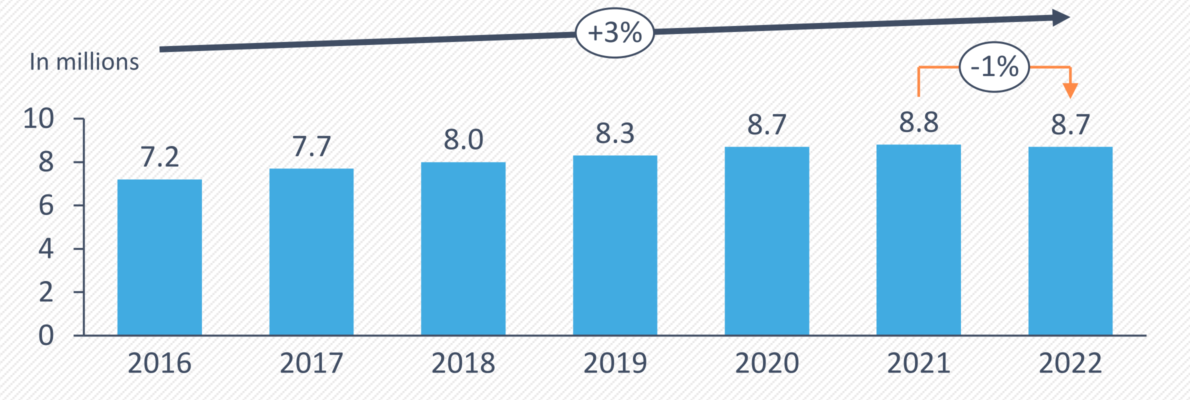
Broadband connections by technology

The disproportionate growth in fibre connections continued in 2022. The number of connections via cable networks (HFC) decreased for the first time.

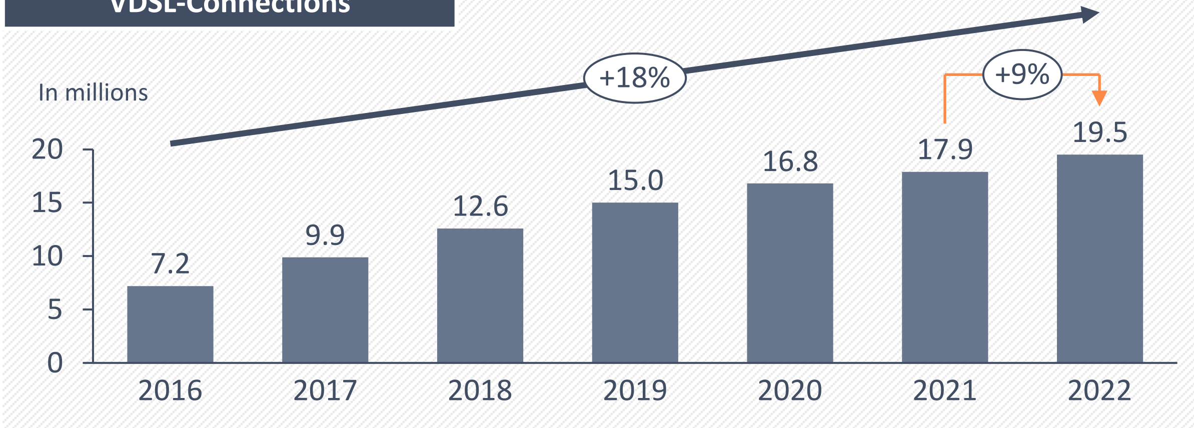
FTTB/H-Connections



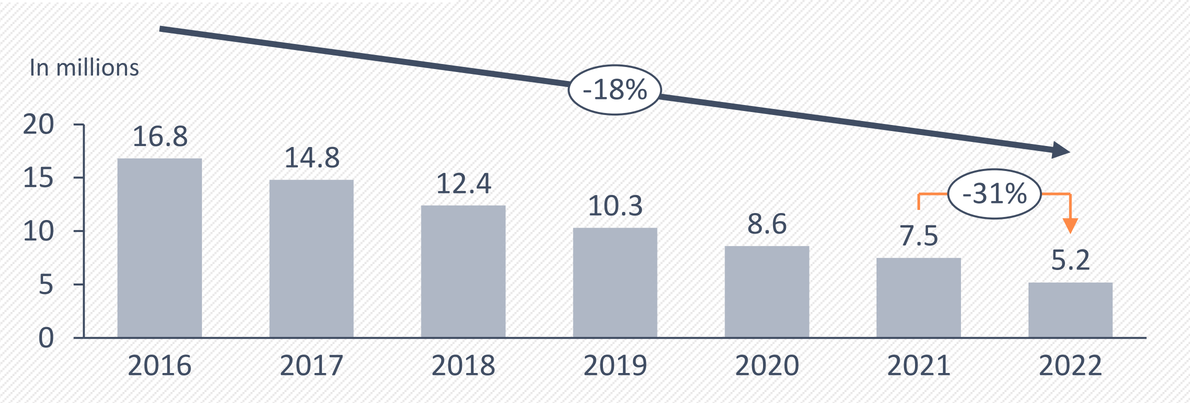
HFC-Connections



VDSL-Connections



ADSL-Connections

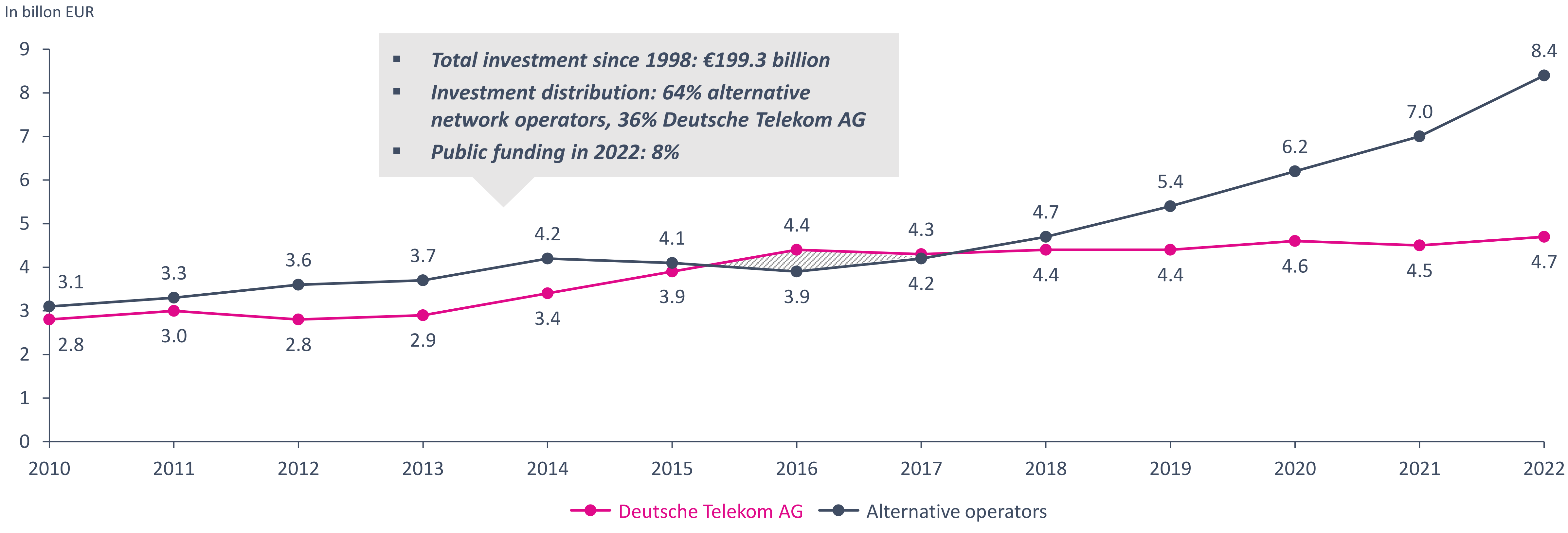


Source: Federal Network Agency, Annual Report 2022, p 14-16; Federal Network Agency, Annual Reports 2016-2021; Differing estimates regarding Homes Activated by different sources.

Total investment in the telecommunications market

Companies invested 13.1 billion EUR in broadband network infrastructure in 2022, more than ever before. The investment share of Deutsche Telekom's competitors rises significantly to a total of 64%.

Investment* in broadband network infrastructures**

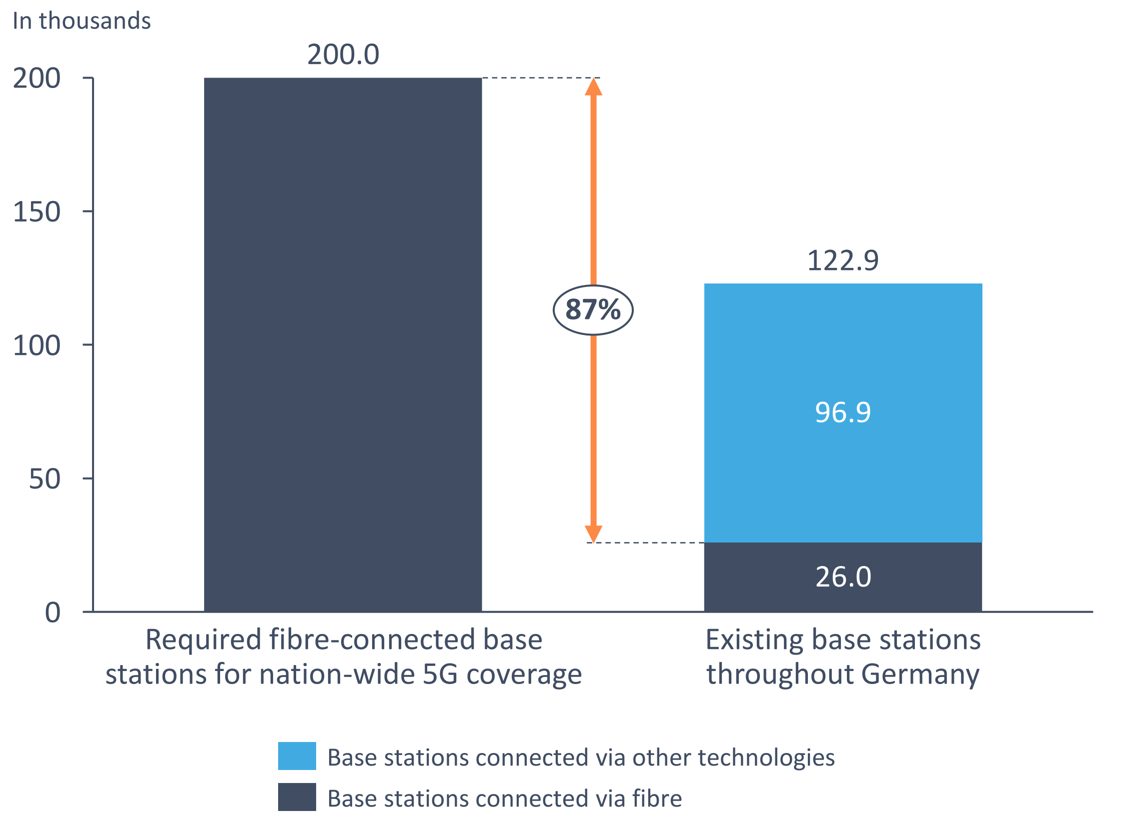


Source: Federal Network Agency, Annual Report 2022, p. 10; BMDV 2023; *incl. public funding; **investments in new and existing broadband network infrastructures (excluding investments in mobile spectrum licenses)
/// vectoring dent caused by vectoring decisions of the Federal Network Agency

Fibre backhaul for mobile radio sites

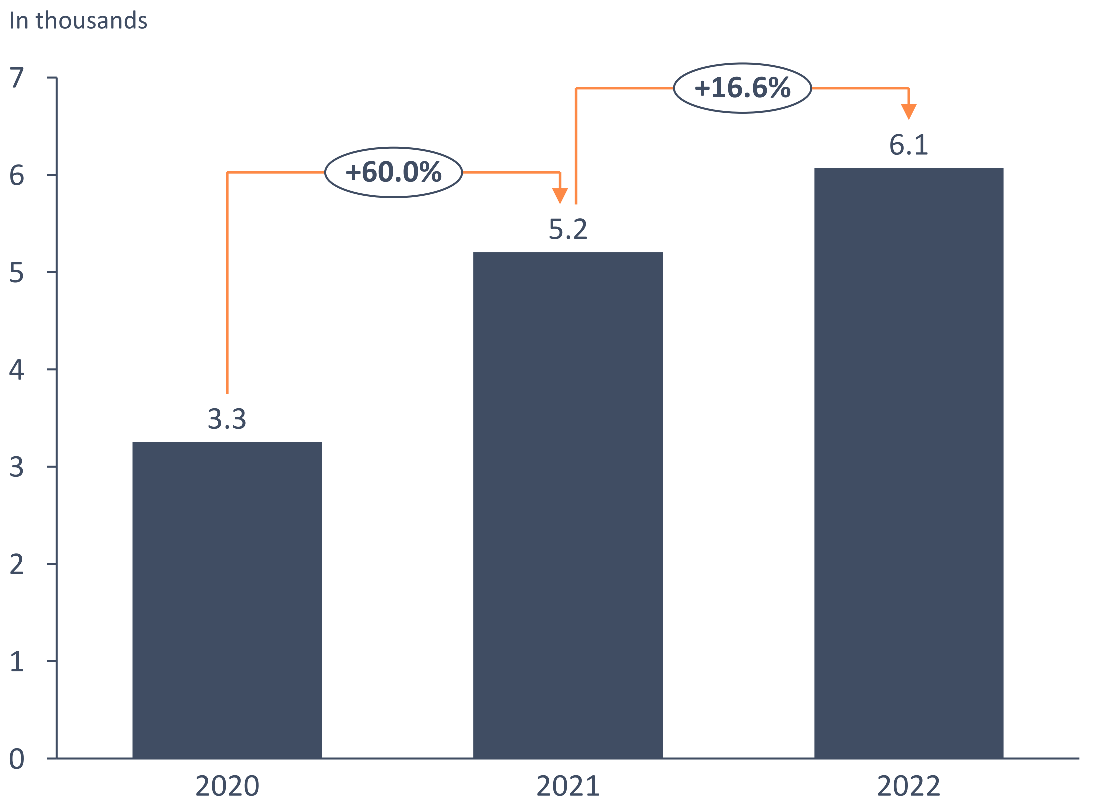
Supplying fibre backhaul for mobile radio sites continues to be an important business segment for fibre network operators. BREKO member companies built almost 25% of all fibre backhauls for base stations.

Base stations in Germany



Source: WIK 2022.

Base stations connected by BREKO members



Source: Survey of network operators (n=56)

Fibre development

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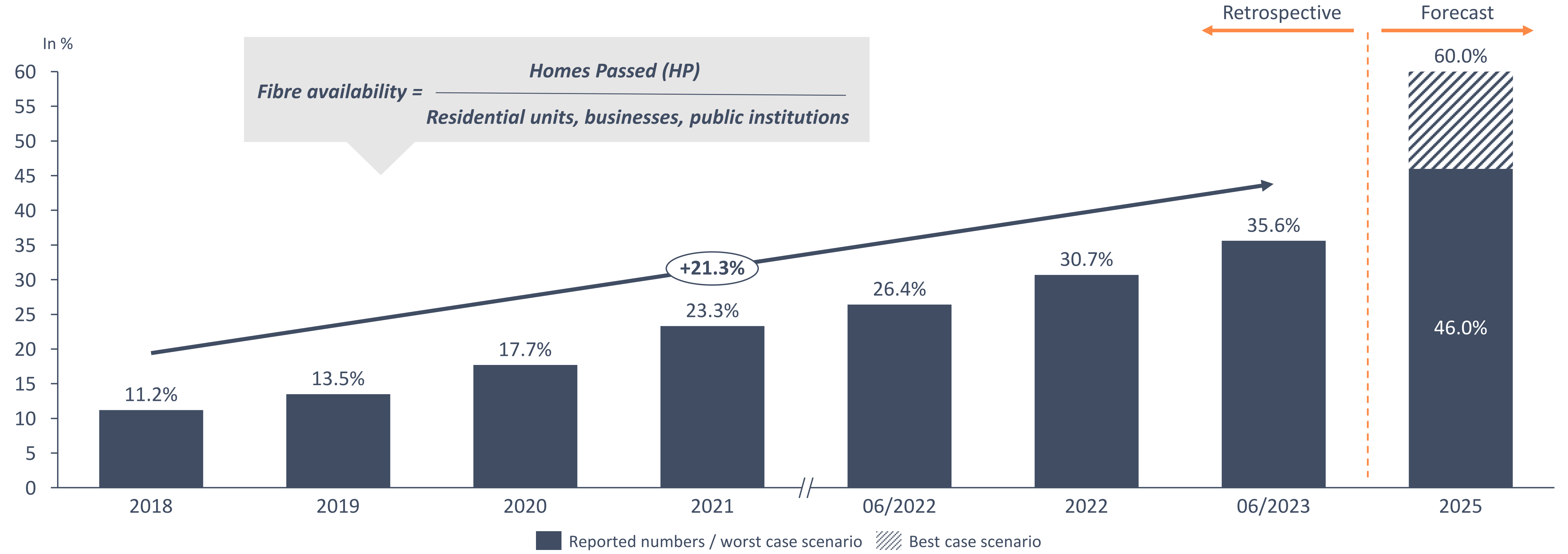
Fibre availability over time

Fibre availability reaches 35.6% as of 30 June 2023, an increase of 9.2 percentage points within 12 months.

Fibre availability

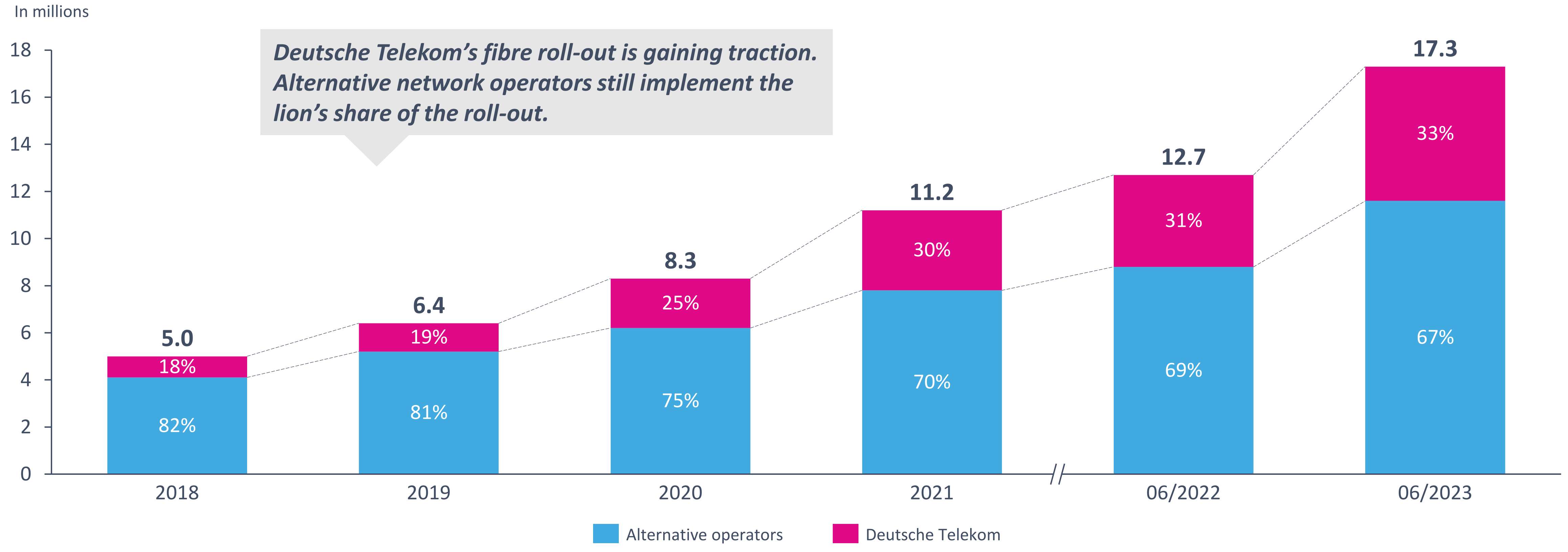


Source: survey of network operators (n=178); Federal Network Agency, annual reports 2018-2020; Federal Statistical Office 2023, basis for fibre availability: residential units, businesses, public institutions; figures refer to homes passed, incl. under construction
Absolute numbers: as of end 2021: 11.2 million homes passed, as of 30 June 2022: 12.7 million homes passed, as of end 2022: 15.0 million homes passed, as of 30 June 2023: 17.3 million homes passed.

Distribution of fibre connections over time

67% of homes passed are built by alternative operators, 33% by Deutsche Telekom.

Homes passed: alternative operators & Deutsche Telekom



Source: Survey of network operators (n=178); Deutsche Telekom AG, Q2 2023 results; Breko market analyses 2019-2022.

Federal states in comparison

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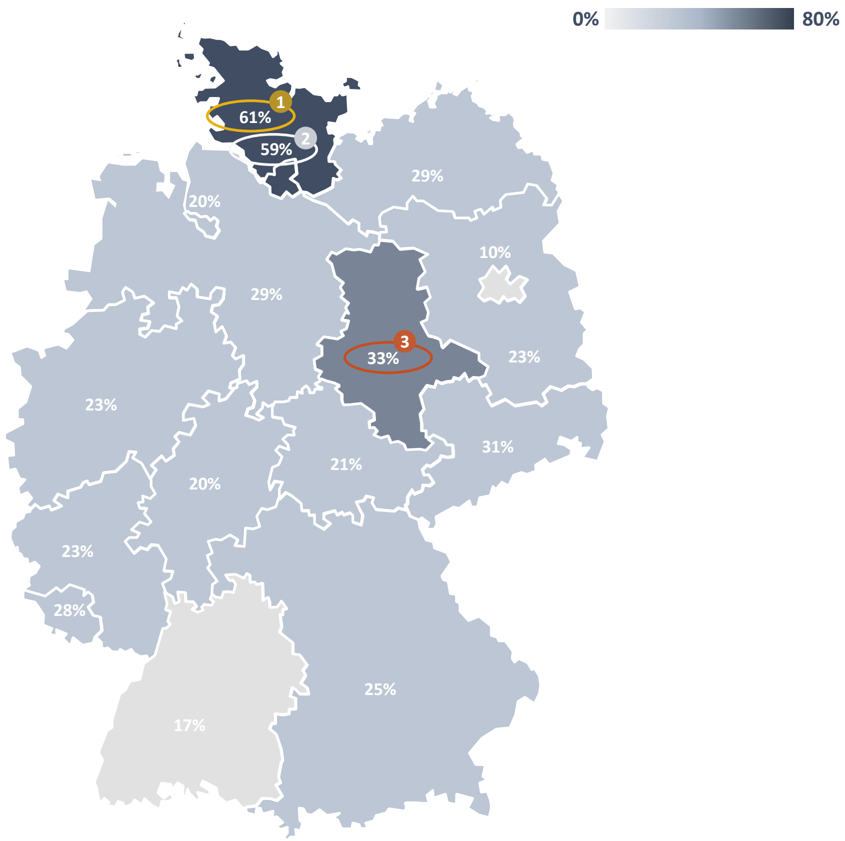
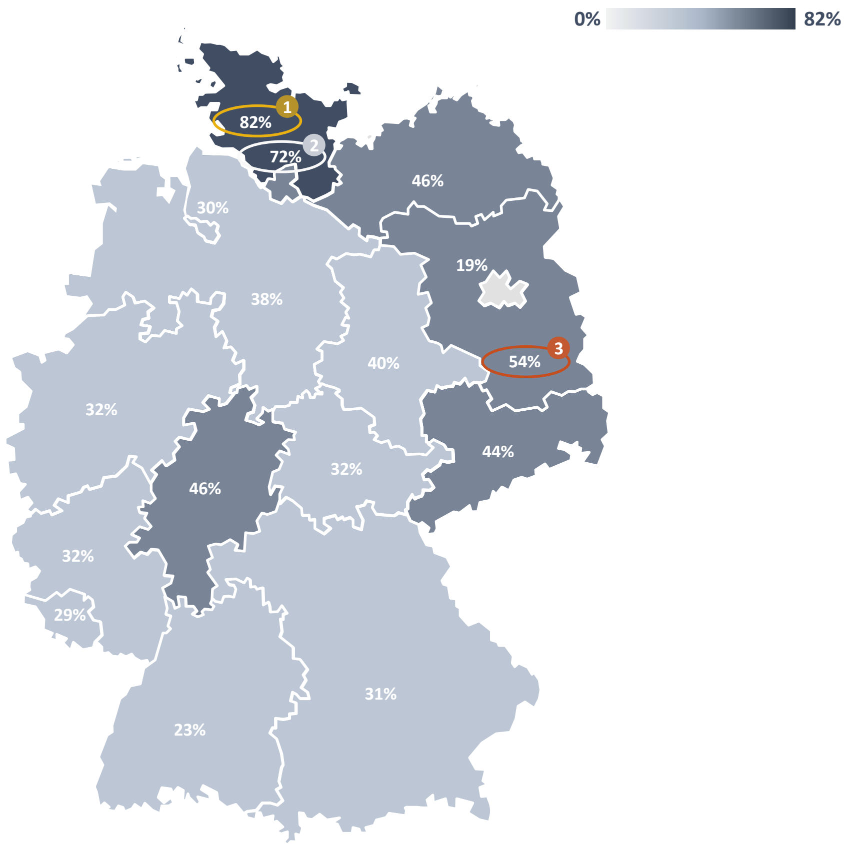
Fibre availability in Schleswig-Holstein remains ahead of the competition; strongest growth in Brandenburg.

Homes passed Germany June 2022



Homes passed Germany June 2023



Source: Survey of network operators (n=178); Federal Statistical Office 2023; Statista 2023, basis for fibre availability: Residential units, businesses, public institutions

Germany compared to other European countries

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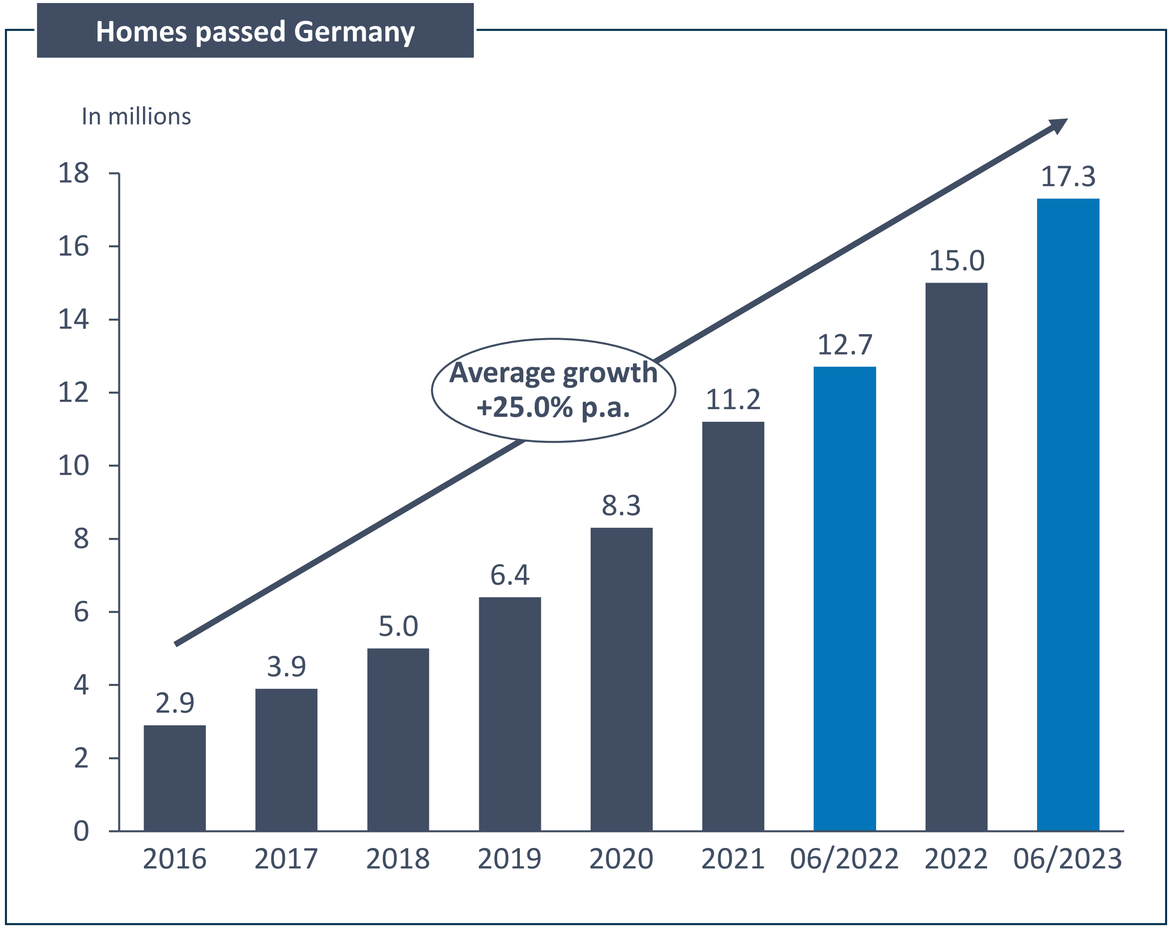
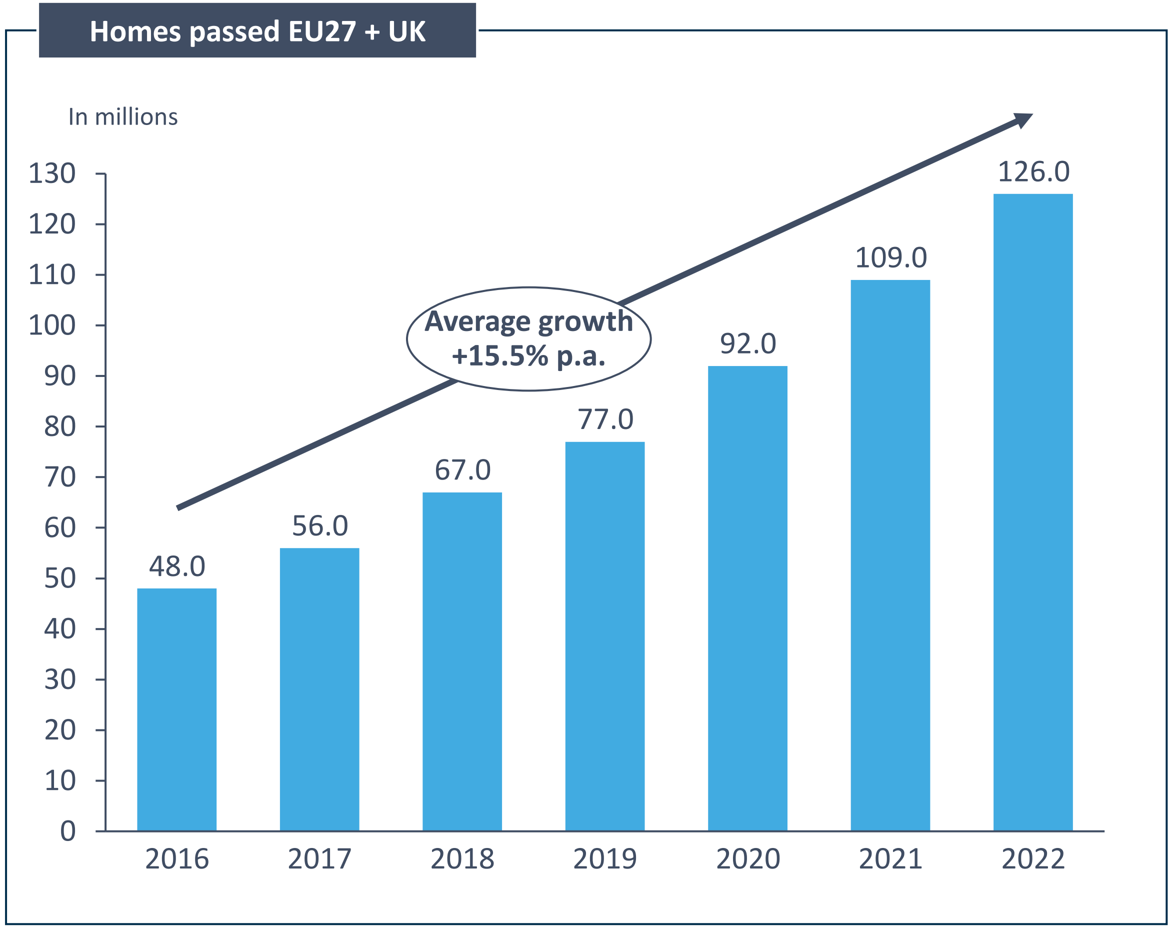
Germany's growth rate in fibre availability is disproportionately high.





Source: Survey of network operators (n=178); FTTH Council Europe, FTTH/B Market Panorama 2023.

Risk factors for the fibre roll-out in Germany

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Specific risk factors have a significant impact on fibre roll-out in Germany.

Risk factor	Assessment
Shortage of skilled workers in all areas of the fibre roll-out	Very critical
Public funding from the federal government	Very critical
Strategic duplication of fibre networks by Deutsche Telekom; EU's Gigabit Infrastructure Act	Very critical
Cost increases for network roll-out and operation	critical
Low acceptance of alternative deployment methods	critical
Consumer reticence due to high inflation rates	critical
Lengthy and analog approval procedures	Less critical

Network operators rolling out fibre networks in Germany are facing growing challenges.

Less critical critical Very critical

Duplication of fibre networks

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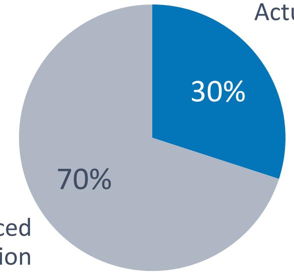
223 municipalities in 13 federal states are affected by the duplication of fibre networks.

Duplication of fibre networks in Germany

Municipalities affected: **223**

Federal states affected: **13**

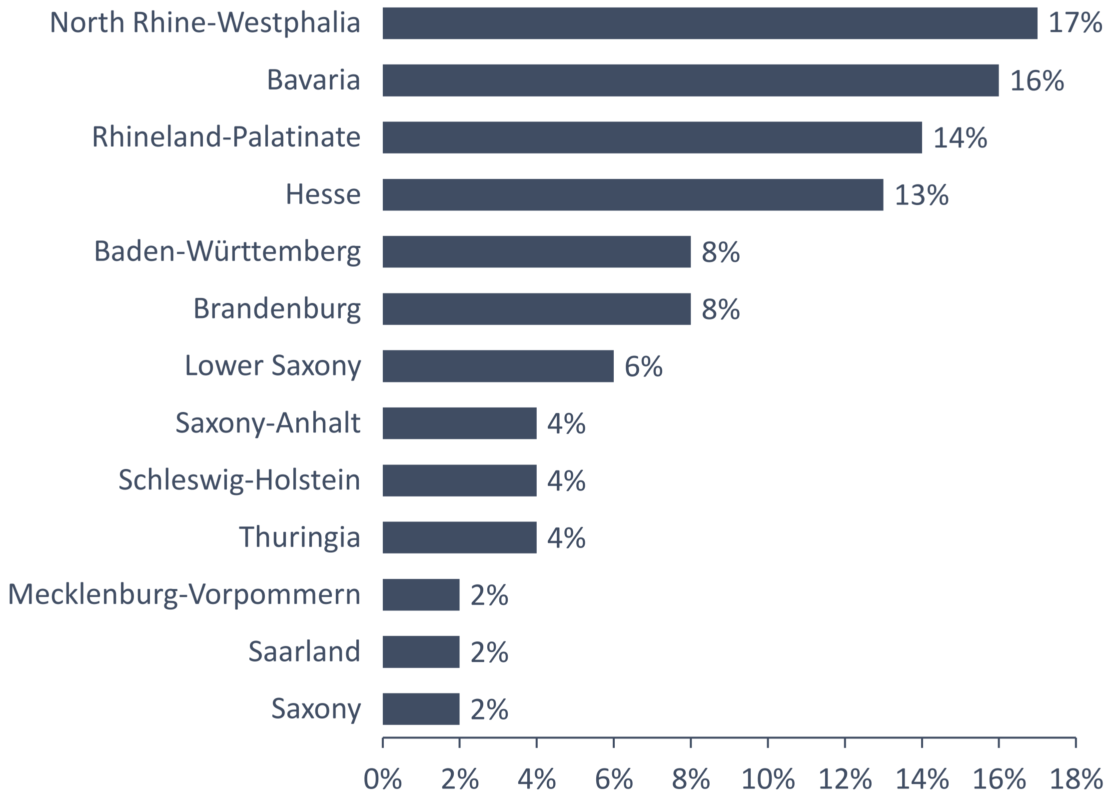
Status of the affected projects



Consequences:

- Withdrawal of the first movers
- Duplication of publicly funded fibre networks

Cases of fibre network duplication by federal states*



Source: Survey of municipalities and BREKO network operators, July 2023. *No reports from the city states of Berlin, Bremen, and Hamburg

Take-up rate for fibre connections

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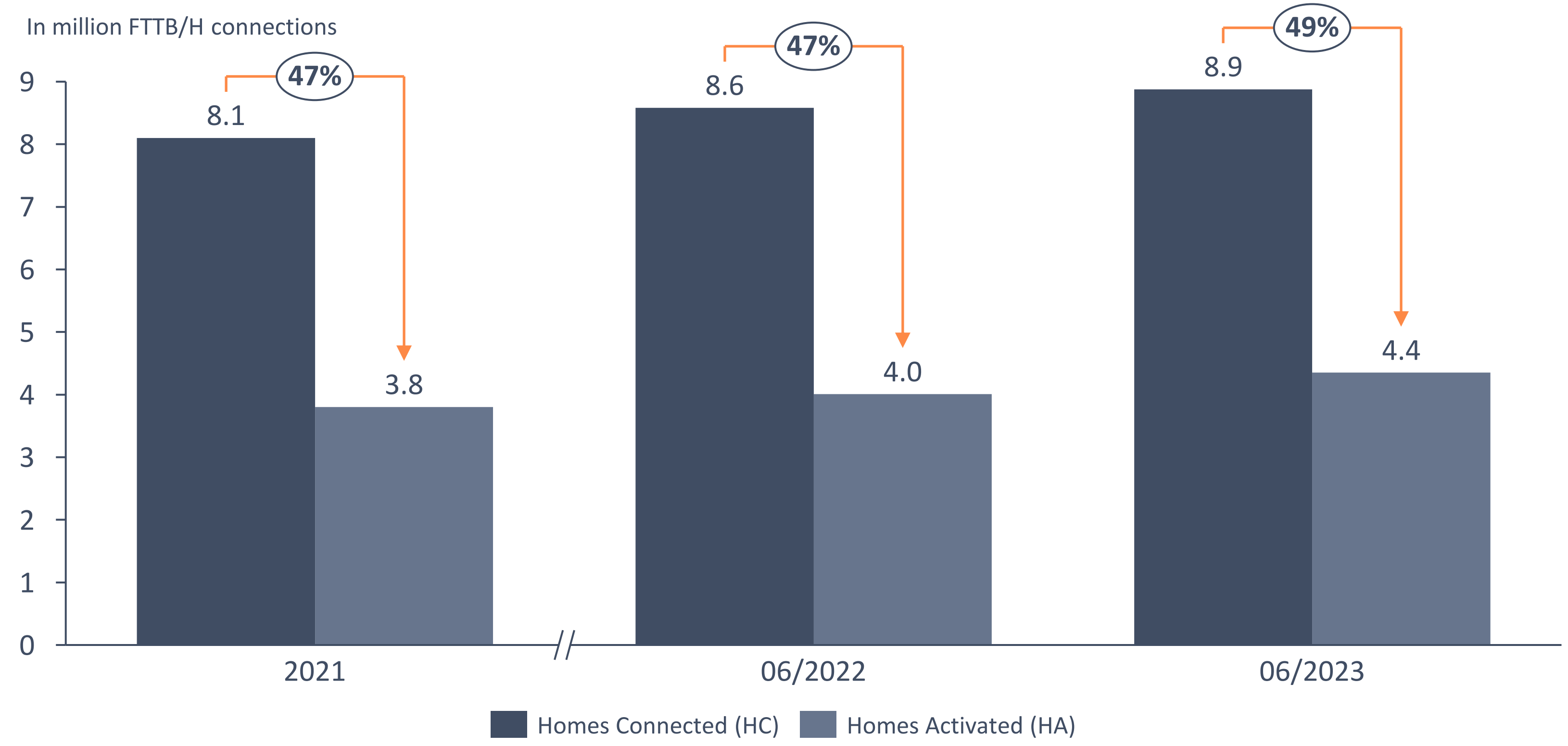
The take-up rate in the fibre market reaches 49%, an increase by 2 percentage points to compared to the previous year.

Take-up-rate



Implications

- Moderate growth in homes connected (300.000, approx. 3%)
- Homes Activated grows by 400,000 connections (approx. 10%)
- Companies focus on the nationwide fibre roll-out (HP) and activating the connections already available (HA).

Source: Survey of network operators (n=157-162).

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Public funding

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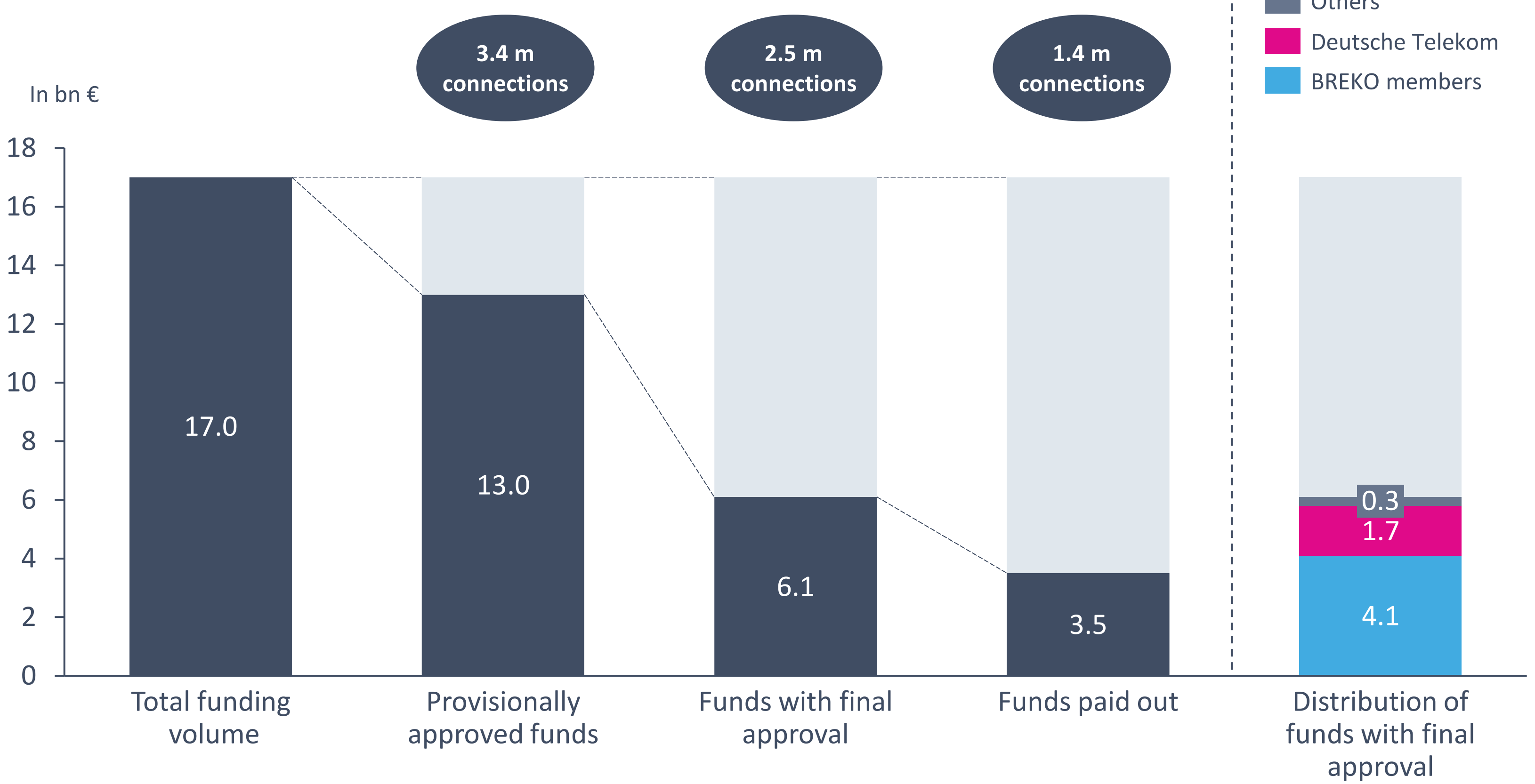
Broadband funding from the federal government

To date only approx. 21% of the funding available 2015-2023 has been paid out.

Distribution of funds*



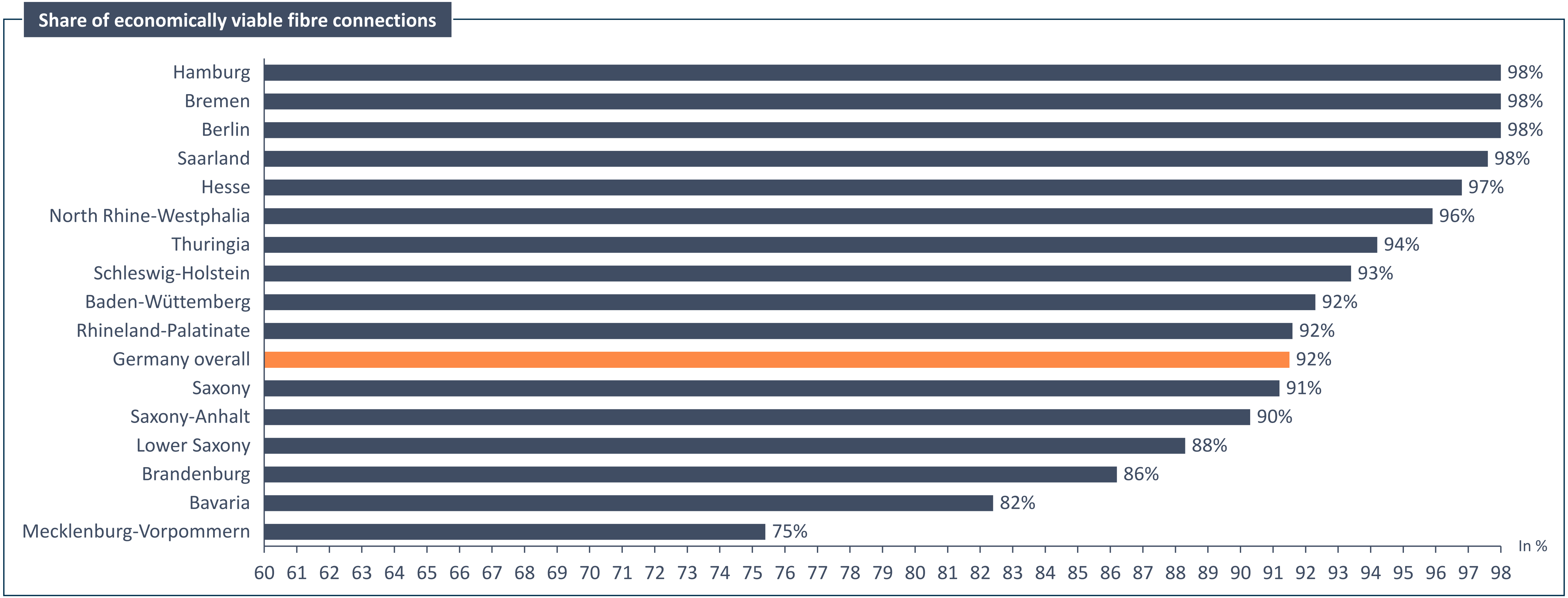
Implications

- The total volume of the federal funding programme will increase to € 17.0 billion in 2023 from € 12.8 billion the year before.
- Of this amount, € 13.0 billion have already been applied for by municipalities.
- € 6.1 billion have received final approval from the federal government for specific roll-out projects.
- € 13.0 billion of provisionally approved funds correspond to 2,650 roll-out projects and 3.4 million connections.
- In the future, public funding should focus on underserved regions.

Source: BMDV, Key figures on broadband funding, as of August 2023; BMDV, List of award winners, as of August 2023; *Federal funding, not including contributions by federal states and municipalities.

Economically viable fibre connections by federal state

According to an “analysis of potential” commissioned by the Federal Ministry of Digital Affairs and Transport, 92% of German households can be connected to fibre without the use of state subsidies.



Source: WIK Consult 2023, Potenzialanalyse des eigenwirtschaftlichen Glasfaserausbaus in Deutschland.

Trends

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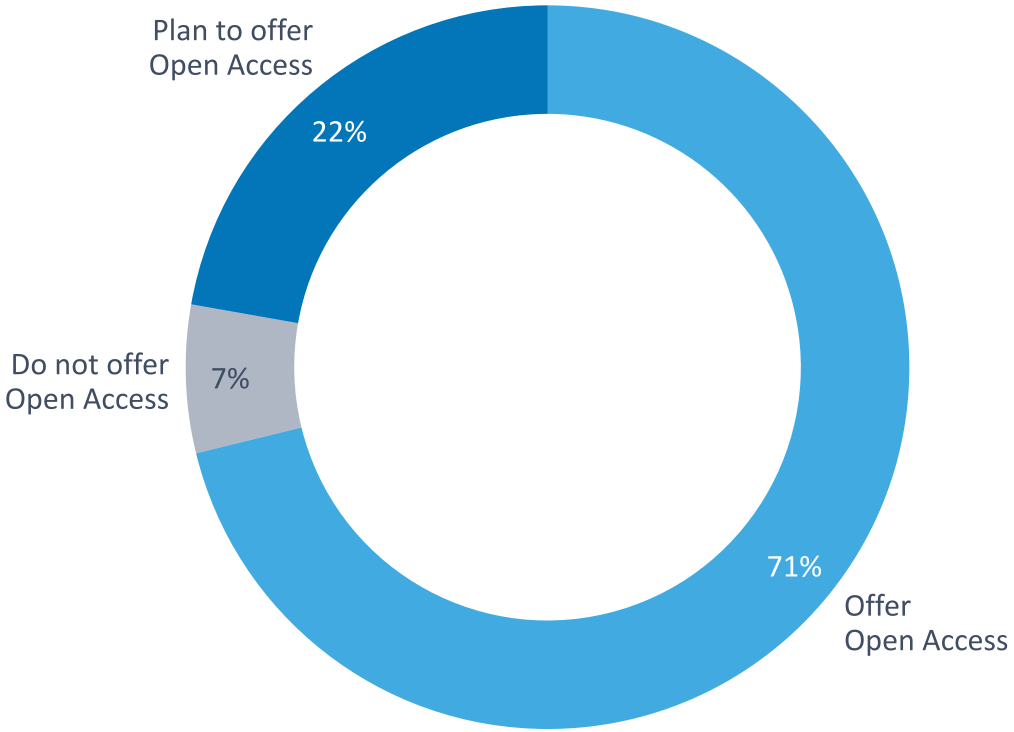
Open Access

The relevance of Open Access business models increases: 71% of companies already offer Open Access.

BREKO member companies who offer Open Access



Source: Survey of network operators (n=45).

Open Access generates an average of 18% of network operators' total revenue.

Close to 74% of the companies surveyed expect that the business relevance of Open Access will strongly increase in the future.

Source: Survey of network operators (n=32/46).

Sustainability in the telecommunications sector

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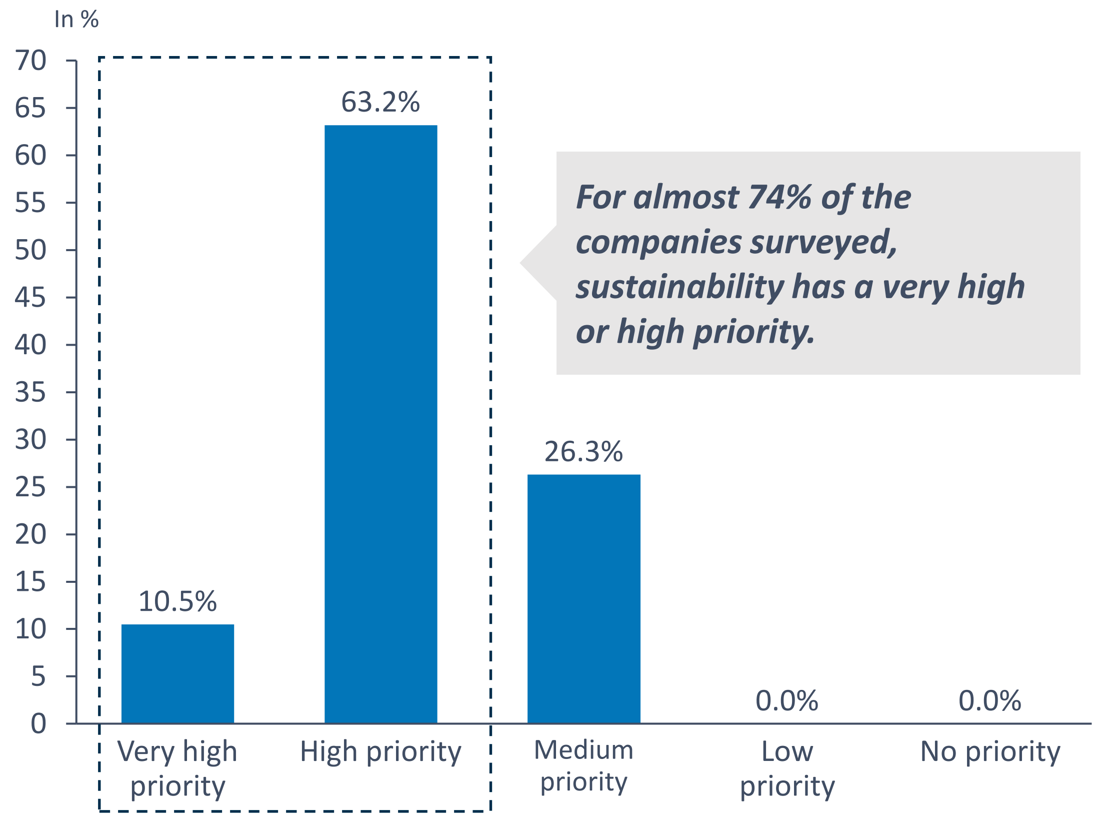
Sustainability is a high priority for telecommunications companies – corresponding measures are being implemented.

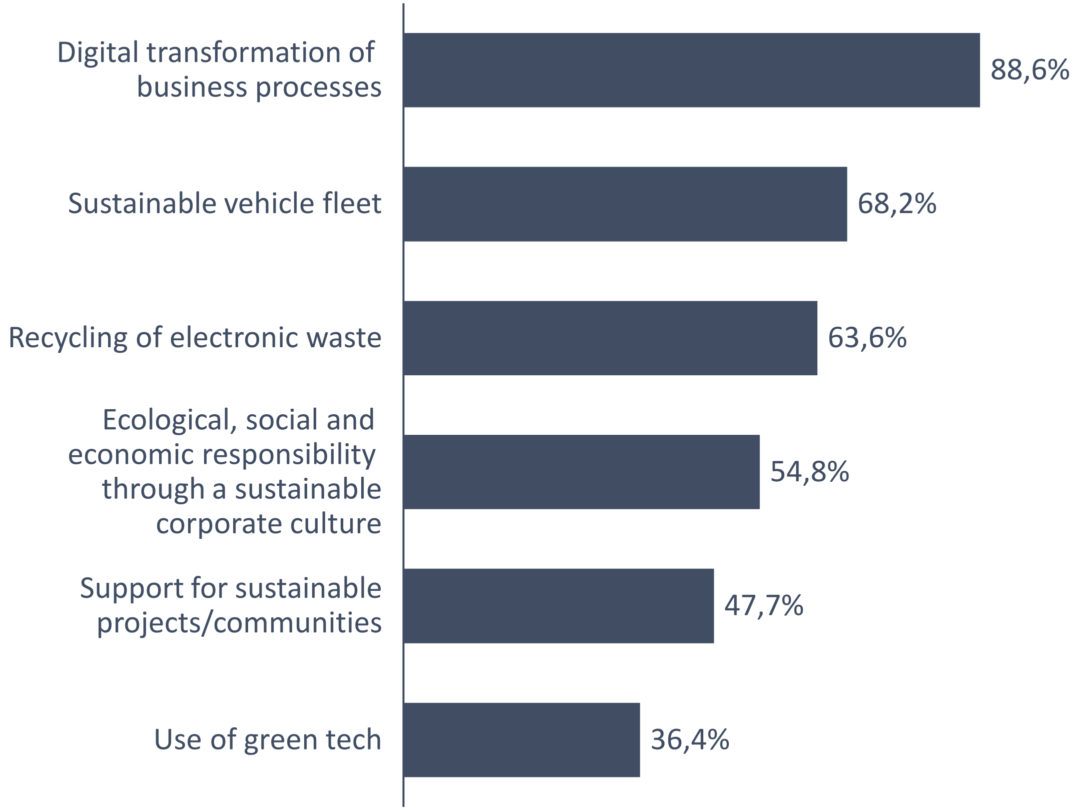
Priority



For almost 74% of the companies surveyed, sustainability has a very high or high priority.

Source: Survey of network operators (n=46).

Measures



Source: Survey of network operators (n=42-44).

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