Herzlich Willkommen!

VATM delegation visit – 18 June 2024

Program

9.00 **Welcome to Fibre Alliance Denmark and Green Power Denmark**

9.10 **From Megawatt to Gigabit – Fibre deployment by the Danish fibre-utilities**
Speaker: Christian Vonger Berg / Senior Advisor / Fibre Alliance Denmark

10.00 **The regulatory landscape in Denmark**
Speaker: Frederik Rygaard / Head of Division / Danish Business Authority – the Danish NRA

11:00 **Coffee break**

11.15 **Gigabit connectivity and permit granting procedures in Danmark**
Speaker: Onno Juhl-Vollers / Head of Section / Danish Agency for Data Supply and Infrastructure

12.00 **Joint lunch buffet at Green Power Denmark's canteen and a walk in the inner harbor**

13.00 **OpenNet – The Danish model for Open Access Networks**
Speaker: Kristian Olaf Plet Freiesleben / International Business Director / OpenNet

13.45 **CPE gateways for Open Access Networks and the positioning of FTTH in relation to 5G FWA**
Speaker: Erik Søe-Pedersen, SVP Sales / Icotera

14.30 **Coffee break**

14.45 **Passive and active FTTH networks**
Speaker: Lars Prisak, CEO Triarca

15.15 **Customer case "Sustainability"**
Speaker: Heike Kaiser-Jäger and Helle Aaker Jensen, Hans Folsgaard

15:45 **Key take-aways**
Frederic Ufer and Christian Vonger berg

FIBRE ALLIANCE DENMARK

PART OF
GREEN POWER DENMARK

Green Power Denmark

- Created March 2022, after a merger between Danish Energy, Wind Denmark and Solar Power Denmark.

- Represents nearly 1,500 members, 800 cooperative members and 200 members of associated associations.

- Approximately 125 employees.

- Offices in Copenhagen, Aarhus and Bruxelles.

- Acts as the voice of the entire value chain from the manufacturers of a screw in a wind turbine, to smaller turbine owners, bigger producers of renewable energy, electricity grids (Distribution System Operators) and electricity trading companies that sell power to the consumers.

- Yearly 80 conferences and events.

Fibre Alliance Denmark

- Fibre Alliance Denmark is part of Green Power Denmark and association for companies that own and operate public telecommunications fibre networks (FTTH)

- Represents 14 members (all fibre-utilities)

- 3 employees (Thomas, Morten and myself)

- Member of the European Local Fibre Alliance (ELFA)

- Fibre Alliance Denmark work to:
  - Make Denmark a digital leader by promoting the deployment and take-up of future-proof FTTH networks for the benefit of growth, welfare, and development of Denmark
  - Ensure an attractive political and regulatory framework for fibre rollout in Denmark
  - Strengthen the dialogue and collaboration with authorities - both nationally and at the EU level - as well as with partners, organizations, and stakeholders broadly within civil society

The Danish fibre-utilities

- 14 local and regional fibre-utilities – mainly co-operatives – have deployed fibre networks since the mid 2000s

- Reasons for the utility companies market entry:
  - New business opportunities
  - Lack of broadband coverage and speeds
  - Lack of competition
  - Co-digging and trench sharing with power cables
  - Patient capital for long-term investments in FTTH
  - Strong expectation that FTTH is the end-game!

- Main challenger to the incumbent operator (TDC Net) (>80% market share on FTTH)

- Mainly GPON / GPON over P2P networks -> XGS PON

- Total investment in FTTH exceeds 4 bn EUR

- 2017 -> Open access based on fair, non-discriminatory and reasonable terms and conditions for access seekers

- Fibre coverage has passed 85% (homes passed)

- Nearly full fibre coverage is expected in 2025

- Ongoing consolidation

The race towards gigabit speeds
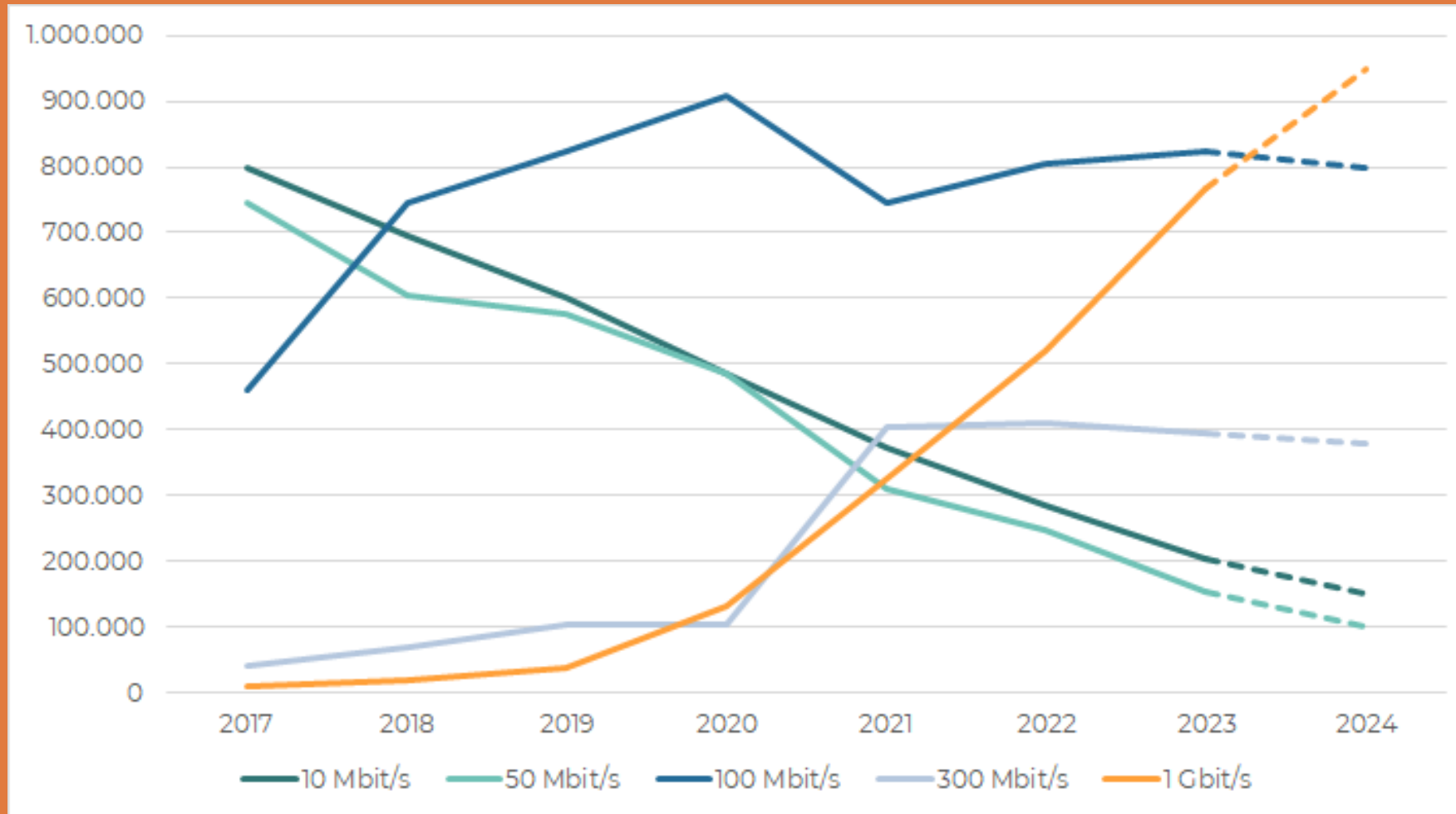
Broadband subs (downstream)

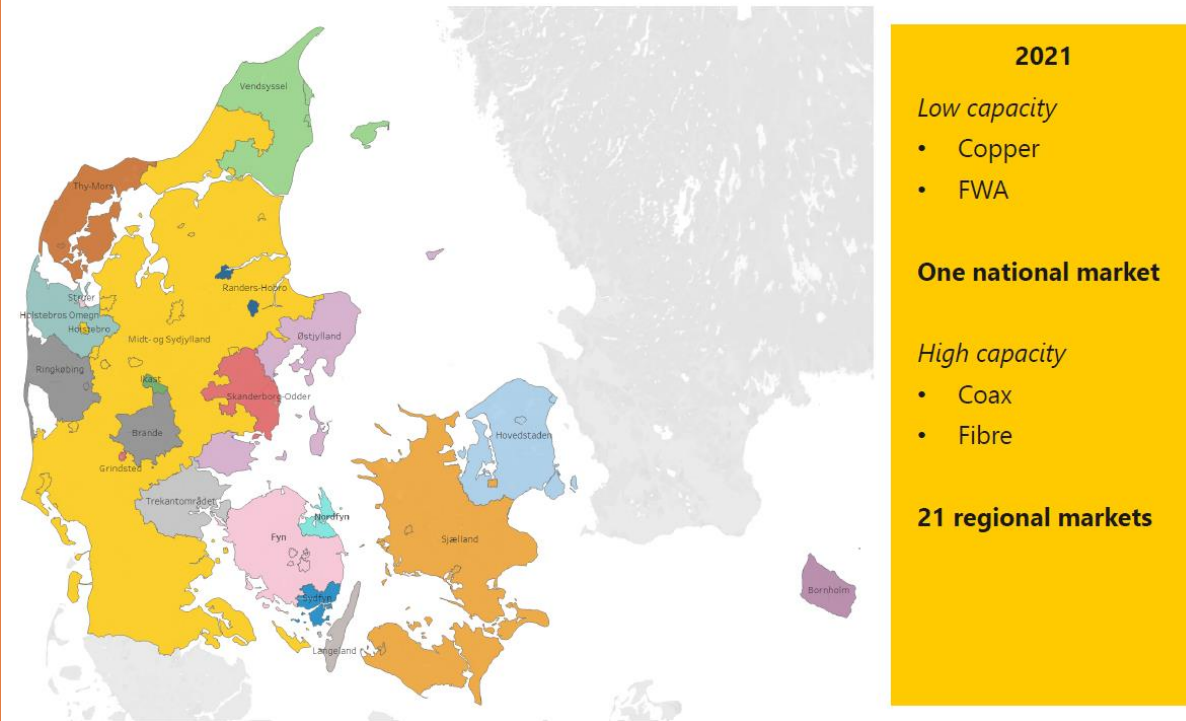Source: The Danish Agency for Data Supply and Infrastructure

Open access networks – the Danish way

- Fibia and Norlys have established wholesale platforms for cooperation between network owners and service providers
- The wholesale platforms contribute with standard contracts, IT integration and technical provisioning
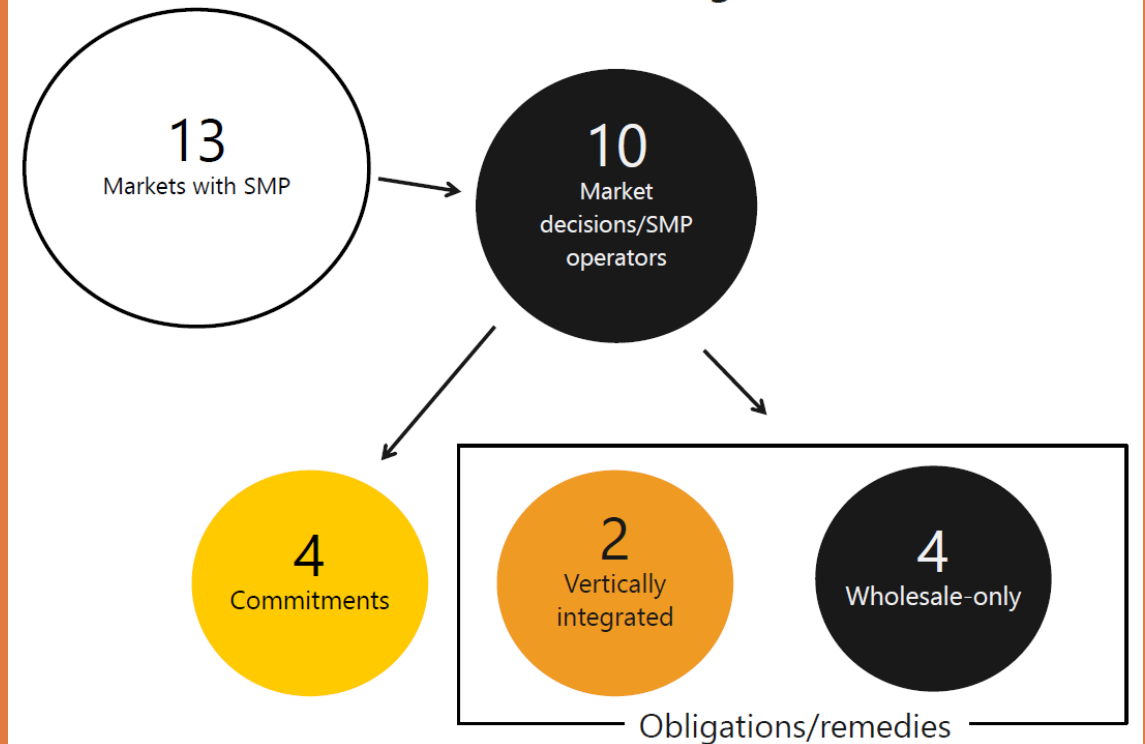- The fibre-utility EWII is using TDC's wholesale platform (Columbine)

FIBRE ALLIANCE DENMARK

PART OF
GREEN POWER DENMARK
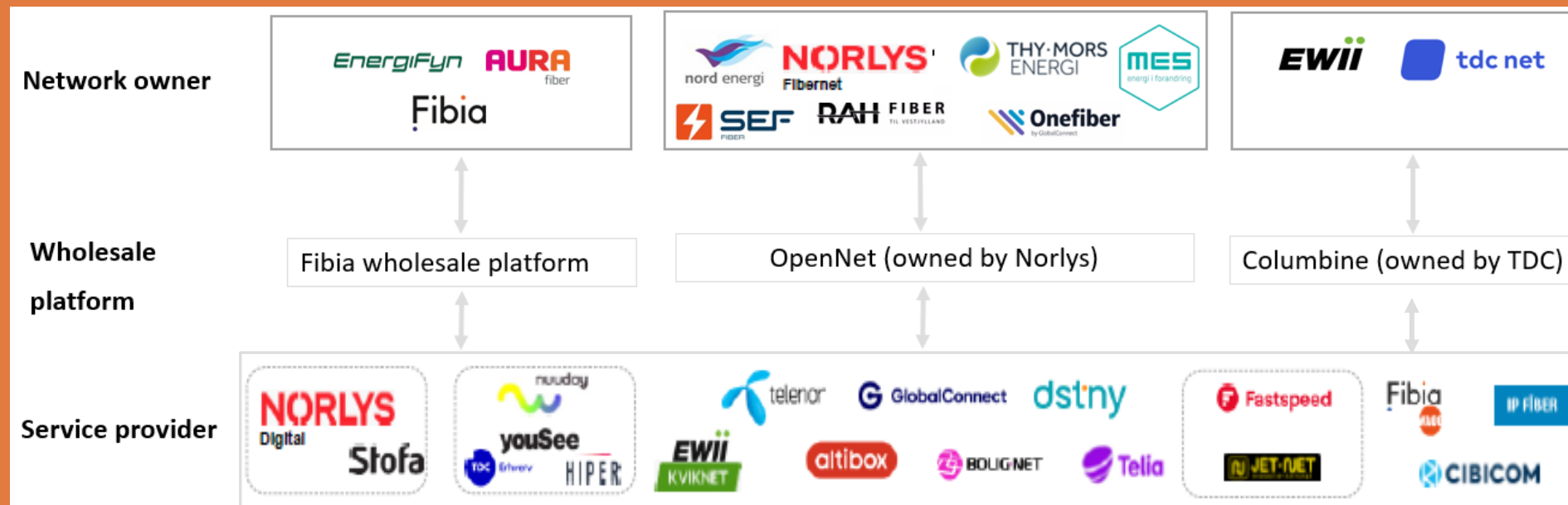
The regulatory landscape - from one national market and one SMP-operator to 21 geographical markets and 10 SMP-operators
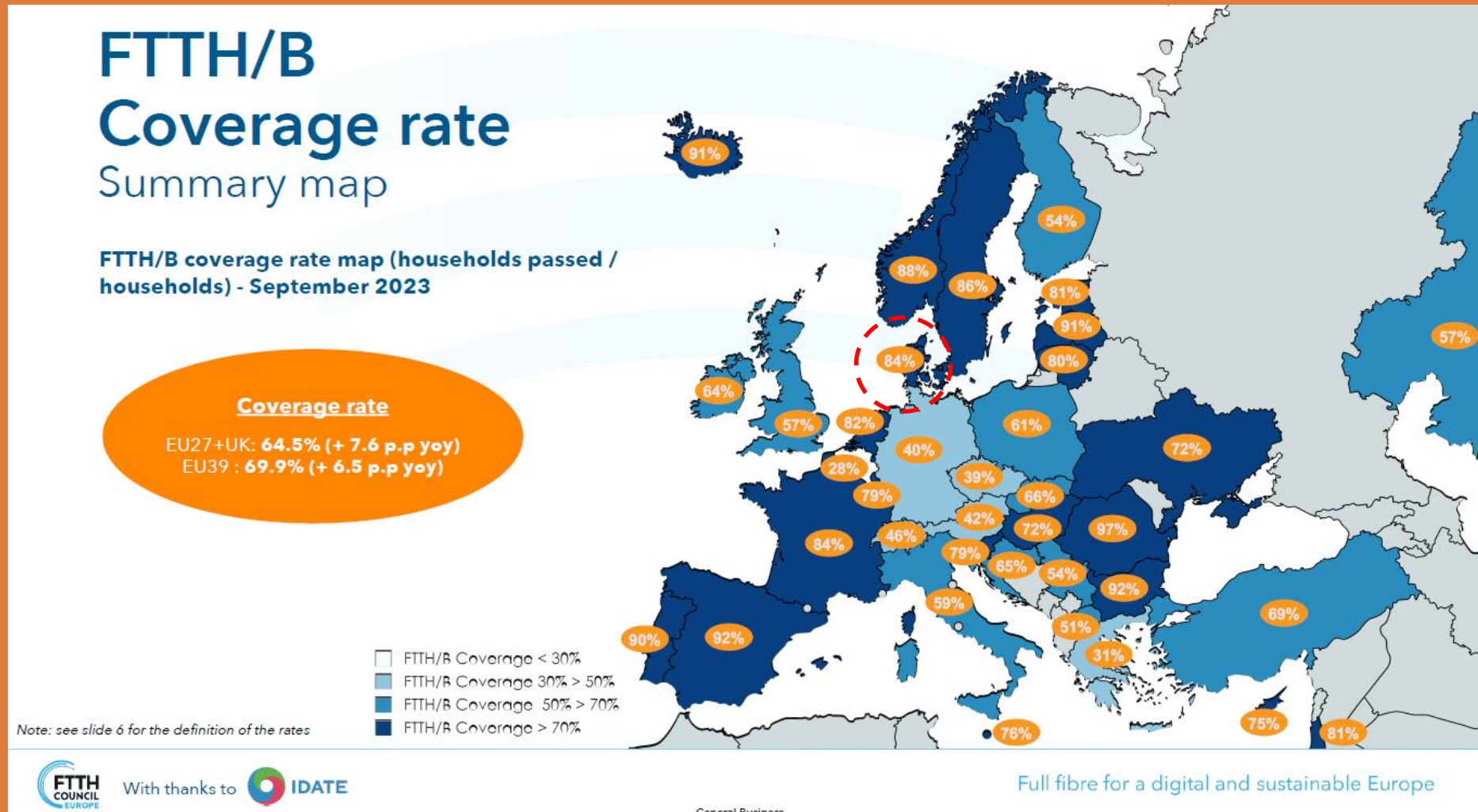

Defining the geographical market(s)

2021

Low capacity
- Copper
- FWA

One national market

High capacity
- Coax
- Fibre

21 regional markets

10 HC market decisions – three categories

13 Markets with SMP → 10 Market decisions/SMP operators

4 Commitments

2 Vertically integrated

4 Wholesale-only

Obligations/remedies

Source: Danish Business Authority (NRA)

FIBRE ALLIANCE DENMARK

PART OF
GREEN POWER DENMARK

Denmark has a high fibre coverage

FTTH/B
Coverage rate
Summary map

FTTH/B coverage rate map (households passed /
households) - September 2023

Coverage rate
EU27+UK: **64.5% (+ 7.6 p.p yoy)**
EU39 : **69.9% (+ 6.5 p.p yoy)**

FTTH/B Coverage < 30%
FTTH/B Coverage 30% > 50%
FTTH/B Coverage 50% > 70%
FTTH/B Coverage > 70%

Note: see slide 6 for the definition of the rates
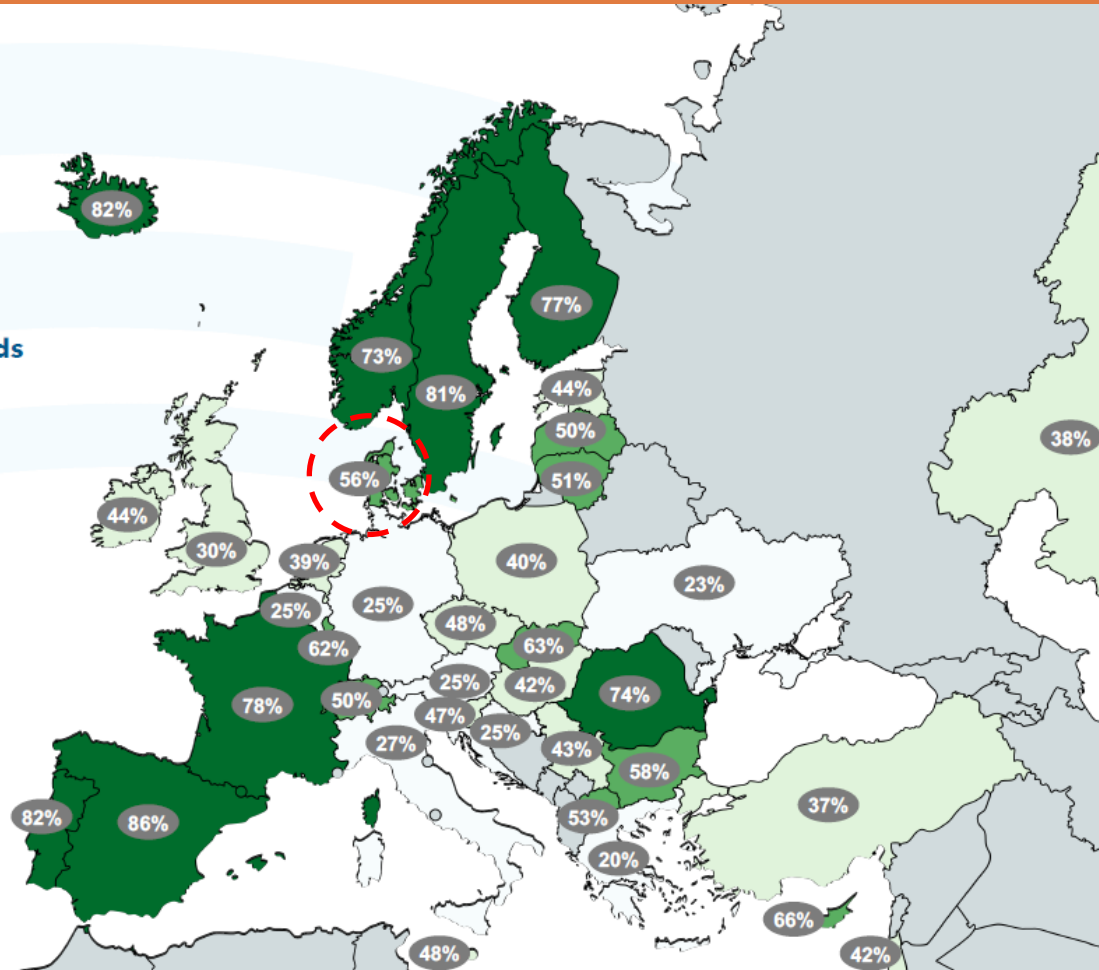
FTTH COUNCIL EUROPE   With thanks to   IDATE

Full fibre for a digital and sustainable Europe

General Business

FIBRE ALLIANCE
DENMARK
PART OF
GREEN POWER DENMARK

...but the take-up rate could be higher

Main focus points for the coming years

- Higher take-up rate and overall penetration on FTTH

- Attractive regulatory framework for fibre investments

- New EU telecommunications regulations, starting with the European Commission's White Paper "How to master Europe's digital infrastructure needs?"

FIBRE ALLIANCE
DENMARK

PART OF
GREEN POWER DENMARK