

An aerial photograph of a residential neighborhood with a green circular highlight and red diamond markers. The map shows streets, buildings, and green spaces. A green circle highlights a specific area, and three red diamonds are placed at different locations within the highlighted area and nearby.

# Costs for Obtaining the EU-2020 Broadband Target in Germany

*Applying the FTTH Council Europe  
Cost Model on a Specific Country*

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# Cost Model Team



**FTTH Council Europe**

- Hartwig Tauber



**Grooten FTTH  
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- Albert Grooten



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- Raf Meersman

- Luc De Heyn



**Greenwich Consulting**

- Patrick Jung



# Agenda

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- The EU27 Cost Model
  - Model for Germany
  - Results for Germany



# Project Objective

What investment is needed to reach DAE broadband objective?

1. **50%** of European households should be **subscribed** to a bandwidth of at least **100Mbps**

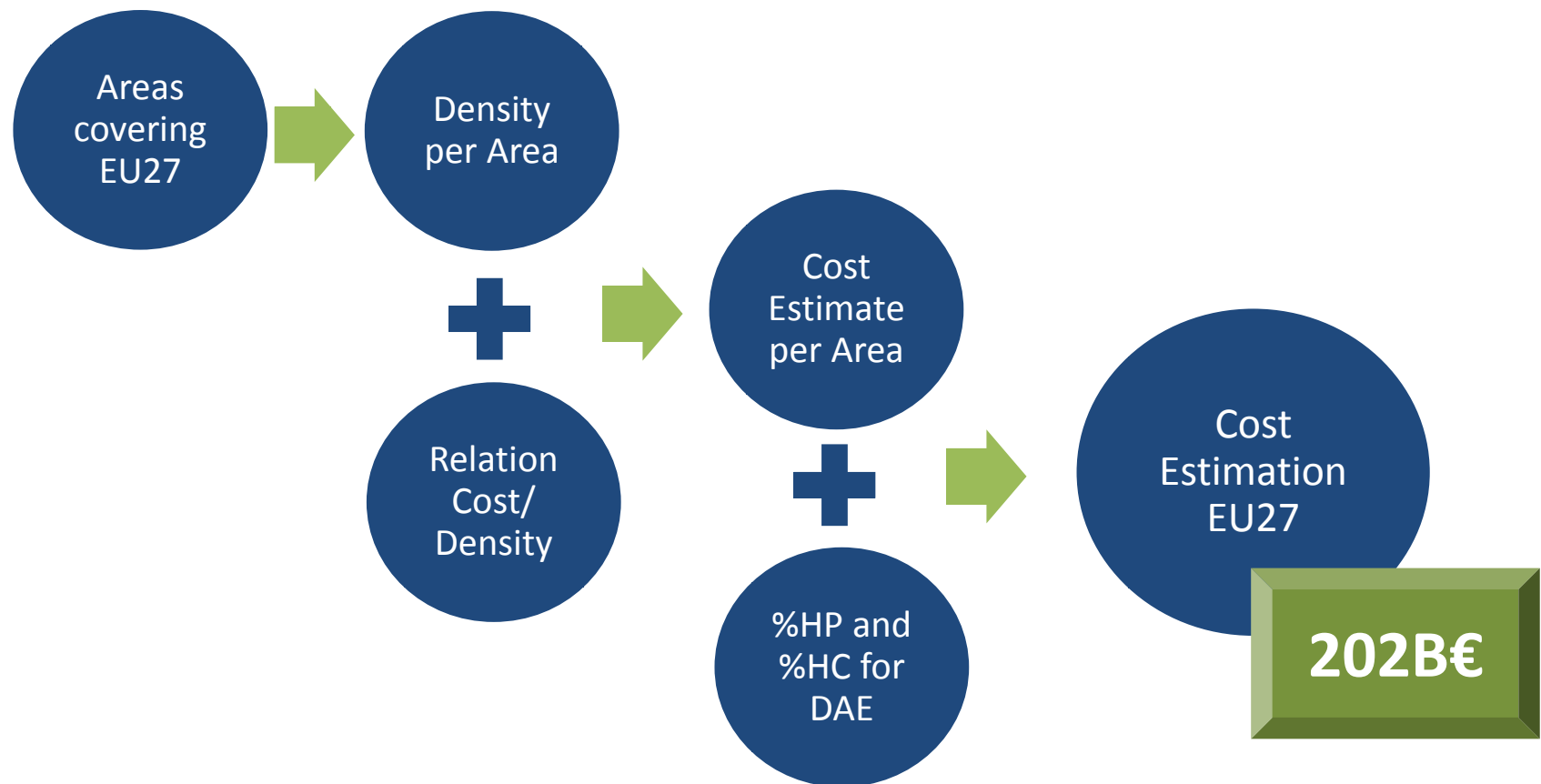


FTTH  
FTTB

2. **100%** of European households should **be able to subscribe** to a bandwidth of **30Mbps**

EU Targets by 2020

# EU27 Project Approach (2012)





# Model Evaluation



Sample points:  
Real topologies  
based on real  
GIS data

Accurate bill of  
material support  
HP/HC costs

Correction for  
country specific  
labour costs



Low amount of  
sample points  
for Cost/Density  
relation

Statistics on  
populated area  
on NUTS2 level

Discounted cash  
flow and unit  
price evolution  
not considered



# Agenda

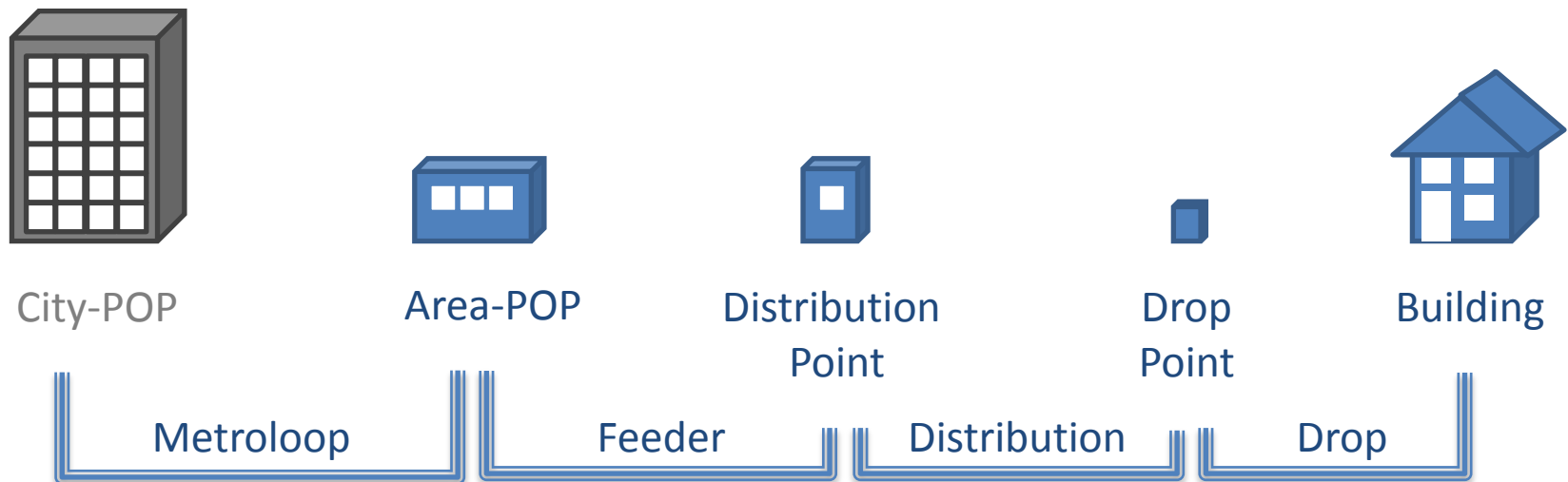
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# Assumptions about design rules

- FTTB (Fiber To The Building)
- P2P or P2MP
- $(4f + 2f)$  / building or  $2f$  / building
- Use Microducts and Air-Blown-Fiber





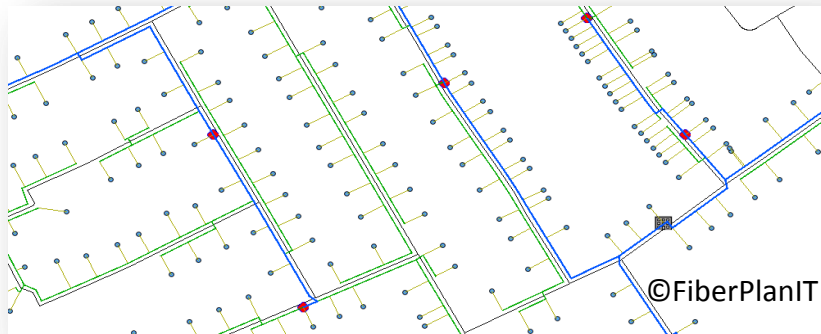
A decorative header image showing a stylized map with green land, blue water, and yellow roads. Two red dots are placed on the map, one in the center and one towards the right edge.

# Assumptions about unit costs

- Material:
  - Start from prices of EU27 calculation (2011 - EU average)
    - Verified by members of the council
  - Revised for 2012 + Germany
- Installation:
  - Start from prices of EU27 model (2011 - EU average)
  - Revised for 2012 + Germany
- Civil work/Trenching:
  - Current practise = deep trenching (60 cm)
    - From 100 EUR/m in most Urban to 40 EUR/m in most Rural areas
  - New methods, for example minitrenching
    - 25 EUR/m

# Reference Calculations

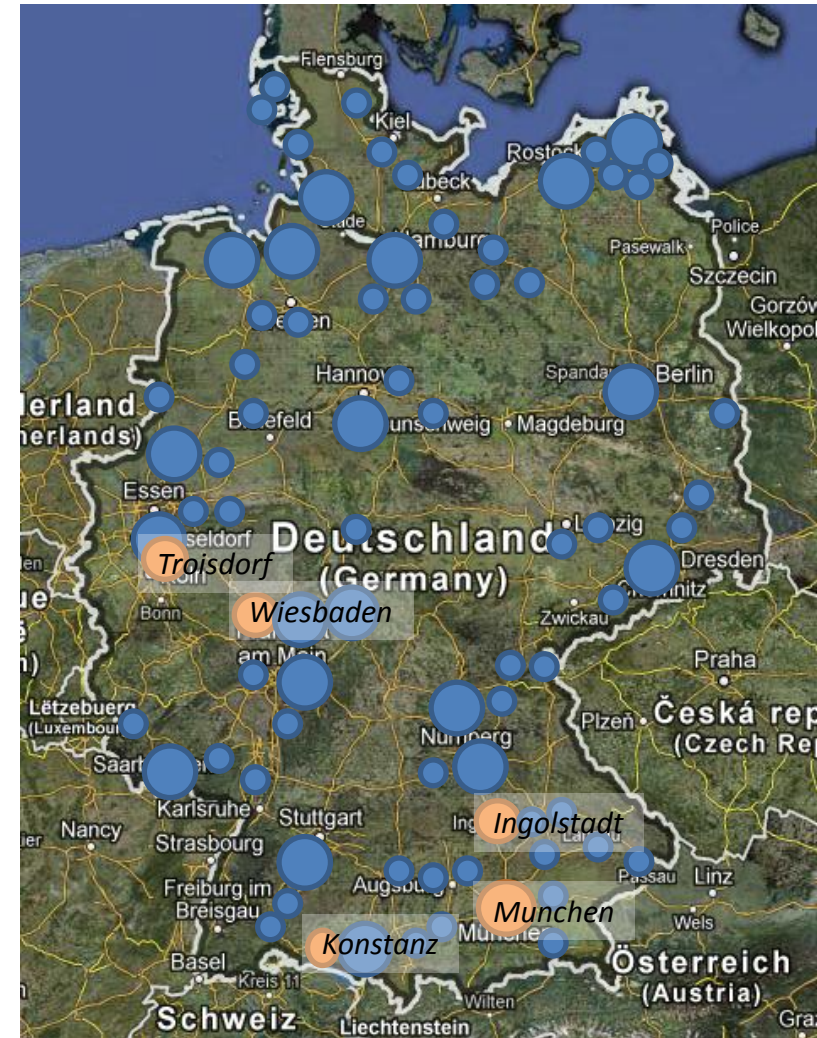
## Generated FTTx designs



Considering 30+ components

On

- More than **230** reference areas
- More than **2.3 million** buildings



# Extrapolation based on density

- Populated area per NUTS3 derived from detailed GIS data covering all of Germany

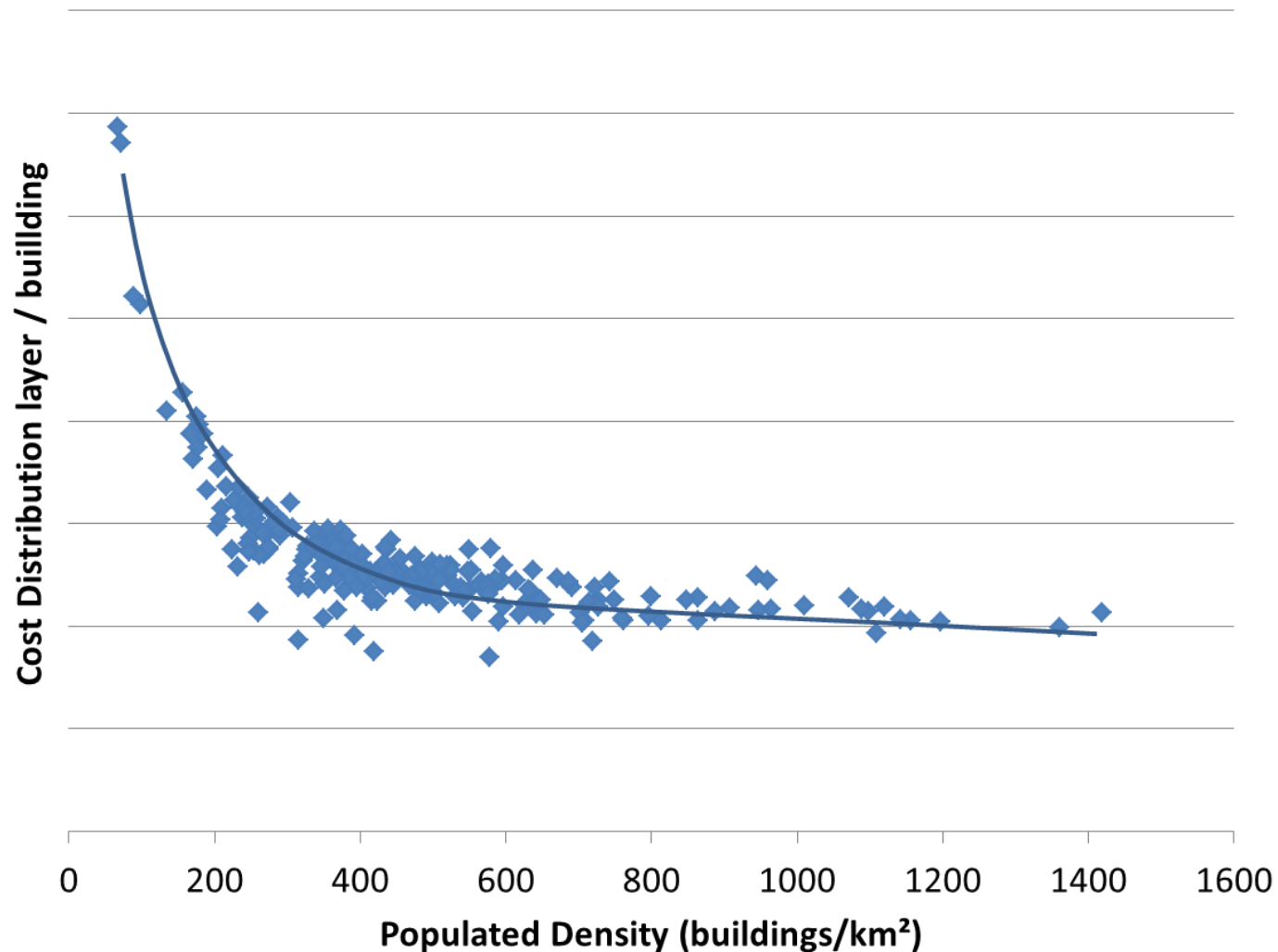


Background = Google Streets/Satellite

Green = Area covered with Residential Building



# Trendlines for each network layer





# Agenda

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# Results for Germany



Typical German network built today

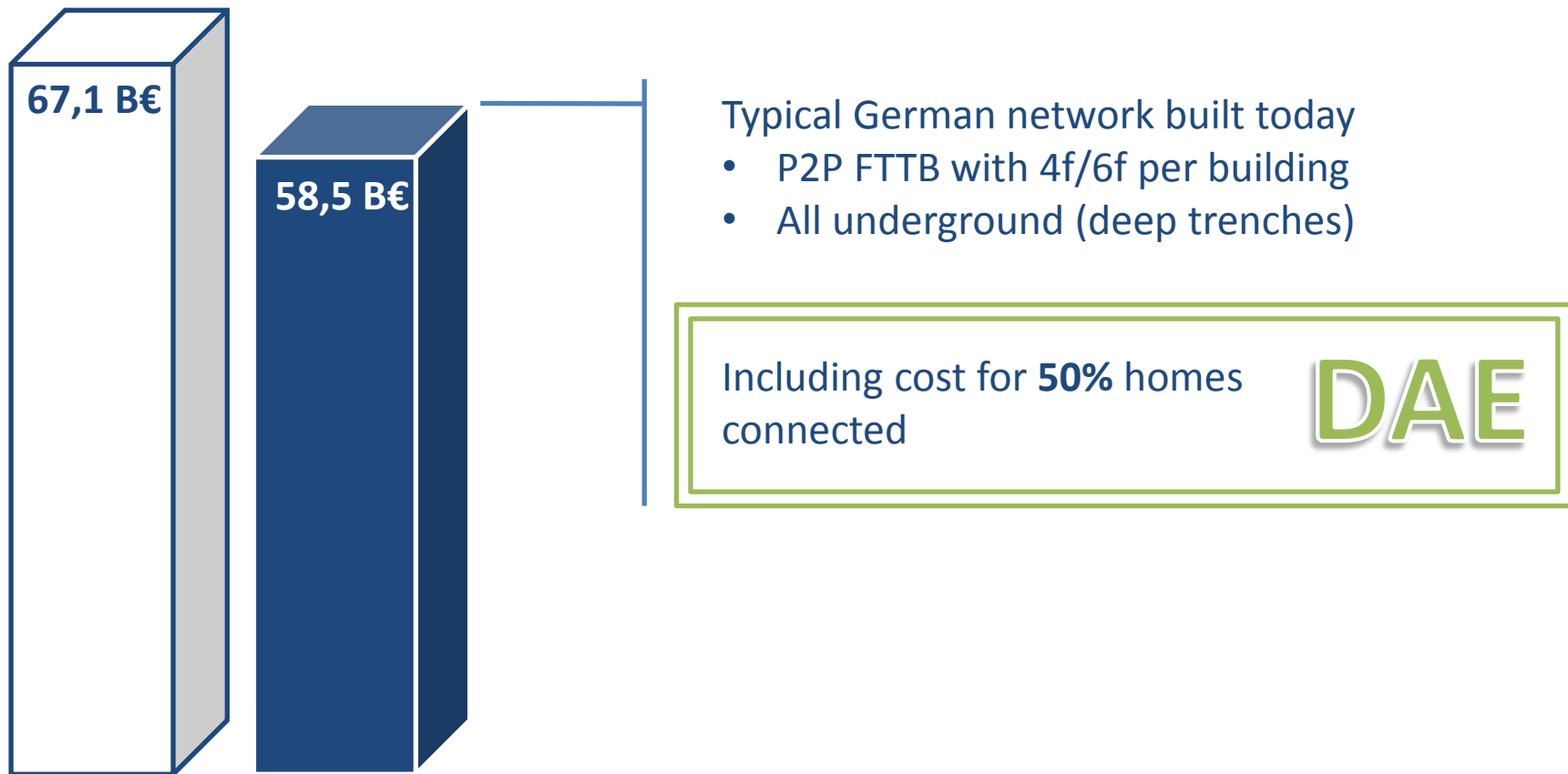
- P2P FTTB with 4f/6f per building **> 100Mbps**
- All underground (deep trenches)

Including cost for 100% homes connected

**> 50% conn**

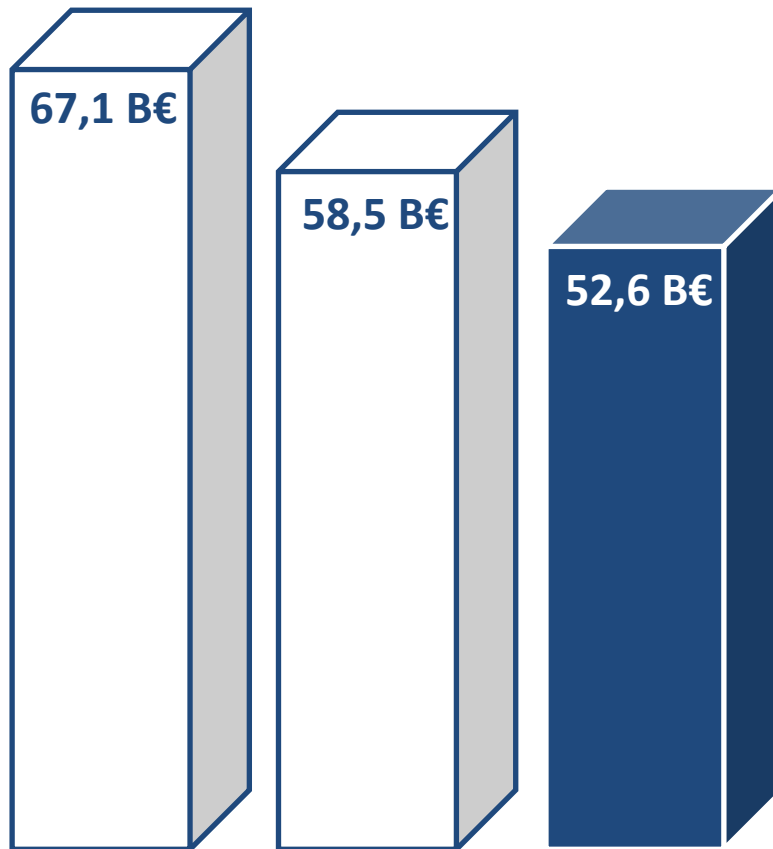
**> DAE**

# Results for Germany





# Results for Germany



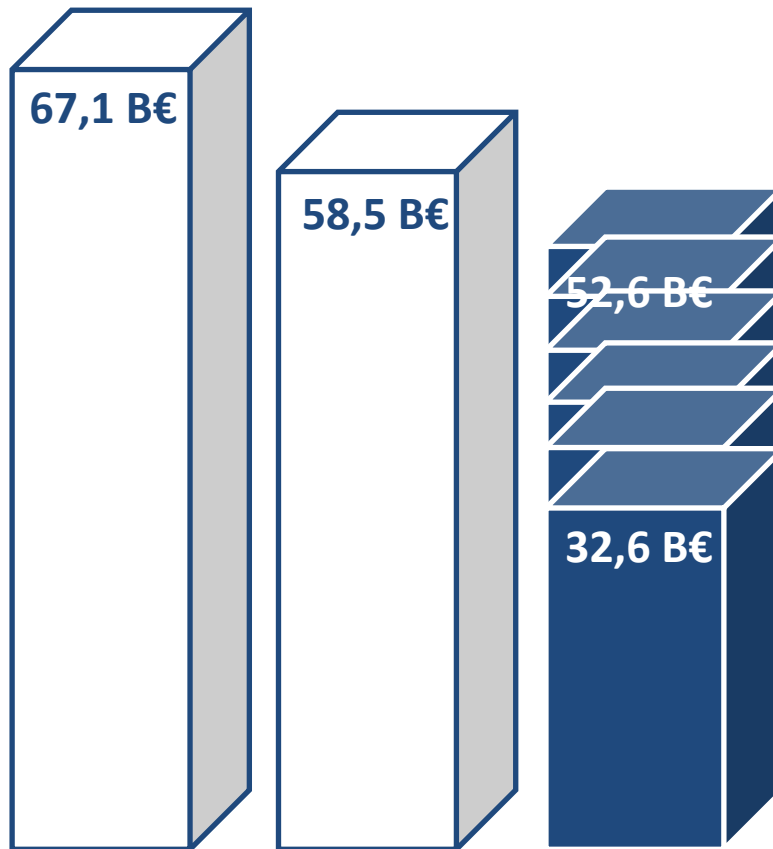
## DAE

### Optimal hybrid network

- P2MP FTTB with 2f for SDU
- P2P FTTB with 4f/6f for MDU
- All underground (deep trenches)

Including cost for **50%** homes connected

# Results for Germany

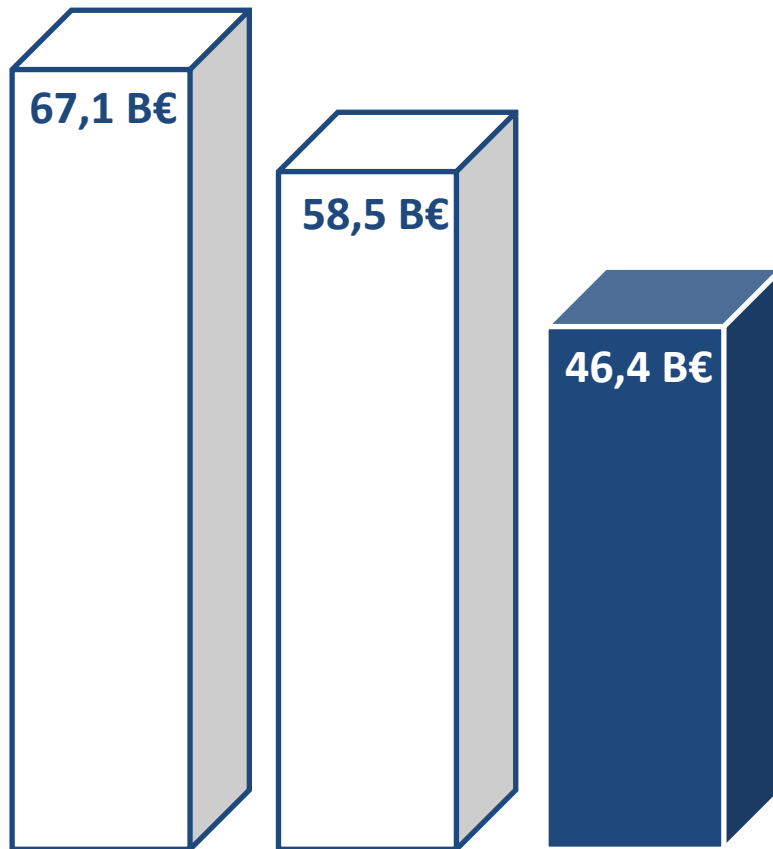


## Optimal hybrid network

- P2MP FTTB with 2f for SDU
- P2P FTTB with 4f/6f for MDU
- All underground
  - **Use alternative trenching methods, for example 'mini-trenches'**

Including cost for **50%** homes connected

# Results for Germany



## DAE

### Optimal hybrid network

- PON FTTB with 2f for SDU
- P2P FTTB with 4f/6f for MDU
- All underground
  - **70% 'deep trenches'**
  - **30% 'mini-trenches'**

Including cost for **50%** homes connected

An aerial photograph of a residential area with a green circular highlight over a specific street. A blue text box is overlaid on the right side of the image.

# Thanks for your attention

*Questions?*

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