



# Concept Symposium 2018

## Governing Megaprojects – Why, What and How

### Regional Victories or National Success? Building roads across Norway

A large part of Norway's population and industries are located along the west coast and the south-eastern part of the country. Between these two regions you find high mountains and deep valleys, reindeers, herds of sheep, tourists, heritage farms, forest, ski slopes, fishing creeks, villages and cottages. There is a need for transporting goods and people efficiently through this landscape in a safe way all year round. Local industry along the roads crossing Norway may benefit from the traffic. However, the roads' effect on nature and wildlife is not necessarily positive. And if a planned road is threatening to ruin a cottage village, where Norwegians spend their oval weekends, there will be trouble.

We were asked to perform quality assurance of two concept studies of main road connections between east and west of Norway. The concept studies were based on transport analyses, research reports on wildlife, cost estimates and economic studies. But they were also subject to constraints and scope limitations that may seem politically motivated. The study comprised a prioritisation between regional and national benefits. The decision process has been quite interesting.



**Elin Kverneggen / Astrid Oline Ervik**  
VP Project Advisory and Analysis / Researcher  
Holte Consulting / SNF  
Norway

#### ***The Concept Symposia on Project Governance***

*The Norwegian Ministry of Finance and the Concept Research Program hosts every second year a symposium on project Governance. Project governance, in brief, is concerned about investments and their outcome and long-term effects. In view of the problem at hand, the aim is to ensure that the best conceptual solution is chosen, that resources are used efficiently and anticipated effects realized. Resource persons from ministries, governmental agencies, academia, international organizations, and industry are invited. In order to facilitate professional exchange and direct communication between participants, the number of individuals is restricted. The aim is to initiate further international cooperation and research on important issues related to project governance.*

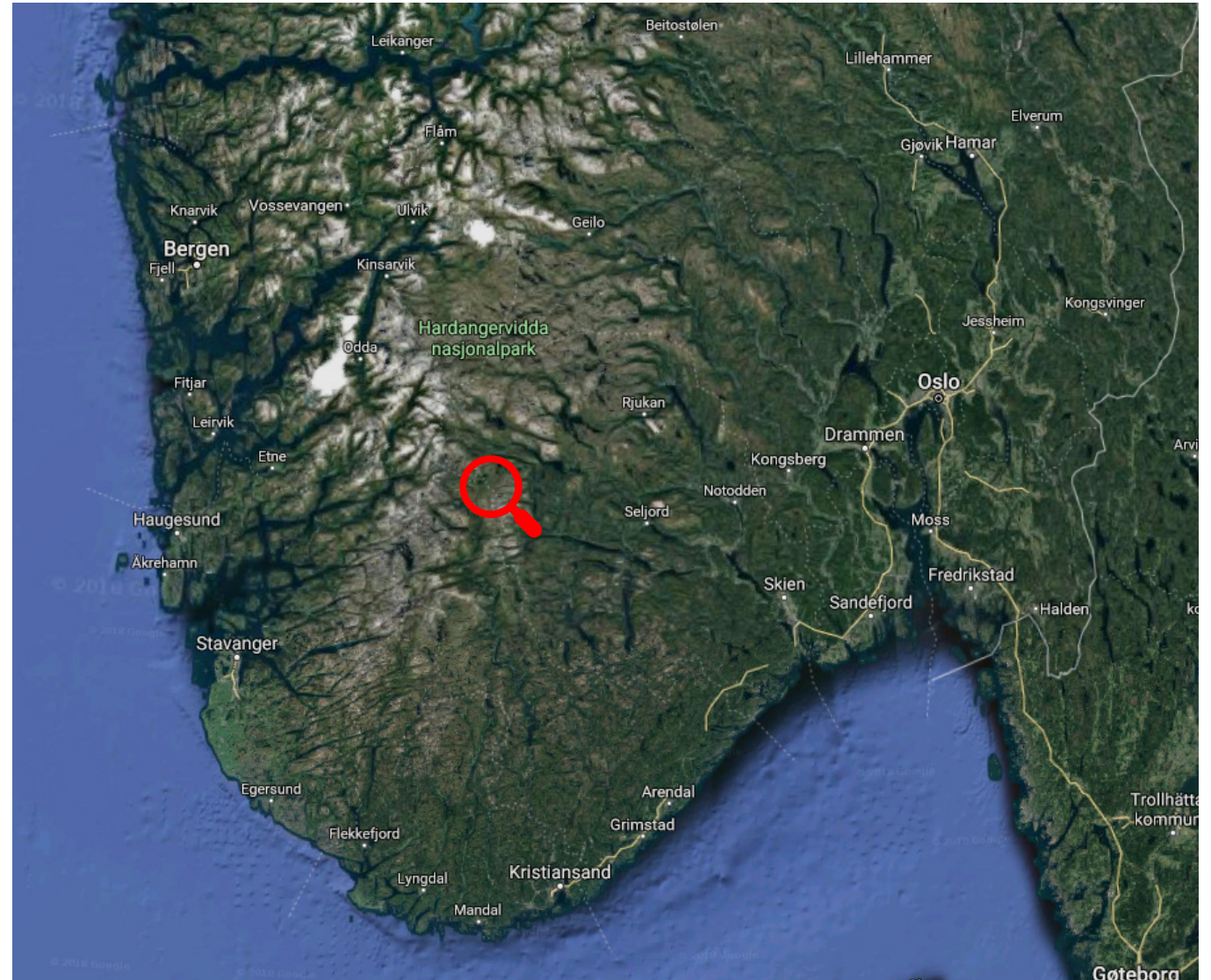
<https://www.ntnu.edu/concept/concept-symposium>

# Regional victories or national success? Building roads across Norway

Concept Symposium 2018

Astrid Oline Ervik, Elin Kverneggen

# Norway – geography



# Topography



# Topography



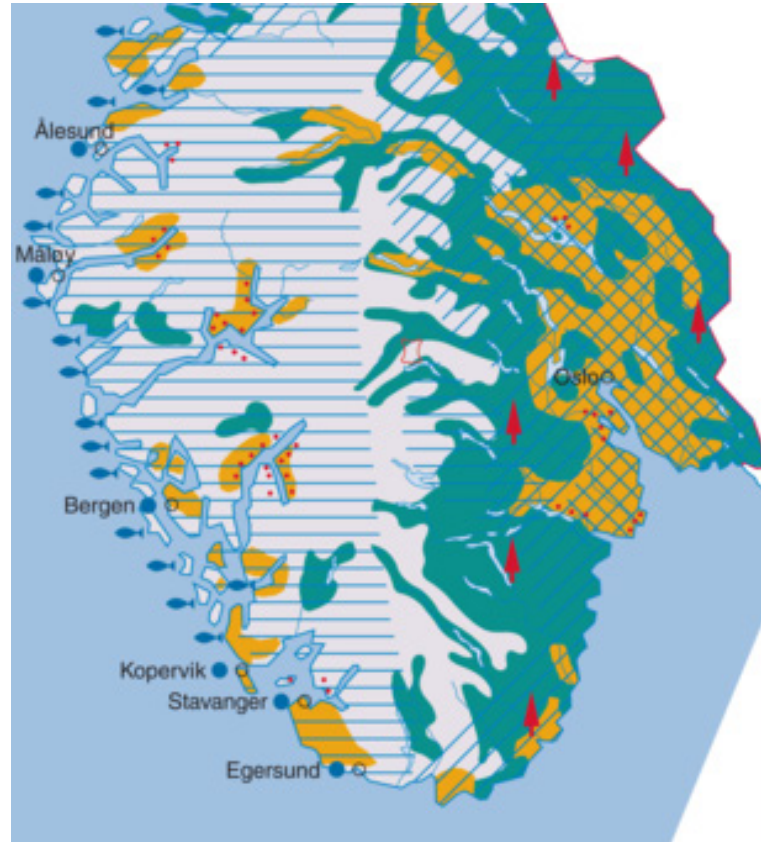
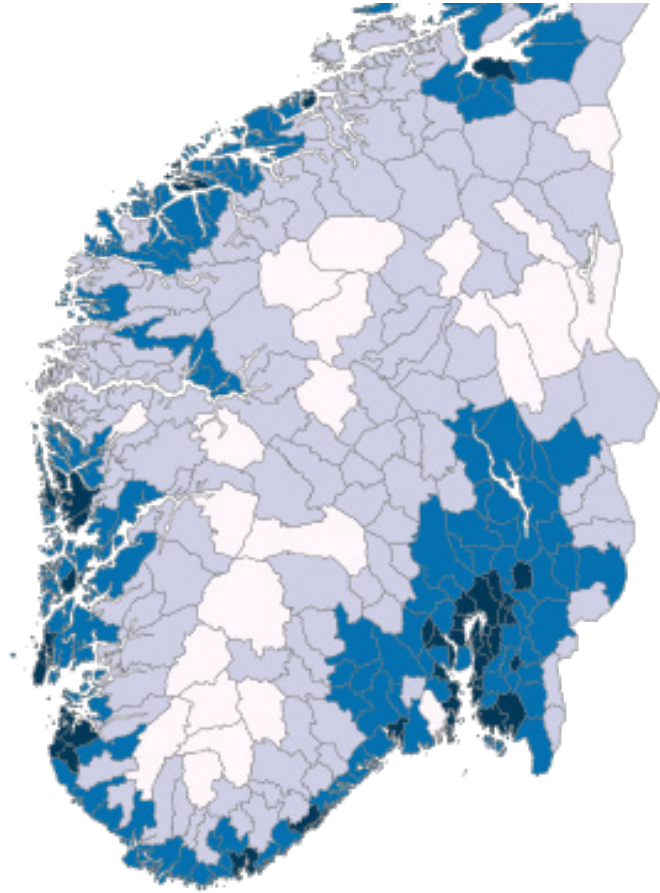
# Climate



# Fauna



# Population and industry

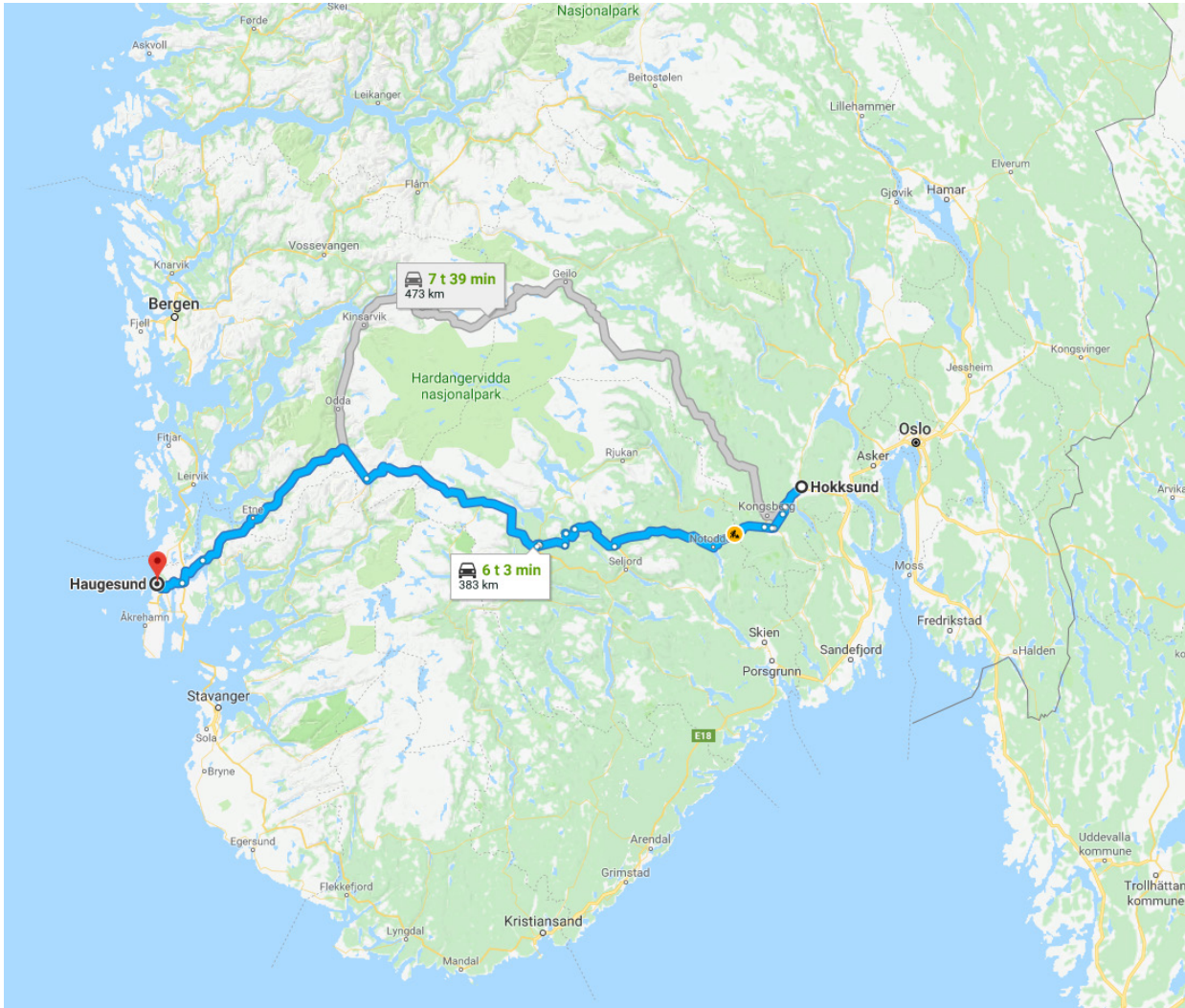




# Transport between east and west

- Goods (industrial, retail) – daily
- Local transport – daily
- Commuters – weekly (daily)
- Tourists – seasonal
- Norwegians going to their cabin – weekends and holidays

# Current road connections between east and west – E134



E134 Hokksund – Haugesund

Crossing Haukelifjell  
Max altitude 1067m  
6 hours travel time

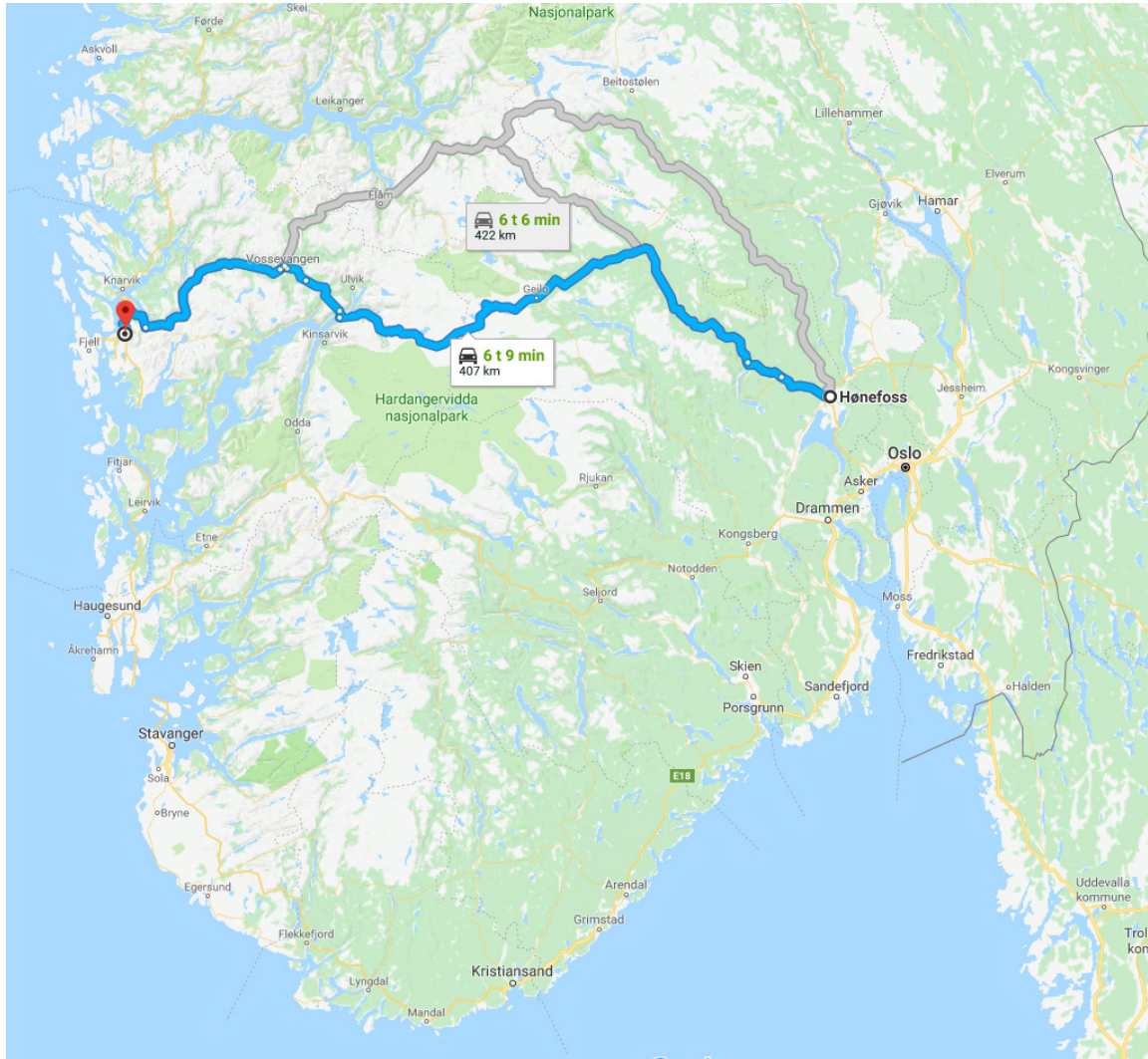
1600 vehicles/day<sup>1)</sup>  
22% heavy vehicles<sup>1)</sup>  
Closed about 215 hours/year (2,5%)<sup>2)</sup>

- 1) Average in 2016
- 2) Average in 2009-2014

# Current road connections between east and west – E134



# Current road connections between east and west – Rv7



Rv7 Hønefoss – Hardangerbrua  
E16 Hardangerbrua – Voss – Bergen

National tourist road  
Crossing Hardangervidda  
Max altitude 1250m  
6 hours travel time

1150 vehicles/day<sup>1)</sup>  
18% heavy vehicles<sup>1)</sup>  
Closed about 530 hours/year (6,1%)<sup>2)</sup>

Surrounded by reindeer

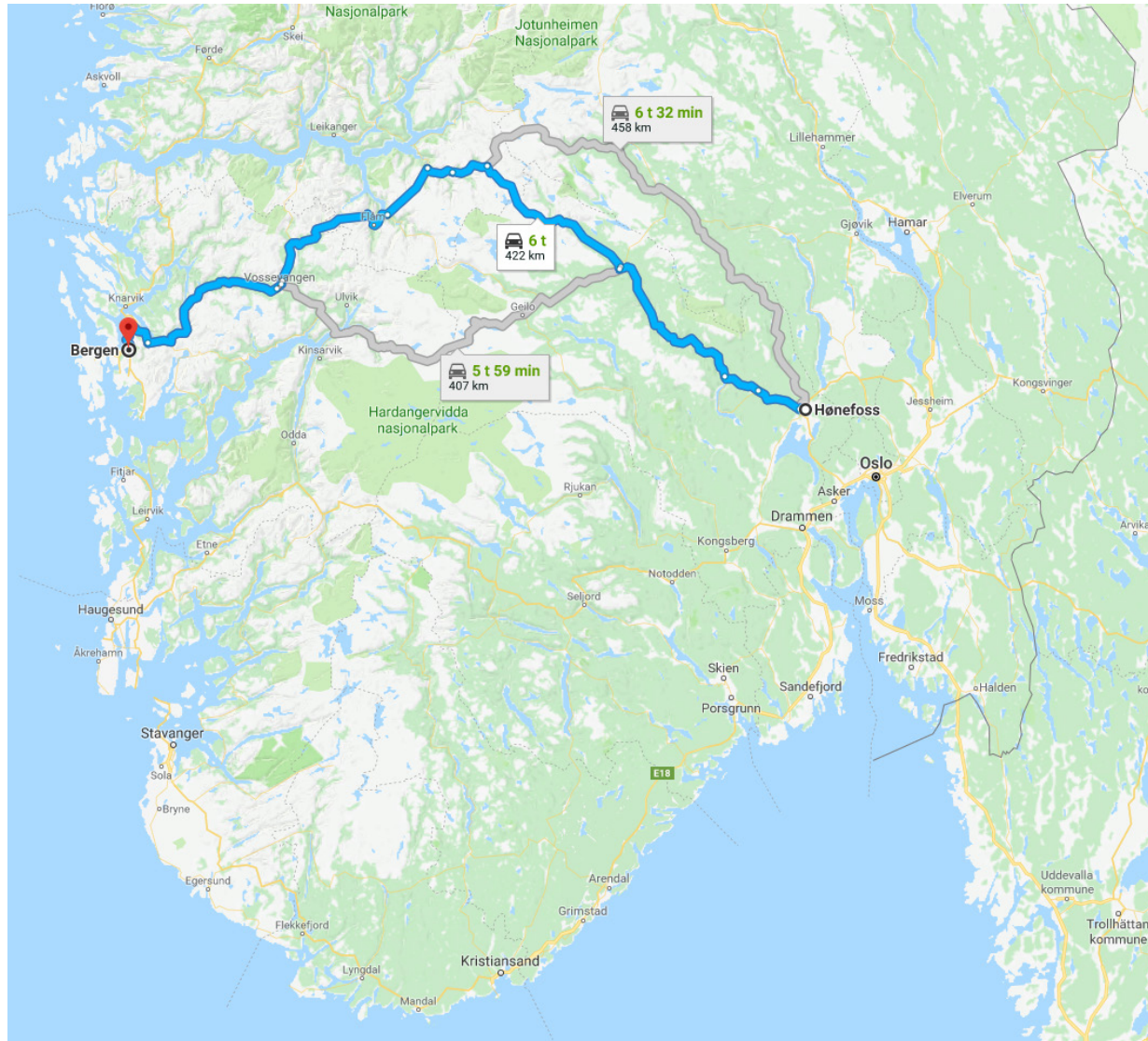
- 1) Average in 2016
- 2) Average in 2009-2014

# Current road connections between east and west – Rv7



Source: Google

# Current road connections between east and west – Rv52



Rv52 Gol – Borlaug (Lærdal)  
E16 Borlaug – Voss – Bergen

Crossing Hemsedalsfjell  
Max altitude 1137m  
6 hours travel time

1280 vehicles/day<sup>1)</sup>  
29% heavy vehicles<sup>1)</sup>  
Closed about 62 hours/year (0,7%)<sup>2)</sup>

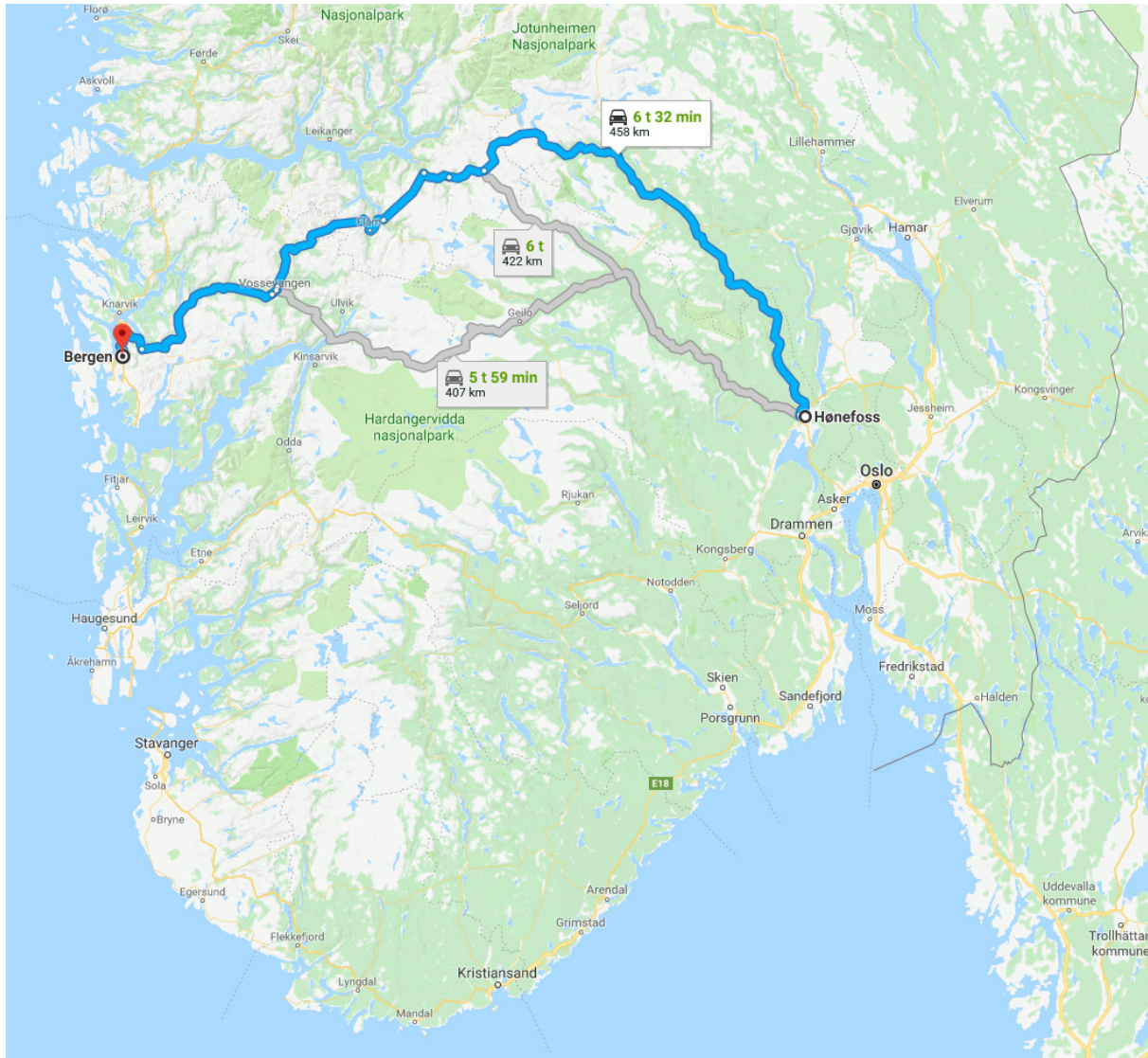
- 1) Average in 2016
- 2) Average in 2009-2014

# Current road connections between east and west – Rv52



Source: Google

# Current road connections between east and west – E16



E16 Hønefoss – Borlaug – Voss – Bergen

Crossing Filefjell

Max altitude 1004m

6,5 hours travel time

920 vehicles/day<sup>1)</sup>

28% heavy vehicles<sup>1)</sup>

Was closed about 150 hours/year (1,7%)<sup>2)</sup>

Generally not closed due to weather conditions

1) Average in 2016

2) Average in 2009-2014, partly due to road works in 2012/13



# Current road connections between east and west – E16



Source: Google

# Current road connections between east and west



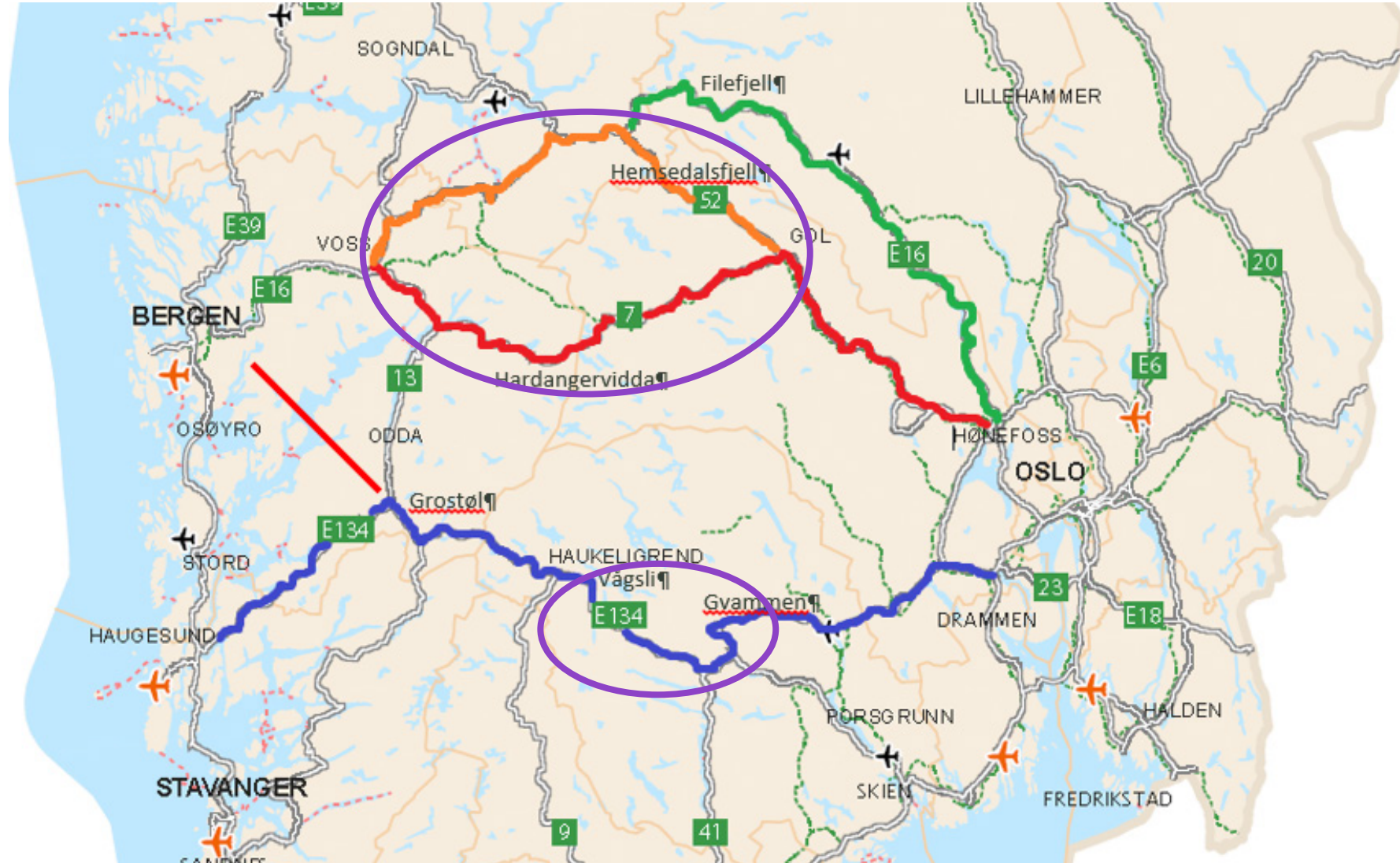
E134

Rv7

Rv52

E16

# Concept studies



Part of E134

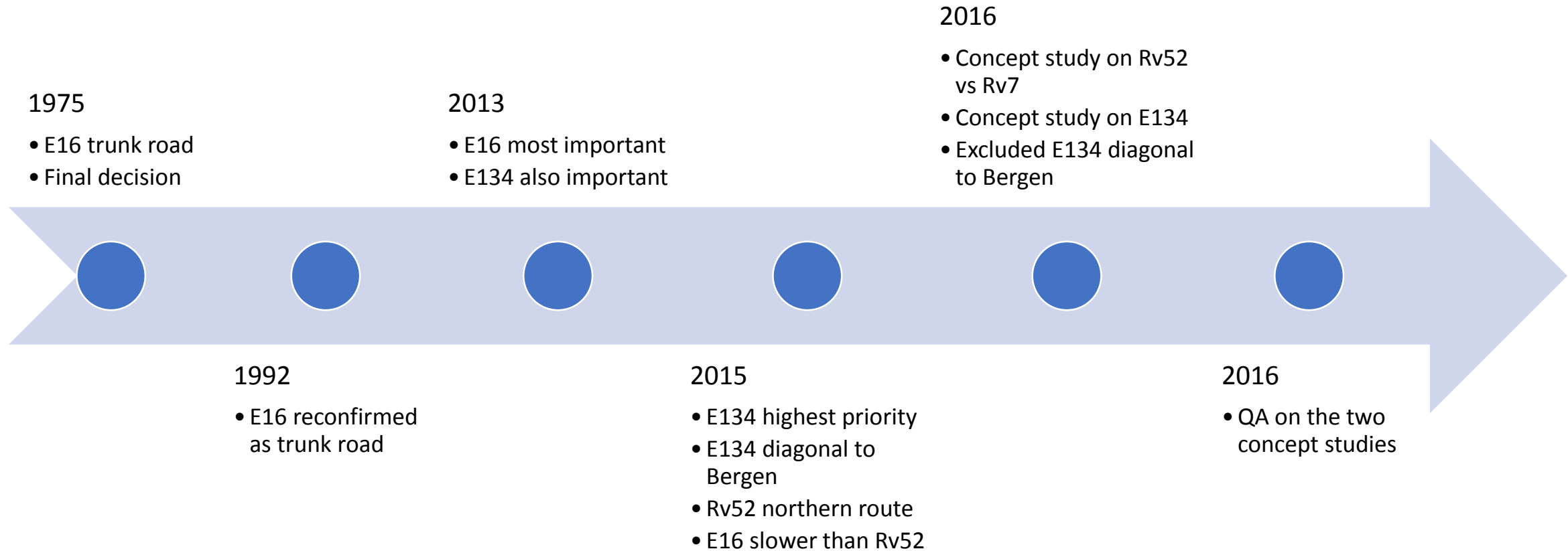
Part of Rv7 vs.  
Rv52

*But not E16*

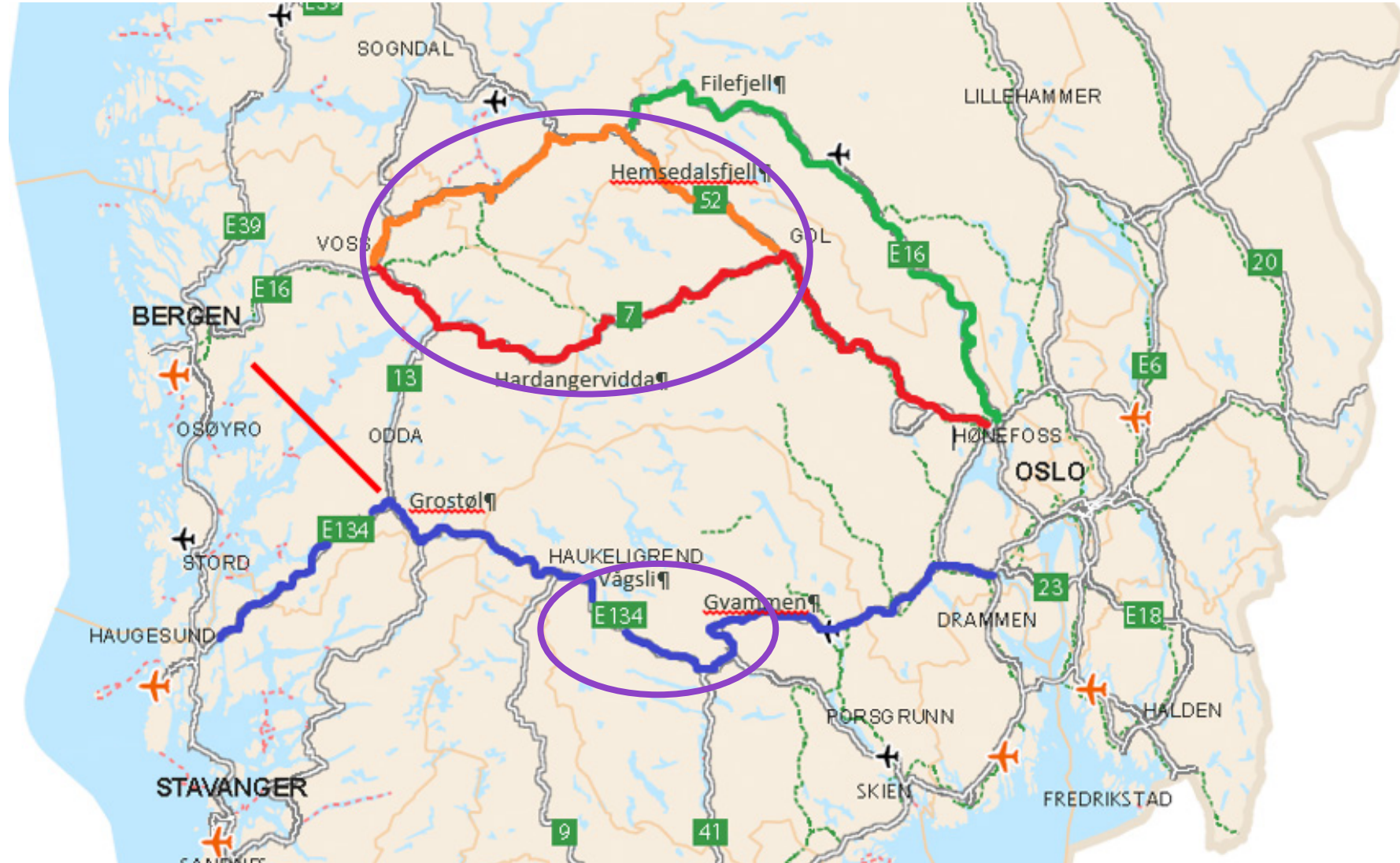
# Planning roads in Norway

- Economic considerations
  - Cost of road, tunnels and technical installations
  - Cost of land (agricultural, recreational, rural, etc)
  - Benefits (efficient transport of goods and people)
- Environmental aspects
  - Competition with train transport
  - Fauna
  - Noise
- Safety and availability
  - Snow, wind
  - Rockslide, landslide

# Time line for the east-west road connections



# Concept studies



Part of E134

Part of Rv7 vs.  
Rv52

*But not E16*

«We need main road connections that are particularly well suited for heavy transport over longer distances. That implies that we cannot spread investments too thinly.»

- *Minister of Transportation Ketil Solvik-Olsen, nrk.no Feb. 15, 2015 (my translation)*



# Quality Assurance of E134

Summary of our considerations, results and recommendations:

- Concept alternatives are limited to only a short section of the road between eastern and western Norway:
  - Northern route: New road shortens travelling distance significantly, but cuts through nature
  - Southern route: New road close to local settlements, small reduction of travelling time, but with negative effects on cultural landscape
- Large and positive net benefits of northern route

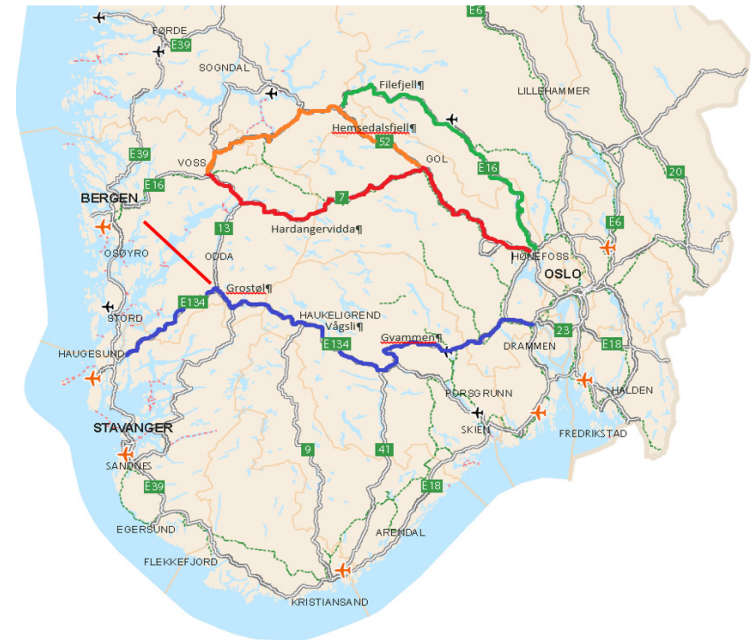




# Quality Assurance of E134 (cont.)

BUT

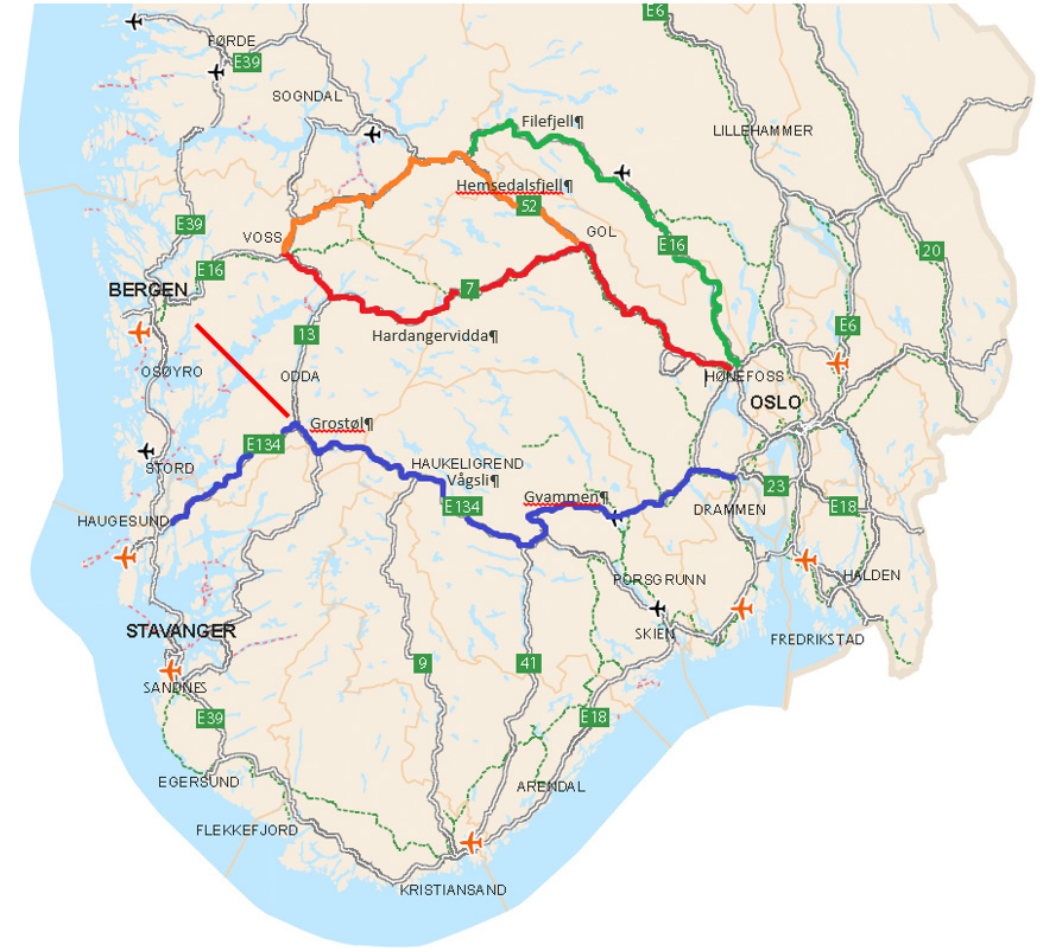
- Assessed benefits with and without planned road building on other sections of E134
- Net benefits are dependent on road building and improvements elsewhere on E134
- Arm to Bergen would increase net benefit of road significantly and may reduce need for significant improvements on Rv. 52 or Rv. 7



# Quality Assurance of Rv7 / Rv52

## Summary of our considerations, results and recommendations:

- Concept alternatives: New or improved sections of road along
  - Rv. 52 Gol – Voss, incl. section of E16 Borlaug - Voss
  - Rv. 7 Gol – Voss, crossing Hardangervidda national park
- A second main road connection between eastern and western Norway does not have a positive net benefit
- New E134 reduces net benefit of rv. 7 and 52 investments, but rv. 7 is most affected
- An extension of E134 to Bergen would reduce benefits even more
- E134 with shortcut to Bergen would be most beneficial



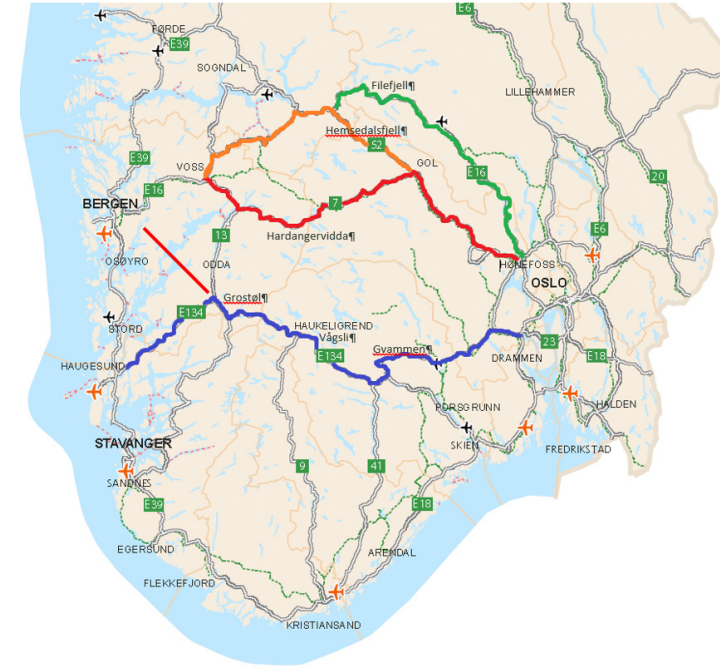
# Quality Assurance of Rv7 / Rv52 (cont.)

- Rv. 52 is by far the best alternative because of
  - Competition from E134
  - Complimentarity to E16 (rv. 52 includes investments on E16 Borlaug-Voss)
  - Benefits for travellers along E16 Borlaug-Voss
  - Rv. 7 tunnels from Hardangervidda to idfjord (Måbødalen) steep and under Hardangervidda costly and difficult
  - Winter conditions
  - Impact on Hardangervidda national park
- BUT some investments on E16, here included in the concept rv. 52 will probably be needed anyway and should maybe have been included in baseline plus, in particular Gudvangatunnel



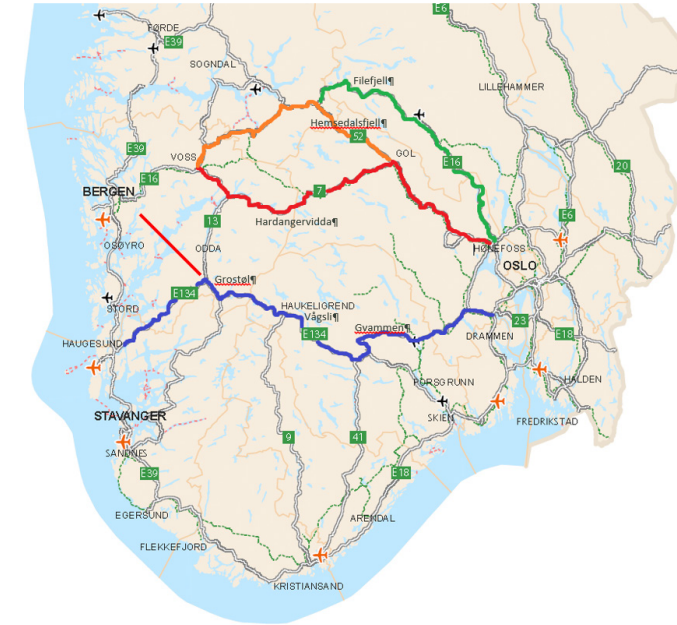
# Process after QA – E134

- We recommended Northern Route and building of shortcut to Bergen
- “National transport plan 2018-2029”:
  - The government gives priority to E134 as the main road connection between Eastern and Western Norway
  - The government assumes that E134 will be established along the northern route E134 Gvammen-Vågsli in new, shortened corridor – 35 km shorter, reduction of travelling time by 50 minutes
  - No mention of shortcut from E134 to Bergen
- E134 Gvammen – Vågsli is not included in current budgets



# Process after QA – Rv7/Rv52

- We recommended:
  - No new main road connection, in addition to E16 and E134, but rather an extension from E134 to Bergen
  - If a second main road connection still will be chosen, we recommend rv 52
- “National transportplan 2018-2029”:
  - The government plans a functional split of the second main road connection, between Rv 52 and rv 7
  - **Rv. 52** will be the main route for **heavy transport** due to road incline and winter regularity
  - **Rv. 7** will be the main route for **tourism and personal** travel
  - The government plans work towards a defining level of ambition and order of priority for further planning of improvements of rv 52 and rv 7
- Only very minor improvements along E16, rv 52 and rv 7 in current budgets



# Best practice – from regional victories to national successes?

- Solvik-Olsen was right: Investments should not be spread out too thinly! Net benefit differs if you section up quality assurance of main connection road investments
- Quality assurance of **entire stretches of road**, if politicians have to make strategically important decisions between roads
- Be clear about what is included in baseline
- If politicians limit the scope of concept studies and quality assurances, conclusions may not lead to national successes.
- However, regional victories may lead to re-election of politicians