

# A step closer to Central Europe

**- status of realization  
of the Öresund-Fehmarn  
corridor**

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March 29, 2019

# 1991-treaty

**As part of the agreement on construction of the Öresundsbron Sweden wanted Denmark to investigate and build a Fehmarn Belt link**




# Fehmarn Link construction approved

Google x Ny fane x Ny fane x momond - søgere: x CPH to HAM, 10.4. x Rejseplanen x hamburg tog pris - x Tag toget til Hambu x DSB Udlænd x Anlægsarbejdet me x + - X

← → ↻ https://www.trm.dk/da/nyheder/2019/anlaegsarbejdet-med-femern-baeltforbindelsen-saettes-i-gang-paa-dansk-side

Politiske aftaler Job og karriere Lovstof Cookies Presse English Indtast søgeord

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Forside / Nyheder / 2019 / Anlægsarbejdet med Femern Bælt-forbindelsen sættes i gang på dansk side


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**NYHEDER**

Nyhedsmail - tilmelding

## Anlægsarbejdet med Femern Bælt-forbindelsen sættes i gang på dansk side

Med den tyske myndighedsgodkendelse af tunnelen under Femern Bælt er der enighed med de tyske myndigheder om, hvordan projektet skal realiseres. På den baggrund har en enig forligskreds besluttet, at anlægsarbejdet skal sættes i gang på dansk side, så vi kommer et skridt nærmere at realisere de store gevinster ved en fast forbindelse over Femern Bælt.



Beslutning 26 marts 2019  
Start på bygge- og anlægsaktiviteter Femern Bælt

Windows taskbar: 20:35 28-03-2019

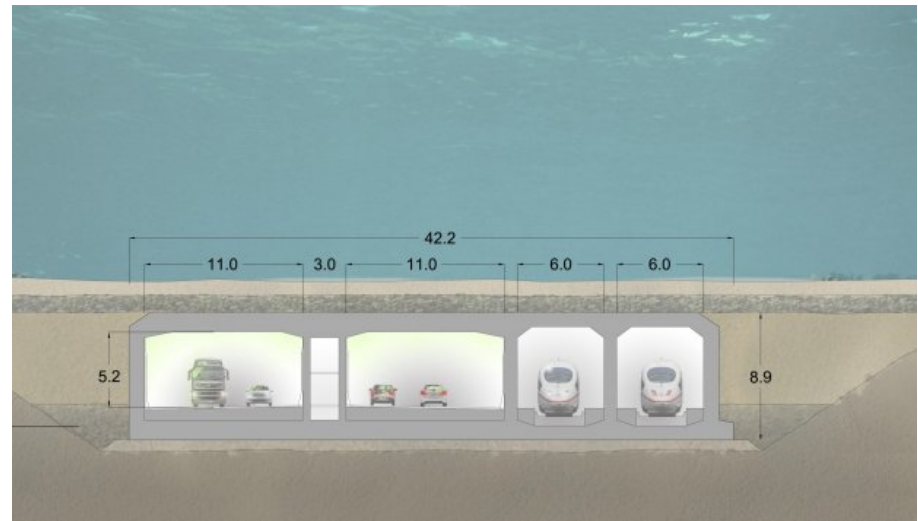
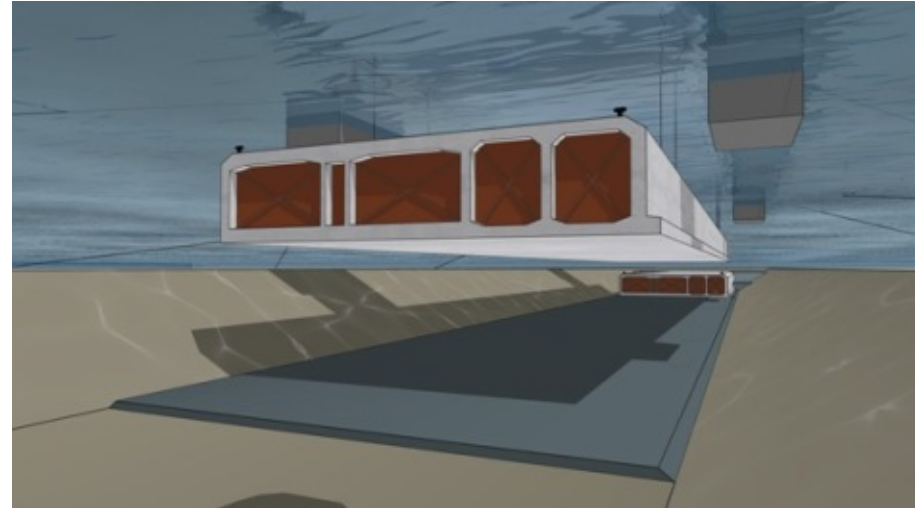
# Fehmarn Link construction approved



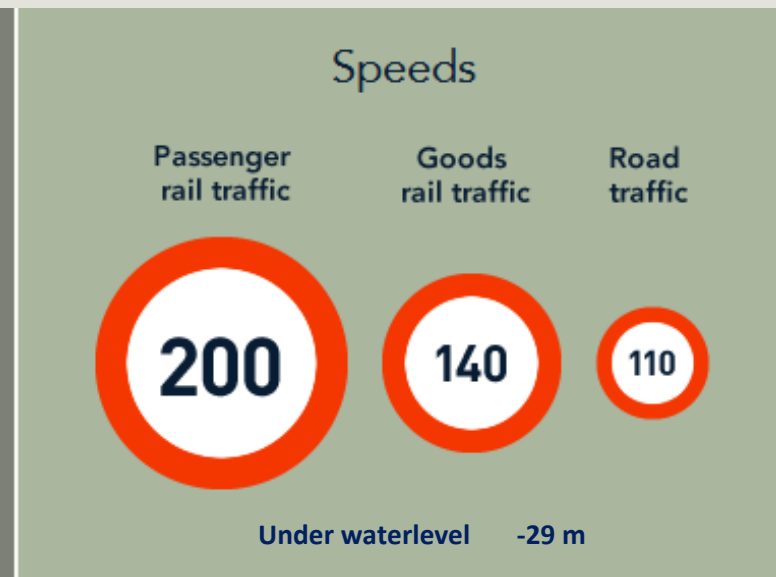
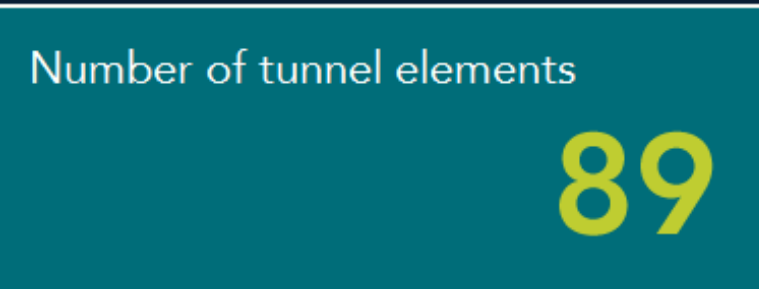
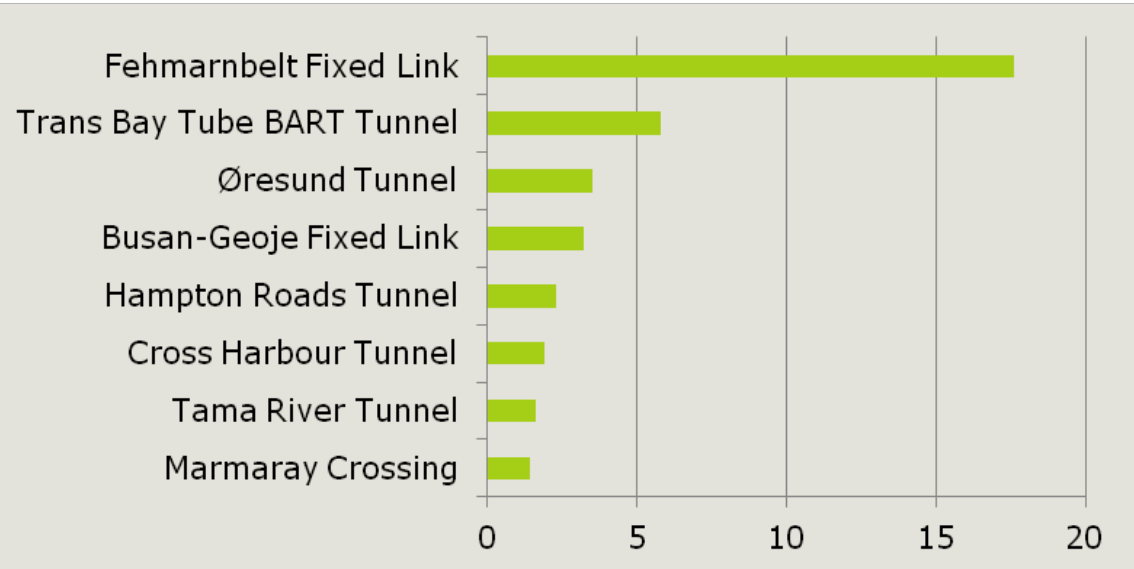
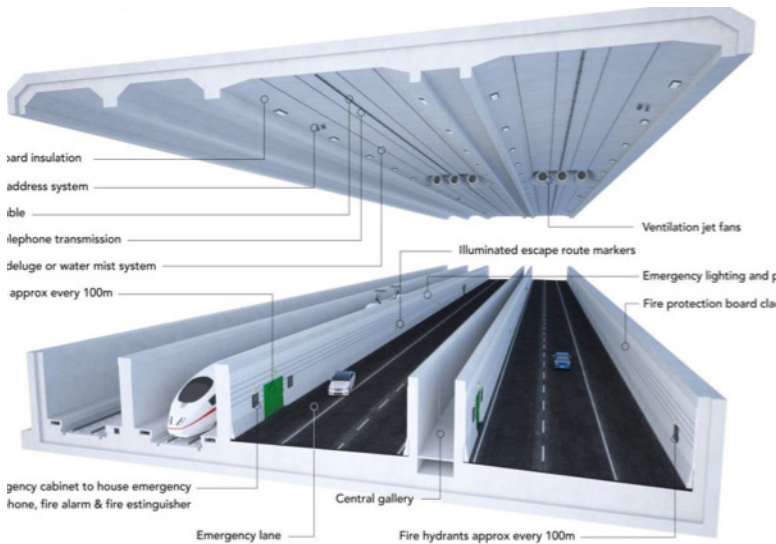
- Build the new harbour at production site
- Build the tunnel production facility
- Build the tunnel portal (Danish site)
- Workers City.
- Increase robustness of grand opening in 2028
- Perhaps a process of trial (in Germany)
- Would not stop Danish initial works



# Immersed tunnel technique



# A mega infrastructure project



# Contracts signed

## Tunnel:



GRANDS PROJETS



AARSLEFF



SOLETANCHE BACHY



COWI

## Portaler:



AARSLEFF



GRANDS PROJETS



SOLETANCHE BACHY

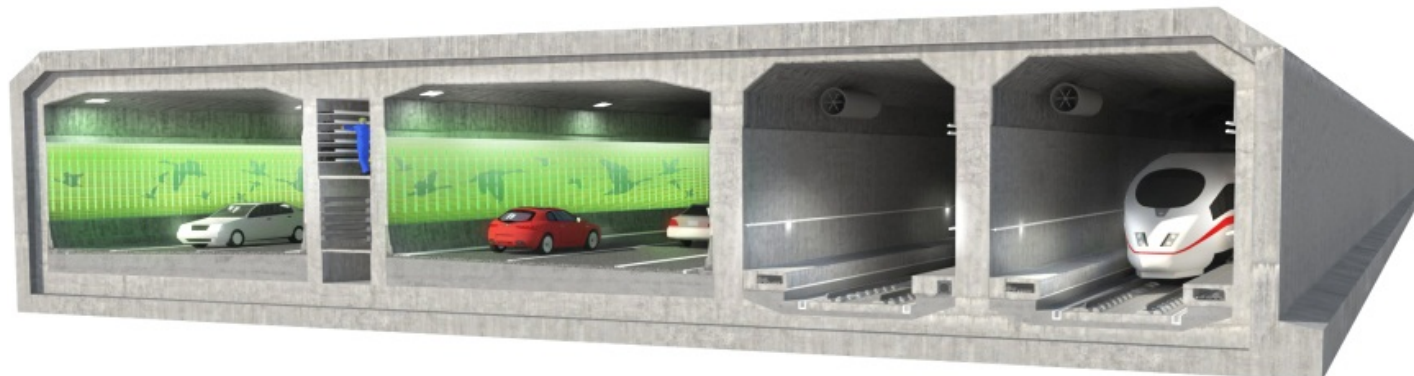


COWI

## Udgravning:



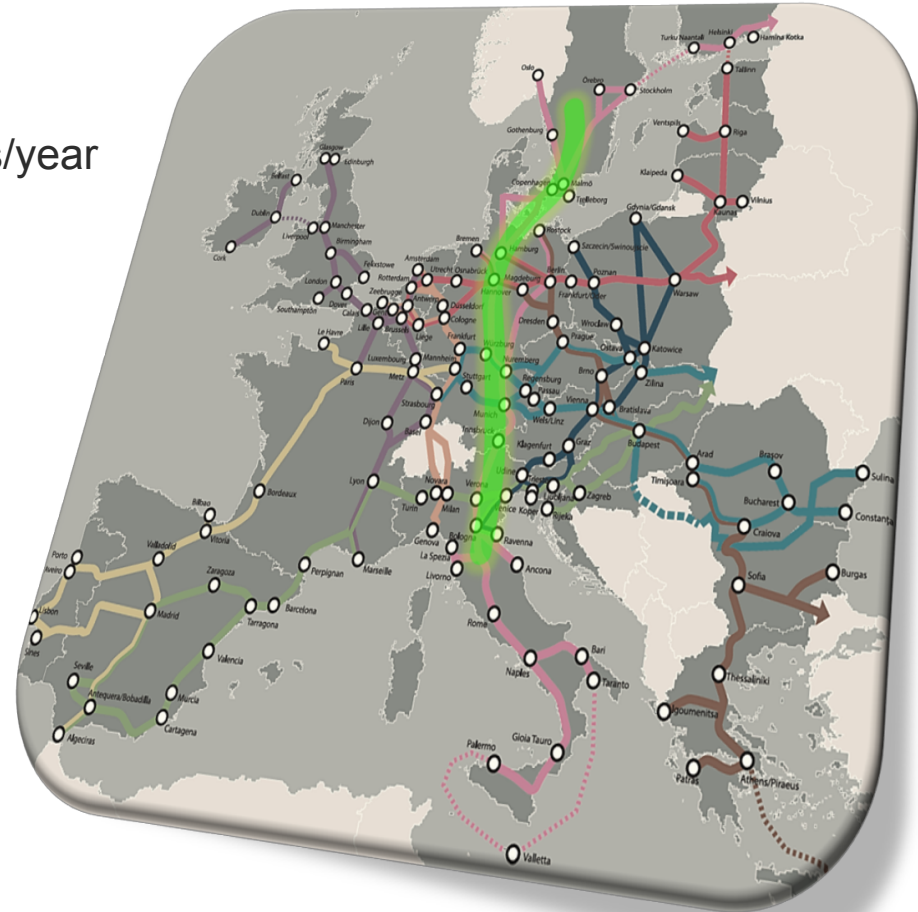
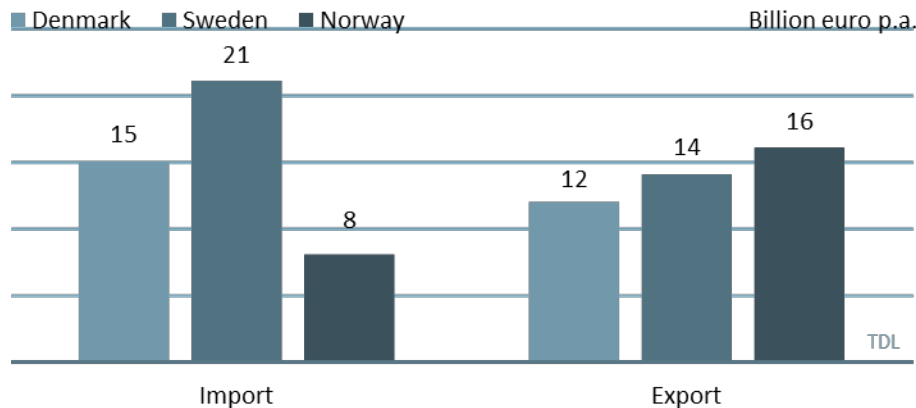
Boskalis



# Socio Economy

## Rail infrastructure improvement as a driver for economic growth

- Scandinavian-German trade = 100 billions/year
- The Nordics = 10<sup>th</sup> largest economy
- In need of more capacity / accessibility
- Strong political priority



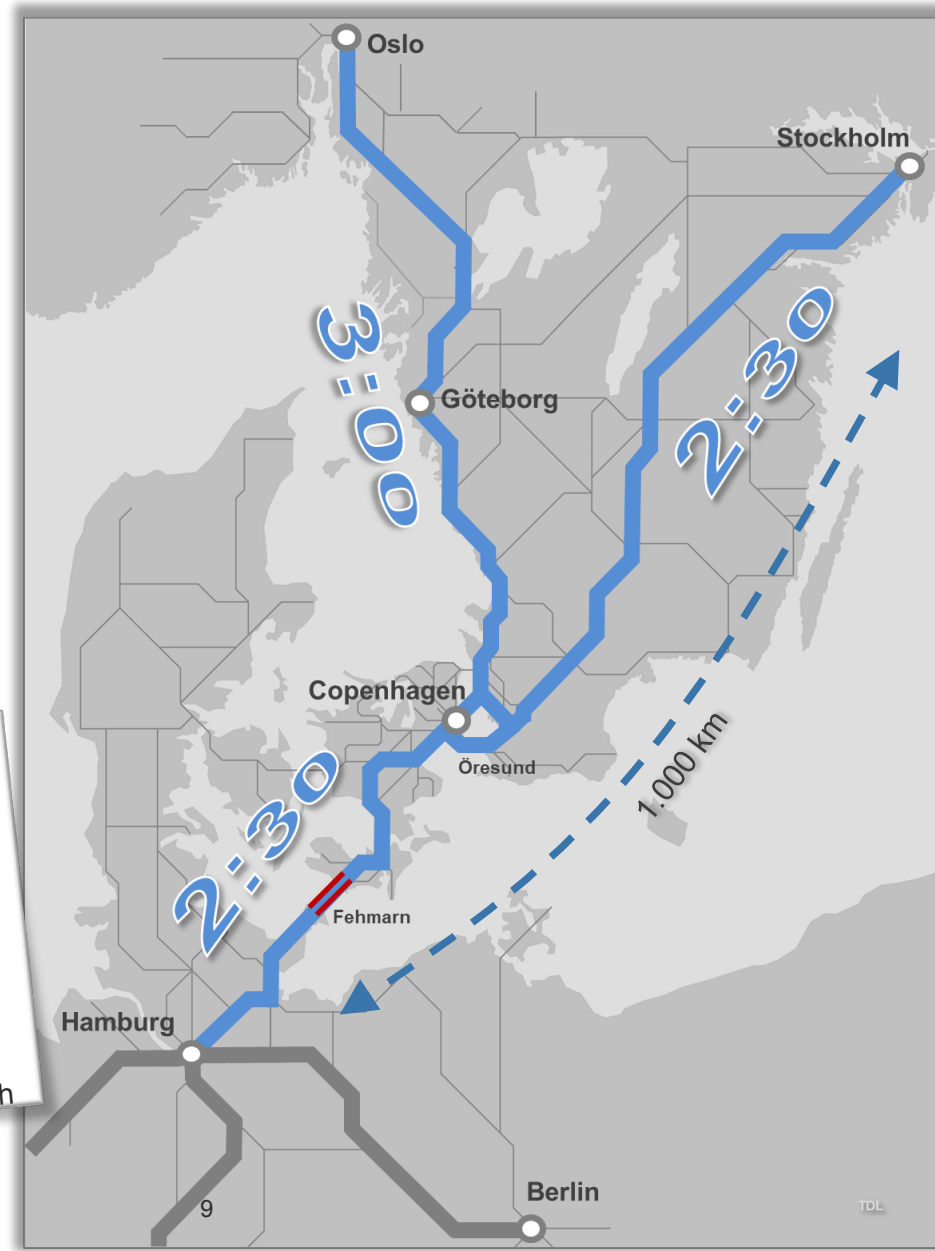


# Vision

## Masterplan in discussion and realization

### Travel time targets

- Stockholm-Malmö  
5:15h (now)  
2:30h (2040?)
- Copenhagen-Hamburg  
5:05h (now)  
2:30h (2028)
- Oslo-Copenhagen  
7:30h (now)  
3:00h (?)



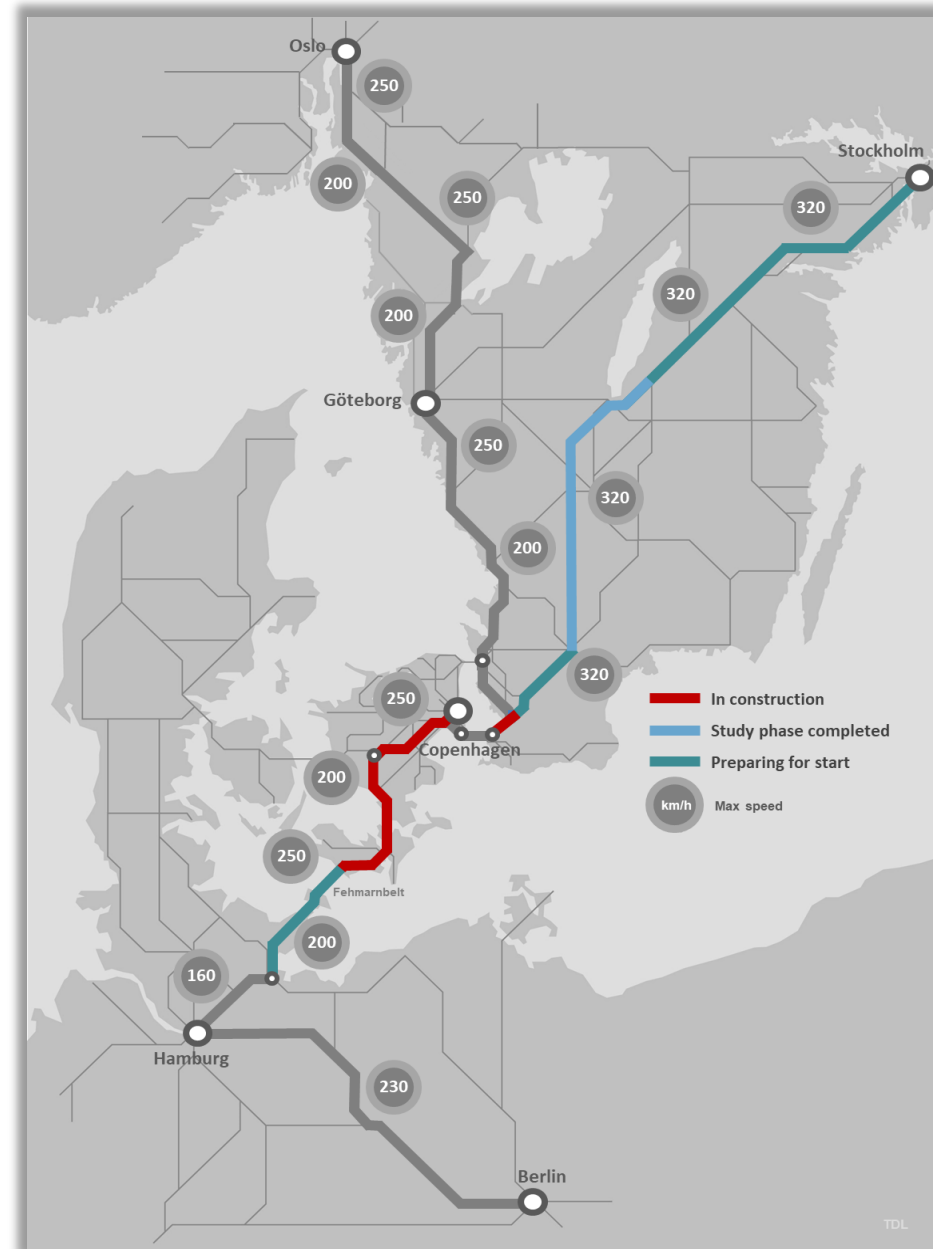
# Scale

## Corridor investments

- ▶ Hamburg-Copenhagen: 12 billions €
- ▶ Copenhagen-Stockholm: 16 billions €
- ▶ Second Öresund tunnel link: 6 billions €

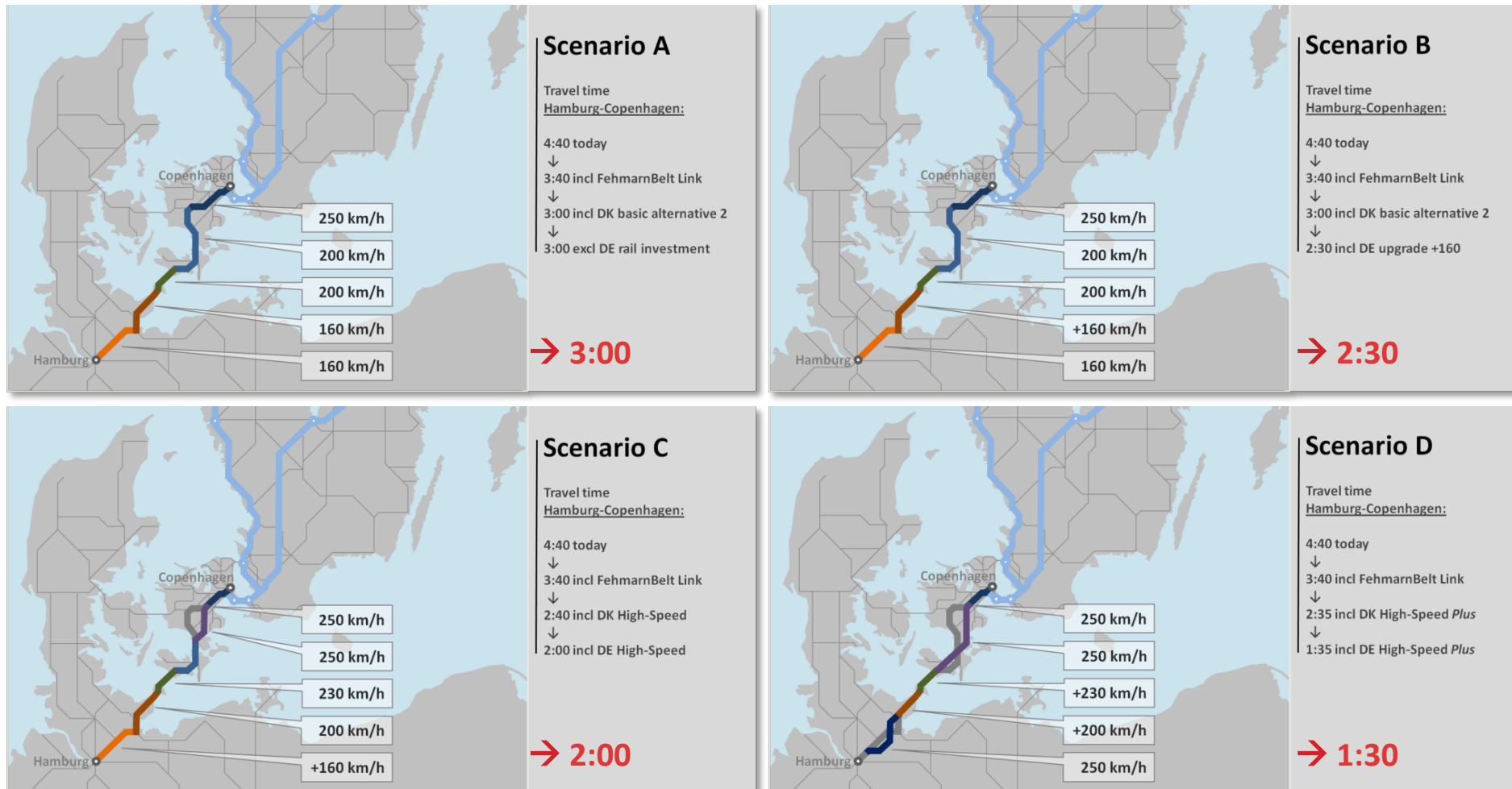
## Choice of concept:

- Passenger and freight transport
- Only passenger trains: max 320 km/h
- Mixed traffic: max 250 km/h



# Scenarios

Scenario B chosen for 2028, C or D could come later

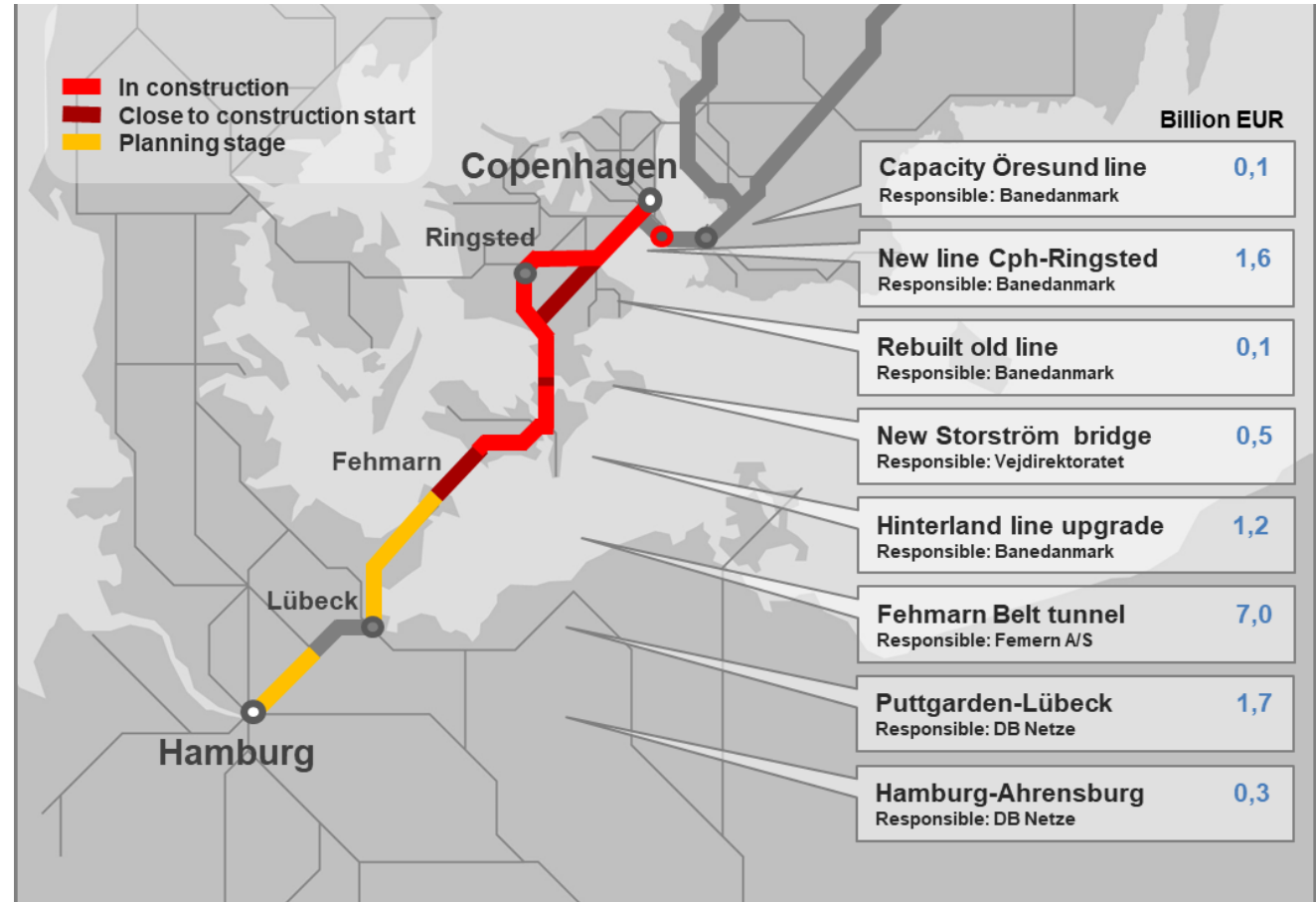


# 10 separate stages

## Many sections and complex organization

Investments for  
12 billions

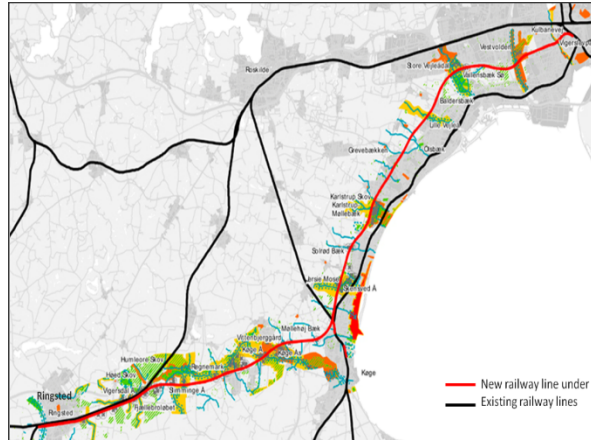
- State grants
- EU-CEF 20% on hinterland rail line
- Maximum support for Fehmarn rail tunnel 40% (20%)
- German hinterland line gets support from EU





# Progress

## First section in Denmark to open in 2019





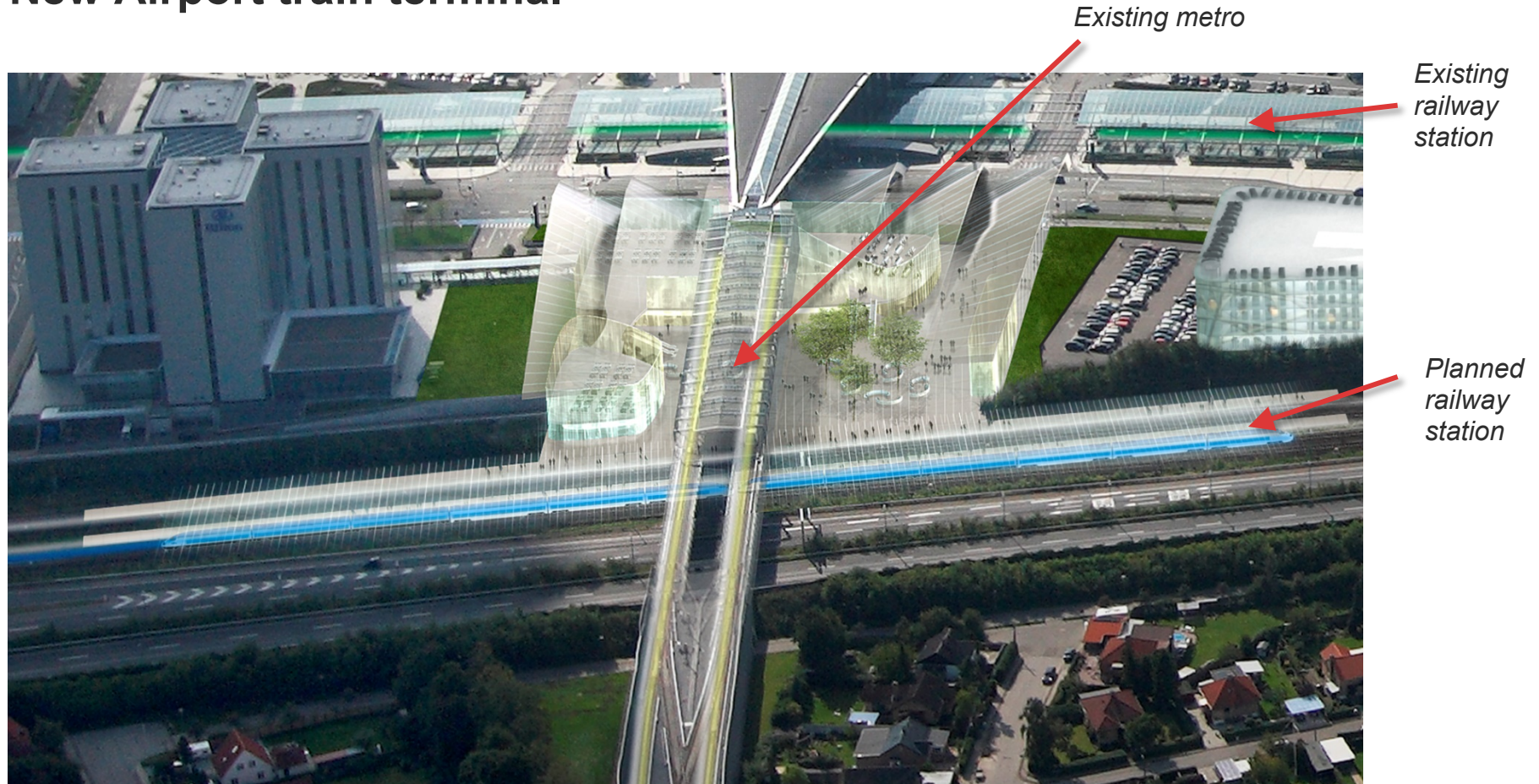
# New Storstrømmen Bridge

Opens in 2023



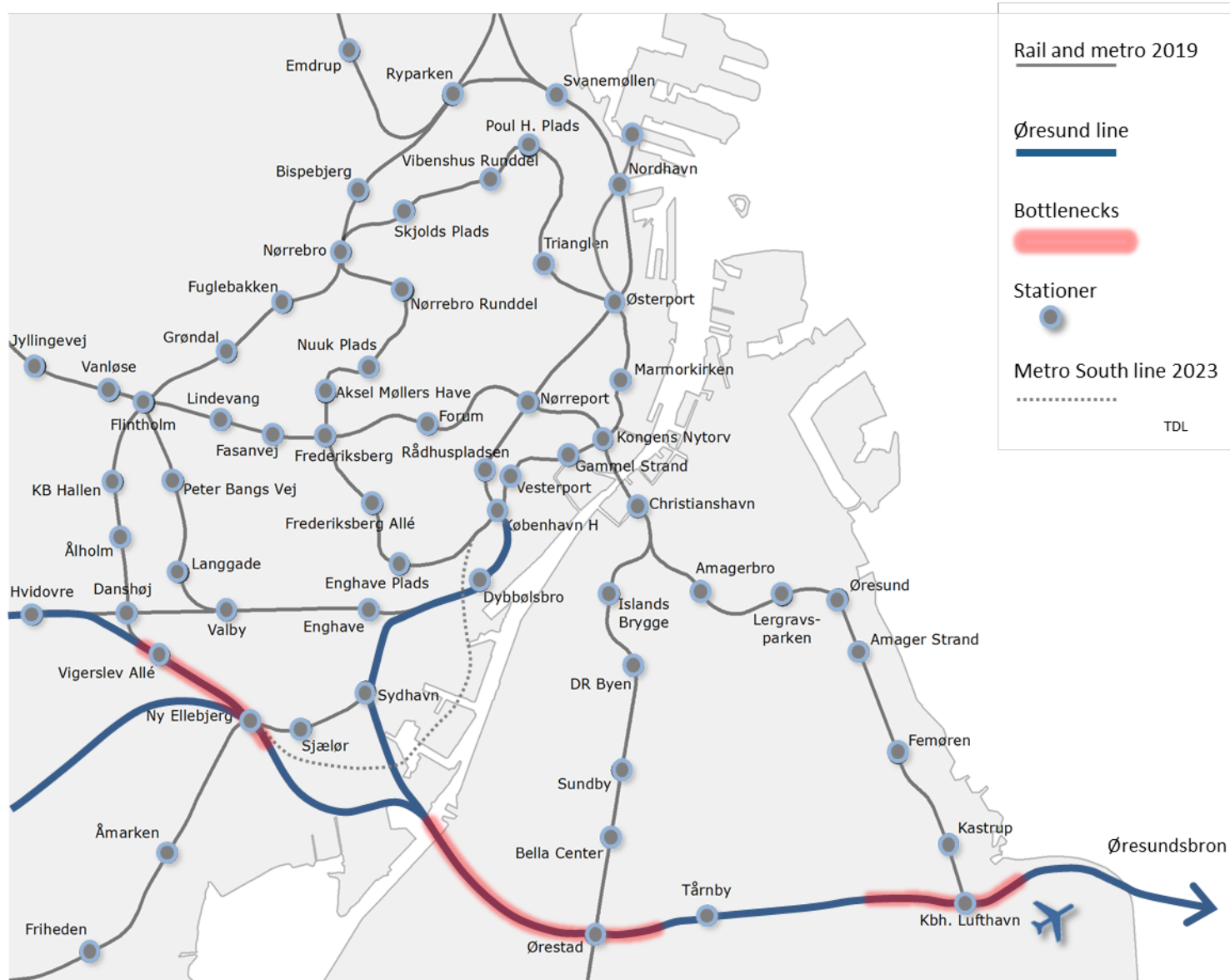
# Øresund line capacity expansion

## New Airport train terminal





# Bottlenecks

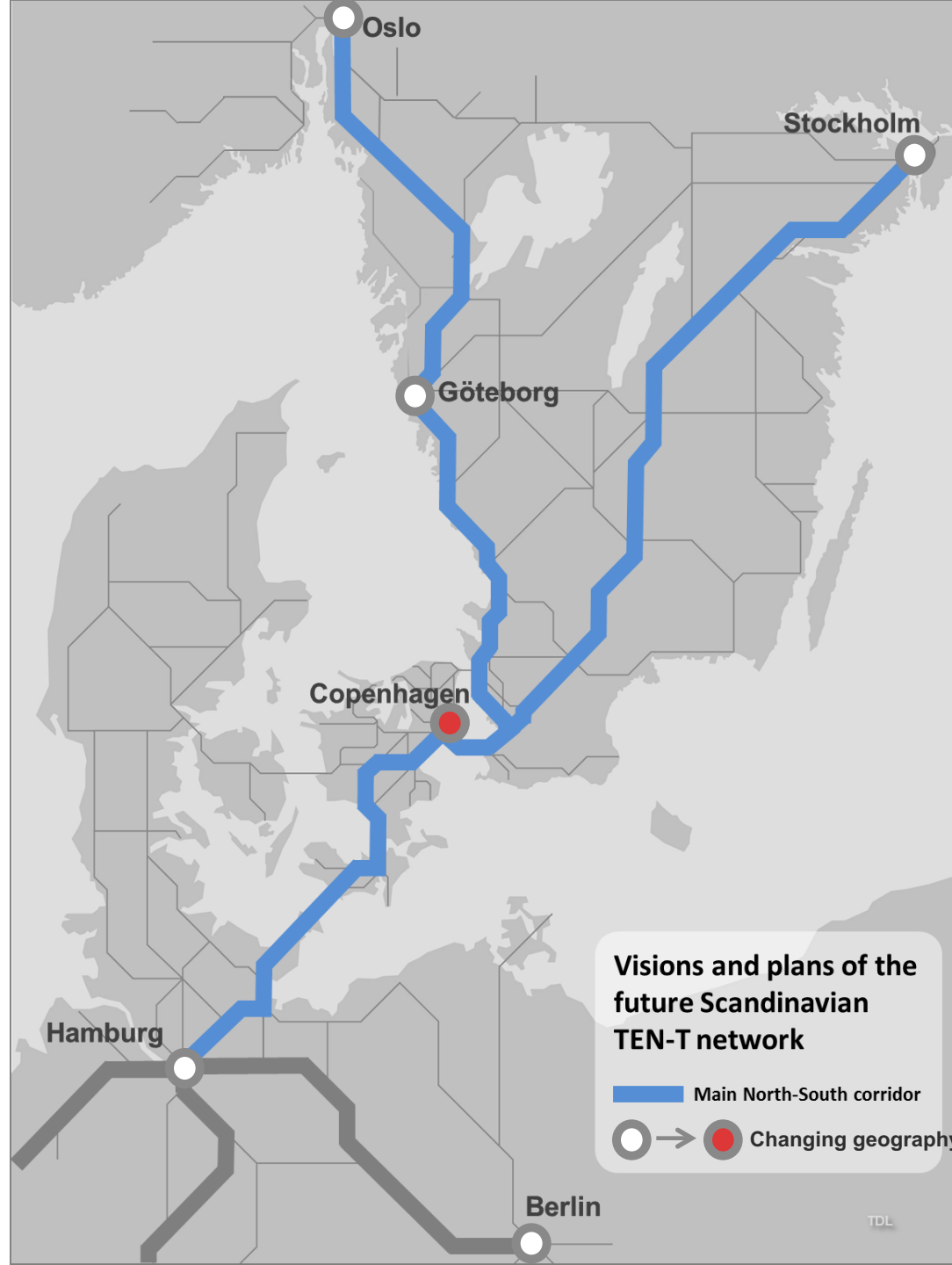




# New Geography

## Moving Germany to Scandinavia

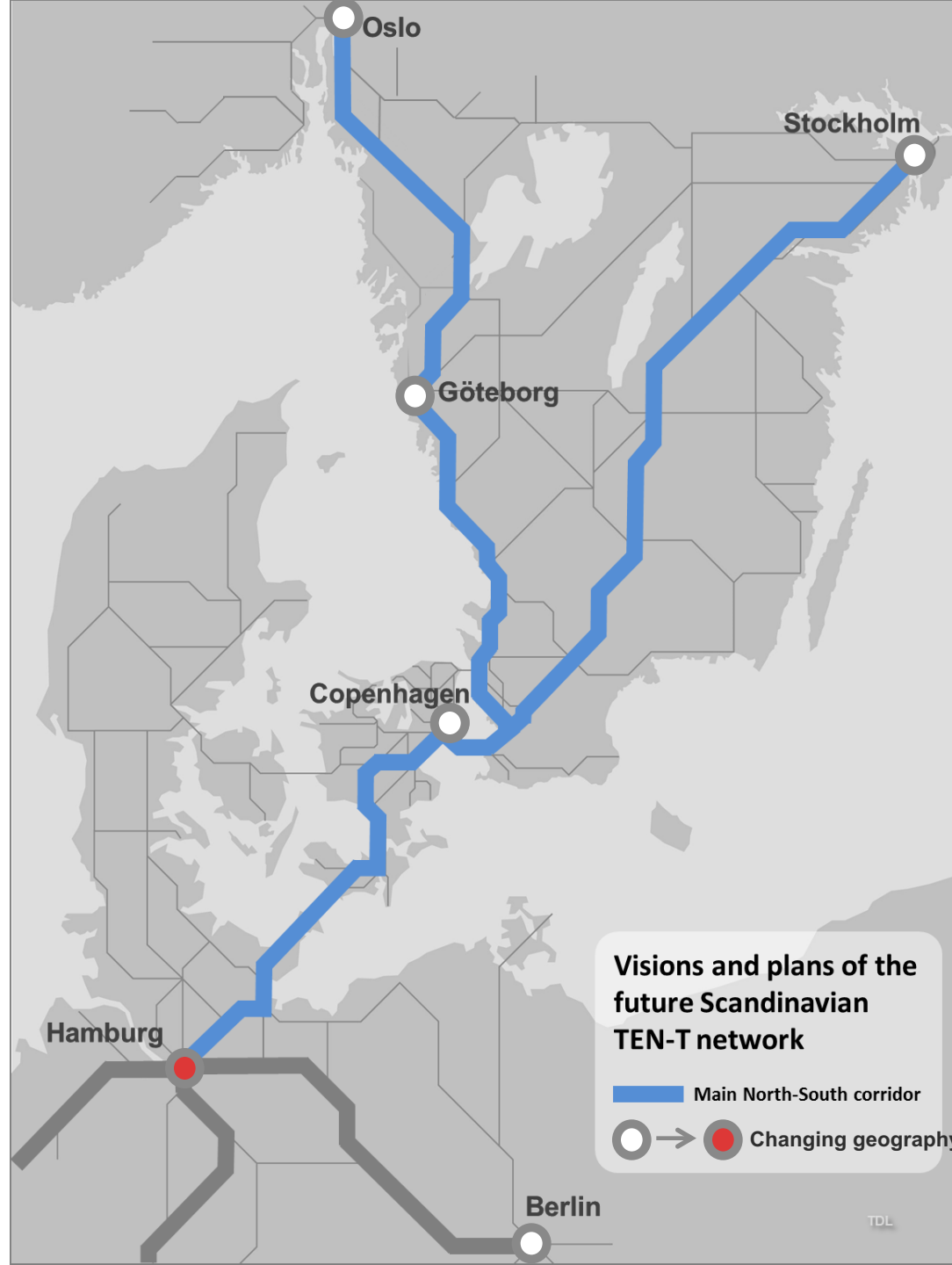
- The Fehmarn Belt tunnel intends to establish a *new geography*
- In our perception we'll find that Hamburg and Berlin are getting closer to Scandinavia.
- Hamburg "moves" itself to the South coast of Denmark. And Berlin placed nearby!



# New geography

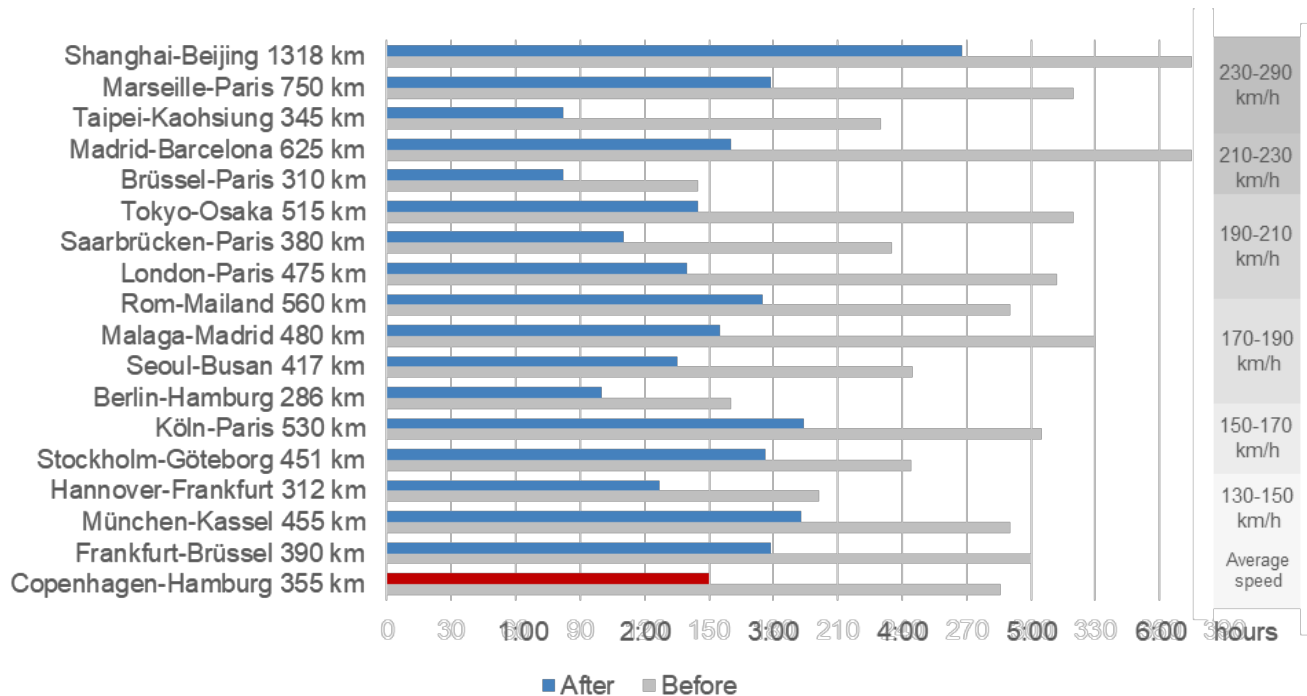
## Scandinavia closer to Central Europe

- ...reduction in time distance "move" Norwegian and Swedish cities closer to Öresund, and thereby closer to the central European markets
- With new lines in Sweden cities come even closer to central europe



# Semi high speed

## Changes in travel times



Many good examples of major improvements

→ Very high speed  
210 – 260 km/h (avg)

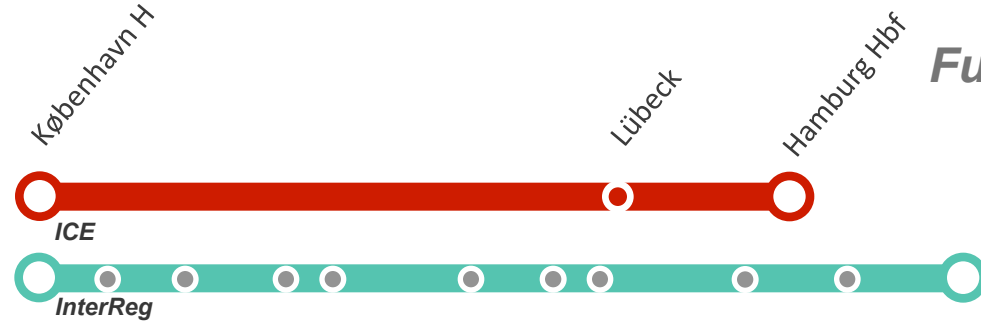
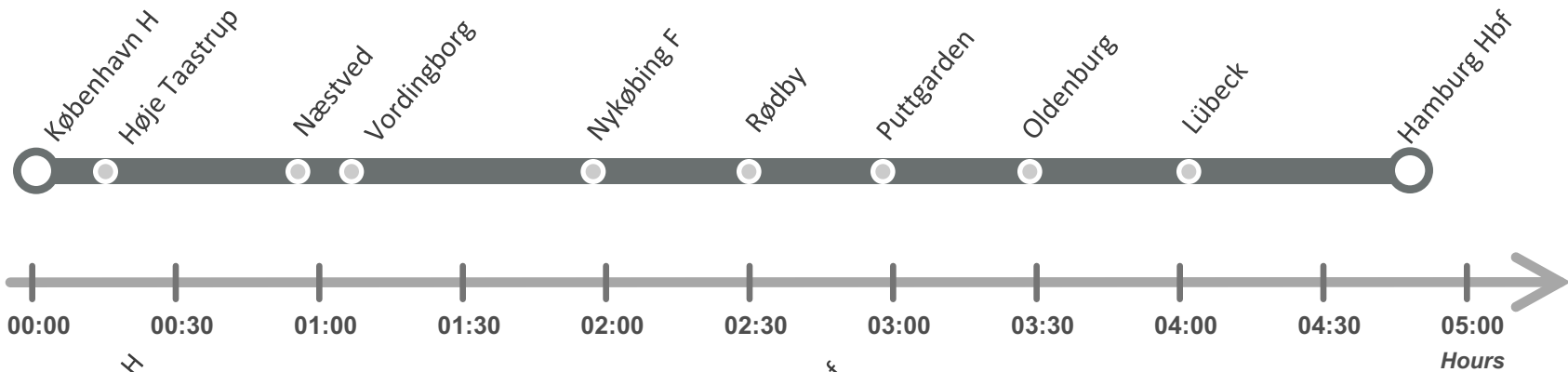
→ High speed  
170 – 210 km/h (avg)

→ Semi high speed  
140 – 170 km/h (avg)

# Various services – 1<sup>st</sup> stage

## Timetable toward 2028

### Present timetable



### Future

	ICE	ReX	ICE	ReX	ICE	ReX	ICE	ReX	ICE
Hamburg Hbf	5:30	5:52	6:30	6:52	7:30	7:52	8:30	8:52	9:30
Lübeck	6:02	6:34	7:02	7:34	8:02	8:34	9:02	9:34	10:02
Roskilde		8:29		9:29		10:29		11:29	
København H	8:00	8:50	9:00	9:50	10:00	10:50	11:00	11:50	12:00
CPH Airport	8:17		9:17		10:17		11:17		12:17
Malmö C	8:35		9:35		10:35		11:35		12:35
Göteborg C		10:35		11:35		12:35		13:35	
Stockholm	11:05		12:05		13:05		14:05		15:05



# Mode comparison

## Copenhagen – Hamburg centre-to-centre

Air



0:15



1:00



0:50



0:15



0:24

2:44

1.540 DKK

Train



2:30

349 DKK

Car



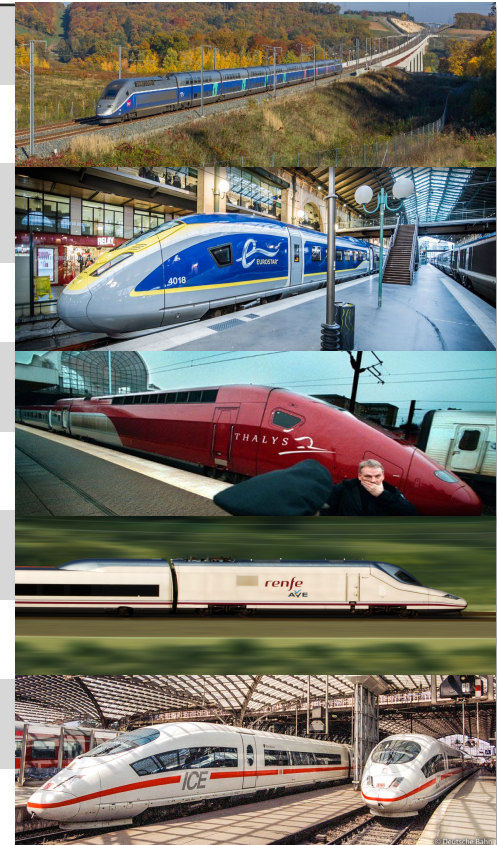
3:17

1.385 DKK

# Major increases in pax volume

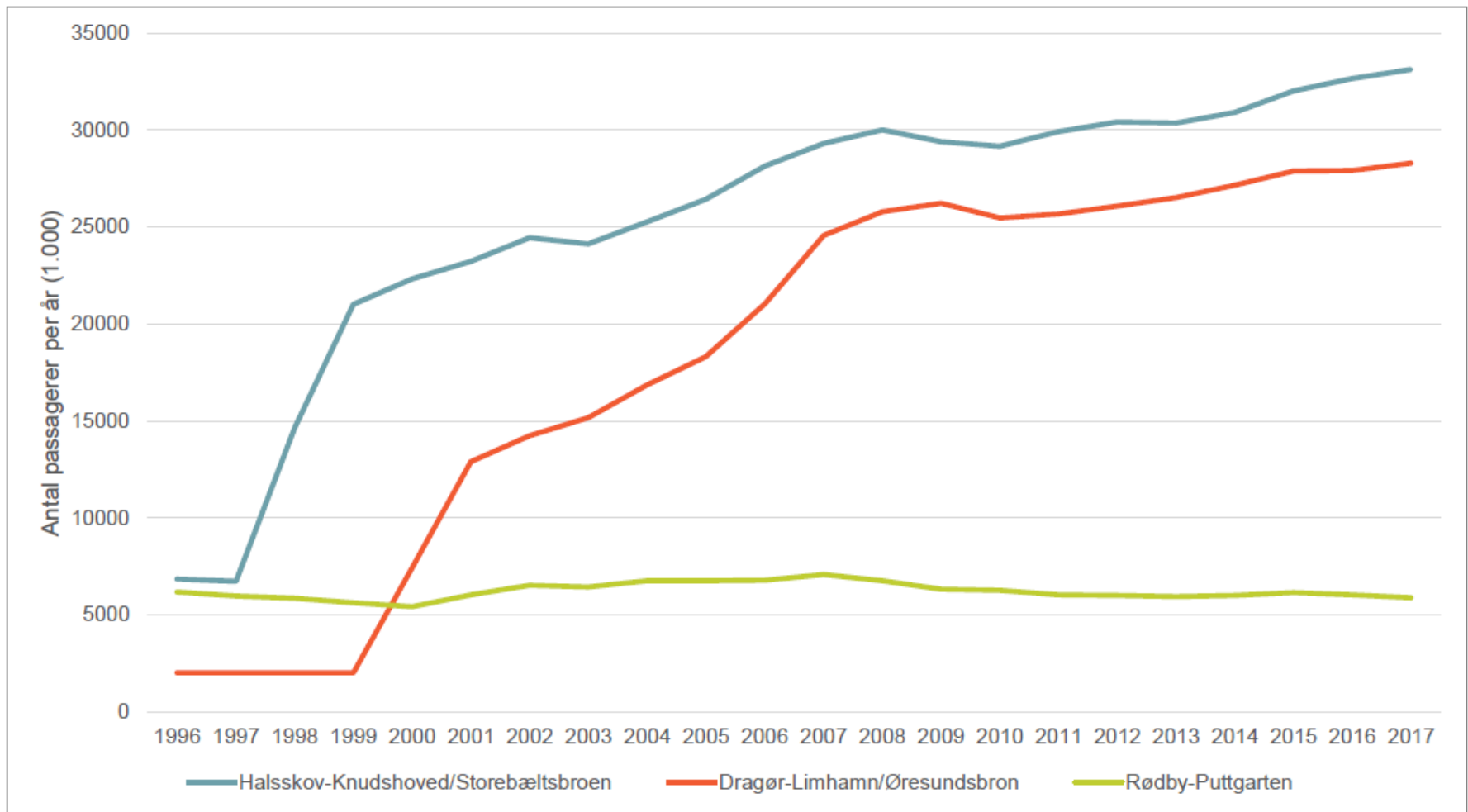
## Experiences

		before	after	change
Paris-Lyon	Travel time	3:46	1:59	-47%
	Passengers	12,500	22,200	<b>+78%</b>
Bruxelles-London	Travel time	4:52	2:01	-59%
	Passengers	1,154	3,885	<b>+237%</b>
Amsterdam-Paris	Travel time	5:16	3:18	-37%
	Passengers	0,676	1,425	<b>+111%</b>
Madrid-Sevilla	Travel time	5:10	2:30	-52%
	Passengers	1,311	3,639	<b>+178%</b>
Frankfurt-Berlin	Travel time	6:15	4:02	-35%
	Passengers	6,570	9,855	<b>+50%</b>



\*) pass. in millions

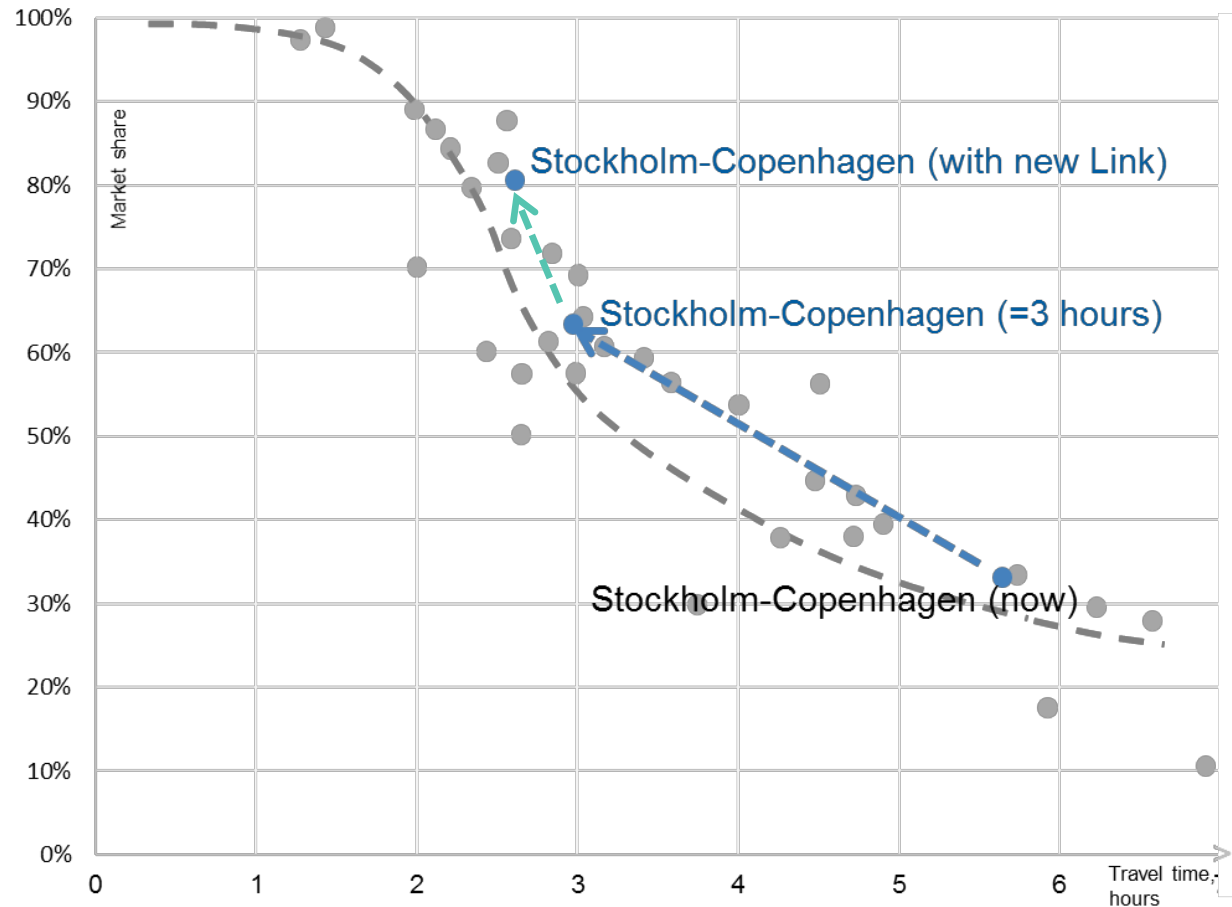
# Impact of fixed links



# Trains as market leader

## Rail market share – from low to high

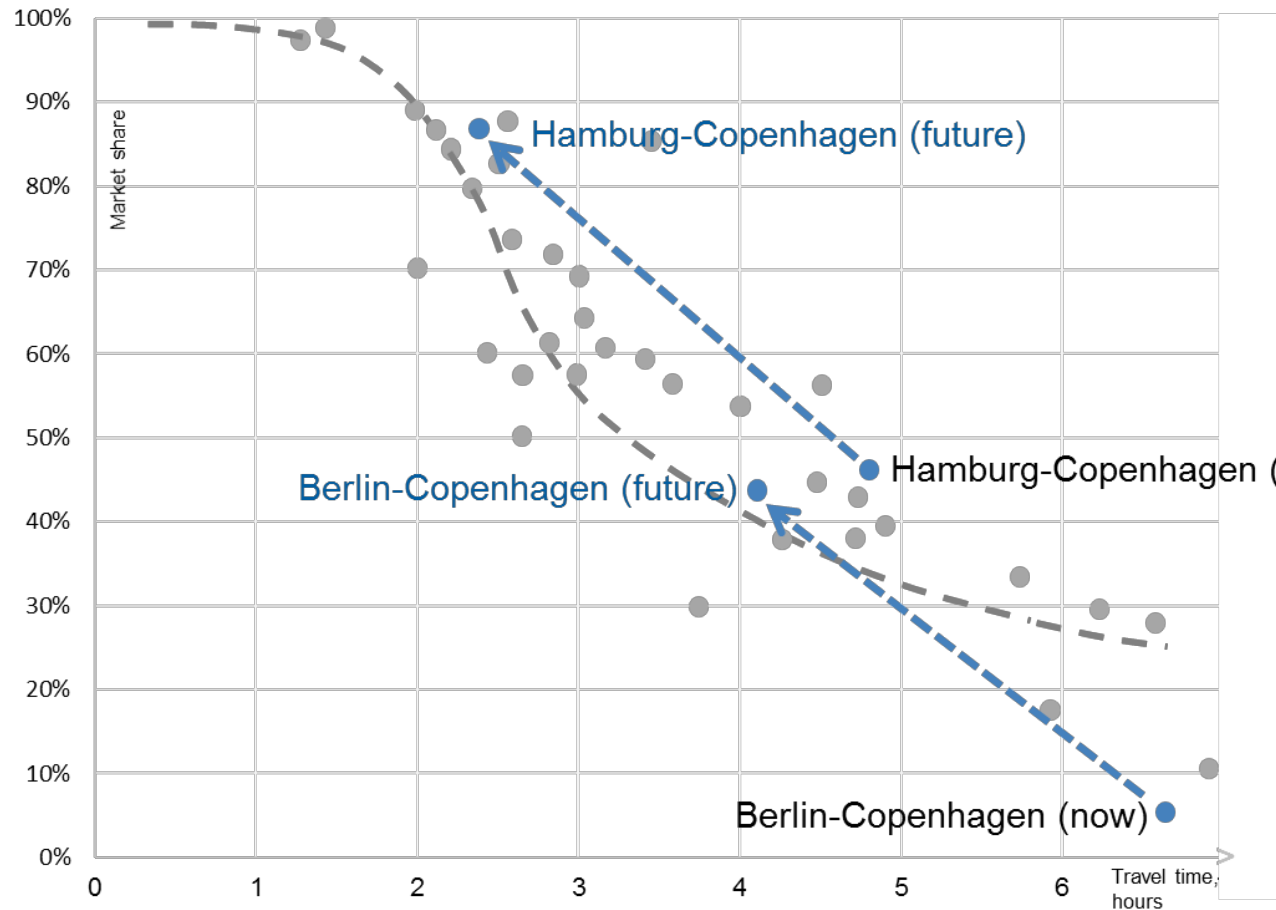
- A high market share rail against air depends on the travelling time/  
higher train speed
- Stockholm-Copenhagen:  
The construction of the new main line will lead to much faster train services
- Market share for rail envisaged to grow from lower level to medium-high  
(→80% market share)



# Trains as market leader

## Rail market share – from low to high

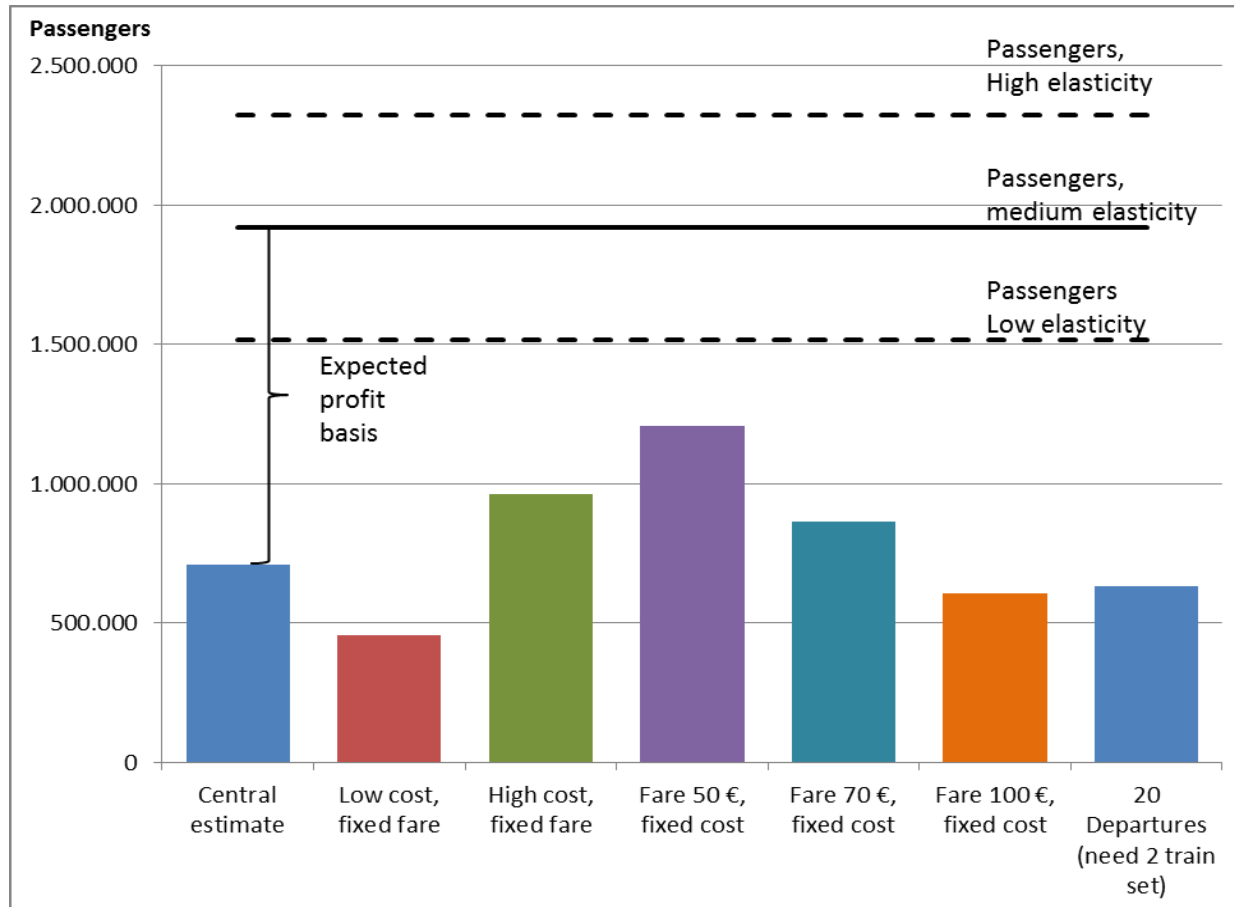
- Hamburg-Copenhagen:  
The market position of train services would be strengthened from medium to (very) high market share (→85%)
- Berlin-Copenhagen  
Market share raise from very low to medium-high (→45-50%)





# Large market potential

## Break-even analysis of various scenarios of demand



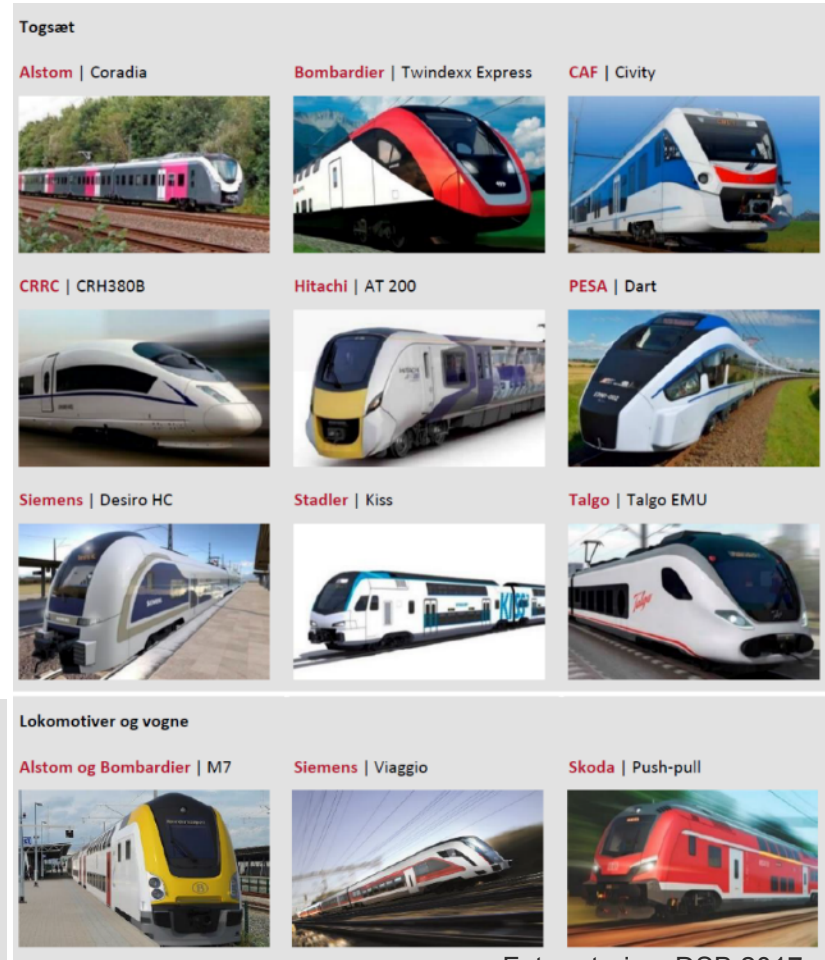
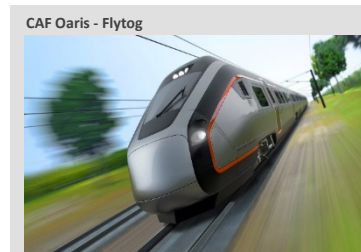
- Demand  
A market forecast predicts 1.9 million pax
- Cost  
A small system with trains running regularly needs 0,7 million pax (no profits)
- It is possible to run a service with max price of 50 €

Source: Market study: Improved trains service Öresund-Hamburg. COWI 2014

# Train operations

## Railway operation on the line

- Present service Hamburg-Copenhagen  
Stop or change during construction years
- Rolling stock
  - DSB increasing its fleet with 26 Vectron locos for 200 km/h (crossborder)
  - DB will have few multi-system trains
  - SJ to buy 30 new trainsets for international traffic for 250 km/h and multisystem 15/25 kV, ERTMS.
- Other operators:  
NAH/Schleswig-Holstein  
MOVIA/Regionstog  
MTR  
Snälltåget



Future trains, DSB 2017

# Train operations

## Interregional might be loco-hauled trains



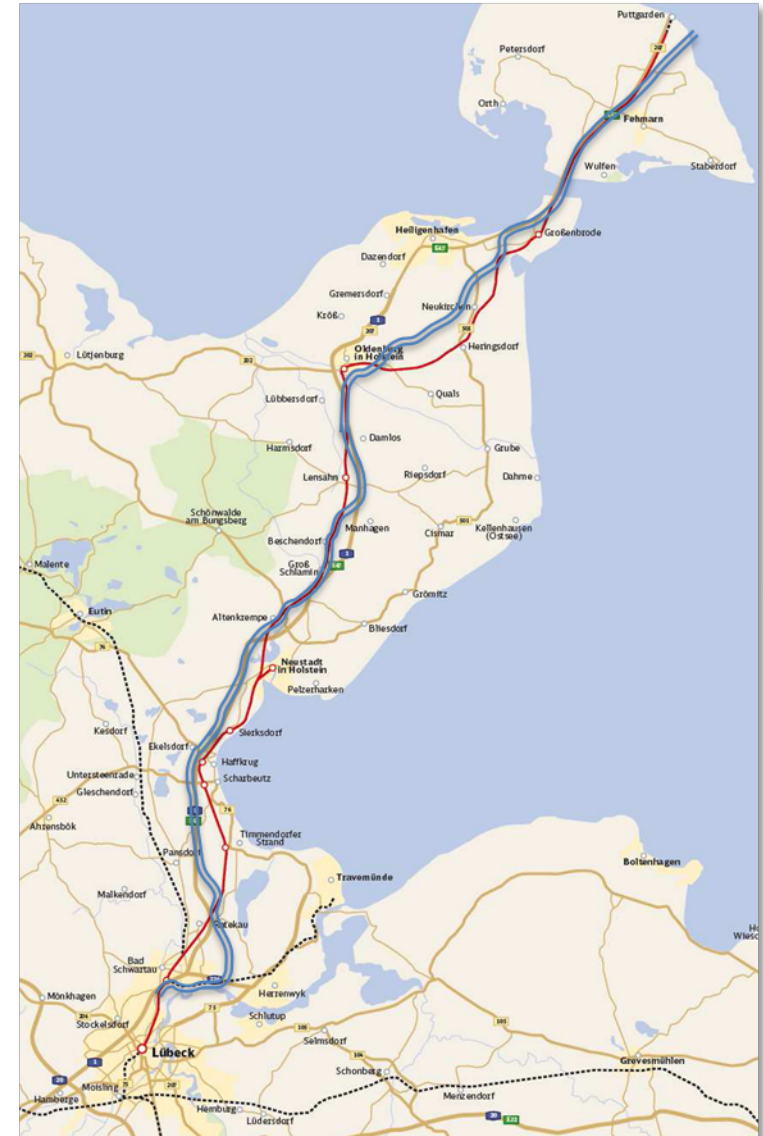
- DB new Talgo 230 trains  
Multi system for Amsterdam-Berlin  
No orders for DE-DK-SE trains



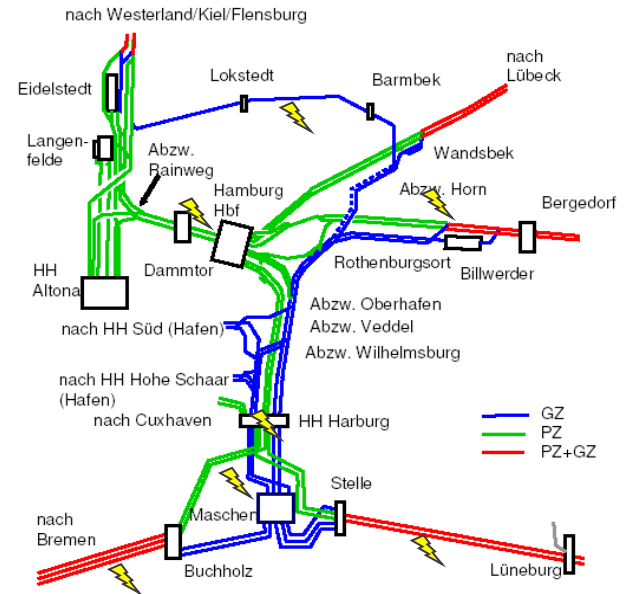
- DSB vectron  
Interregio trains fx like Railjet on the line  
Copenhagen-Hamburg

# Hinterland line Puttgarden-Lübeck

- DB Projektbau promiss upgraded line ready for 2028 (1,3 billion €)
- New Fehmarnsund Brücke in planning  
Single part section
- Probably ready in 2030 (0,5 billion €)







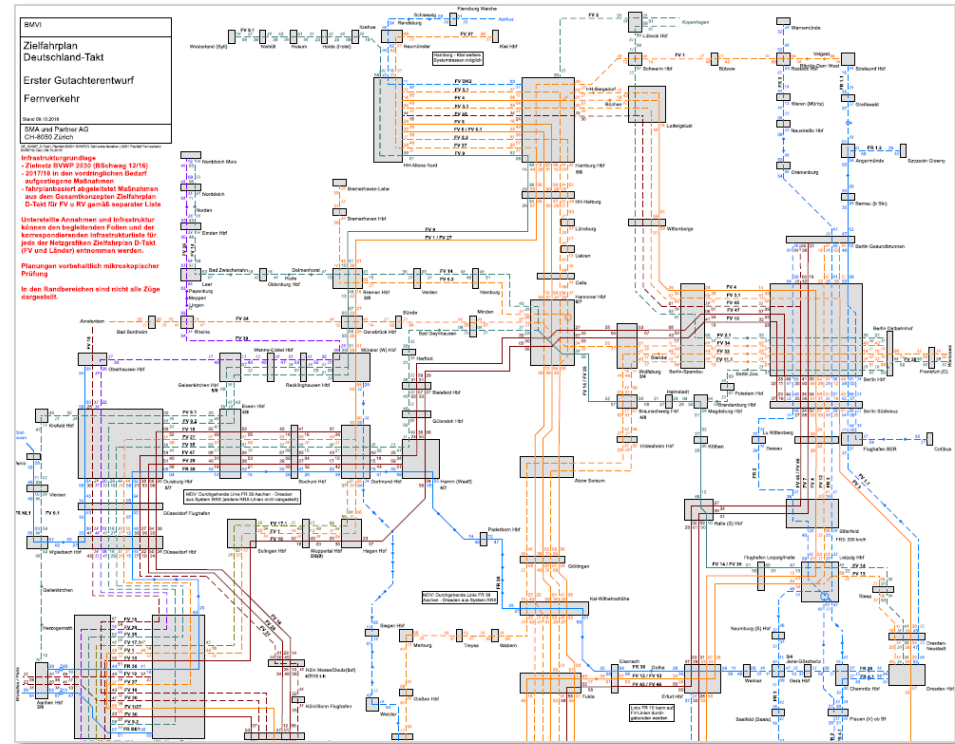
- S-bahn (line S4)
- Estimated costs: 0,5 billion €



# HH-link

- Alternative 1: Only road connection  
Alternative 2: Road and rail connection
- Local line Helsingborg-Copenhagen in 51 minutes (13 stations)
- No freight train capacity. No fast long distance trains





- Copenhagen – Berlin 4:00
- Copenhagen – Bremen 3:30
- Copenhagen – Hannover 3:30

# Corridor Öresund-Fehmarn ready 2028

## Conclusions

- Sweden: construction work in progress (1 billion of total € 16 billion)
- Denmark: construction progress (€ 5 billion out of € 10 billion)
- Germany: final decision pending (approx. € 2 billion commitment)
- A point of no return has been reached (State Treaty etc.)
- A second Öresund tunnel link between DK and SE has been agreed to study
- Financial analyses anticipate high return on investment, robust market forecasts
- Railway operators a little reluctant in procurement of new train sets
- Only 9 years for opening → therefore the time schedule not very long !

