

Building an optimal hydrogen transportation system, *Methodology and model framework*

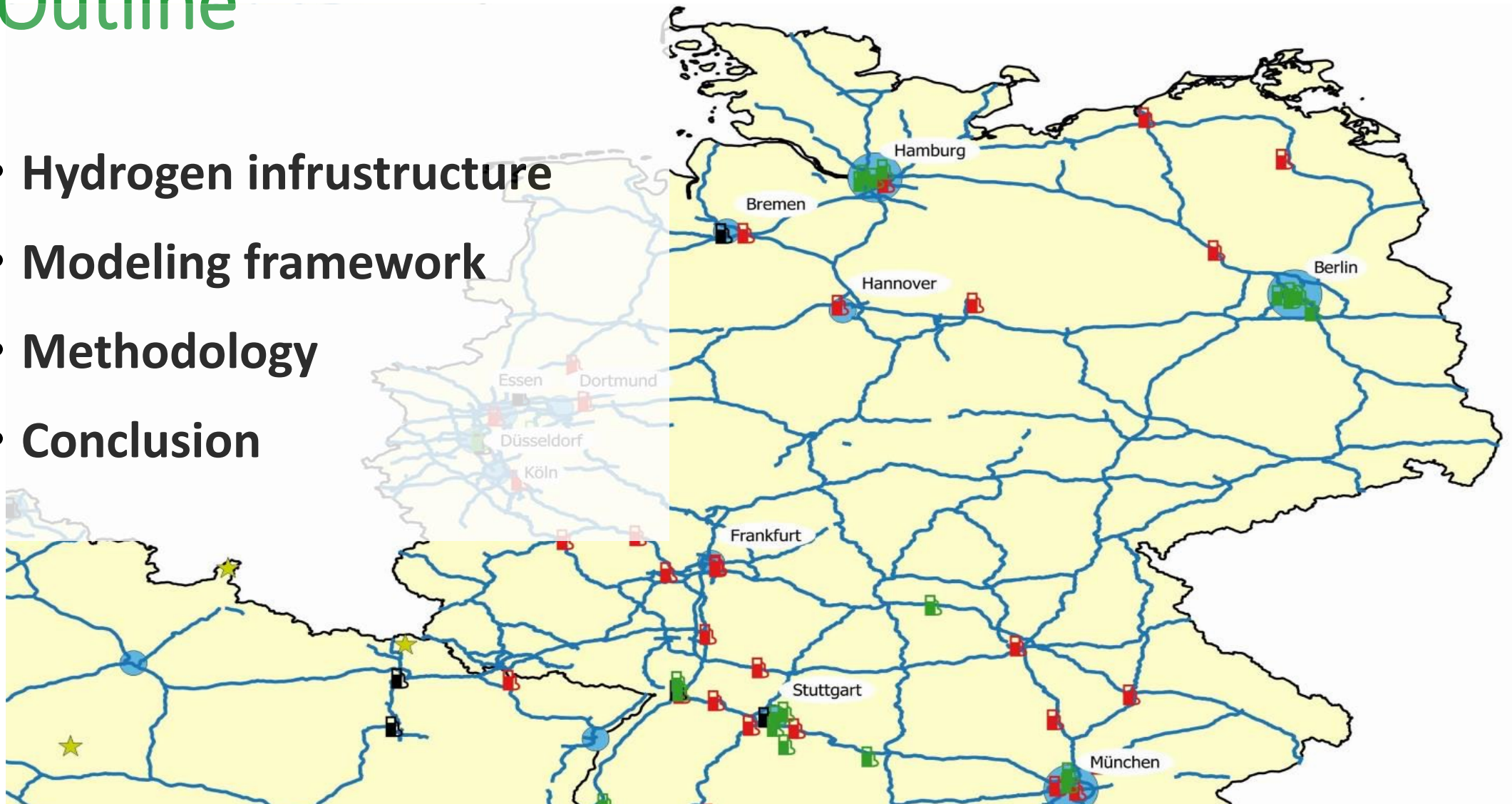
August 24th, 2017 | Amin Lahnaoui, Christina Wulf, Didier Dalmazzone

Institute of Energy and Climate Research, Systems Analysis and Technology Evaluation (IEK-STE)

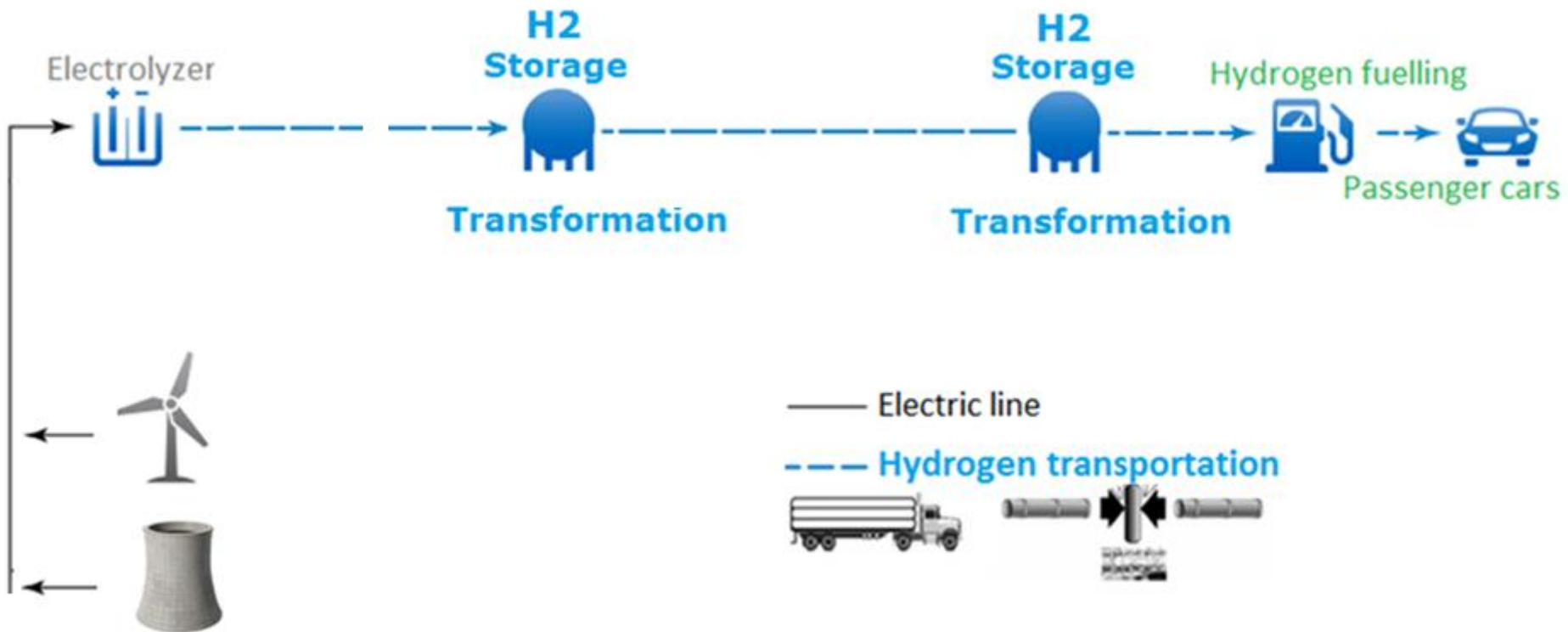


Outline

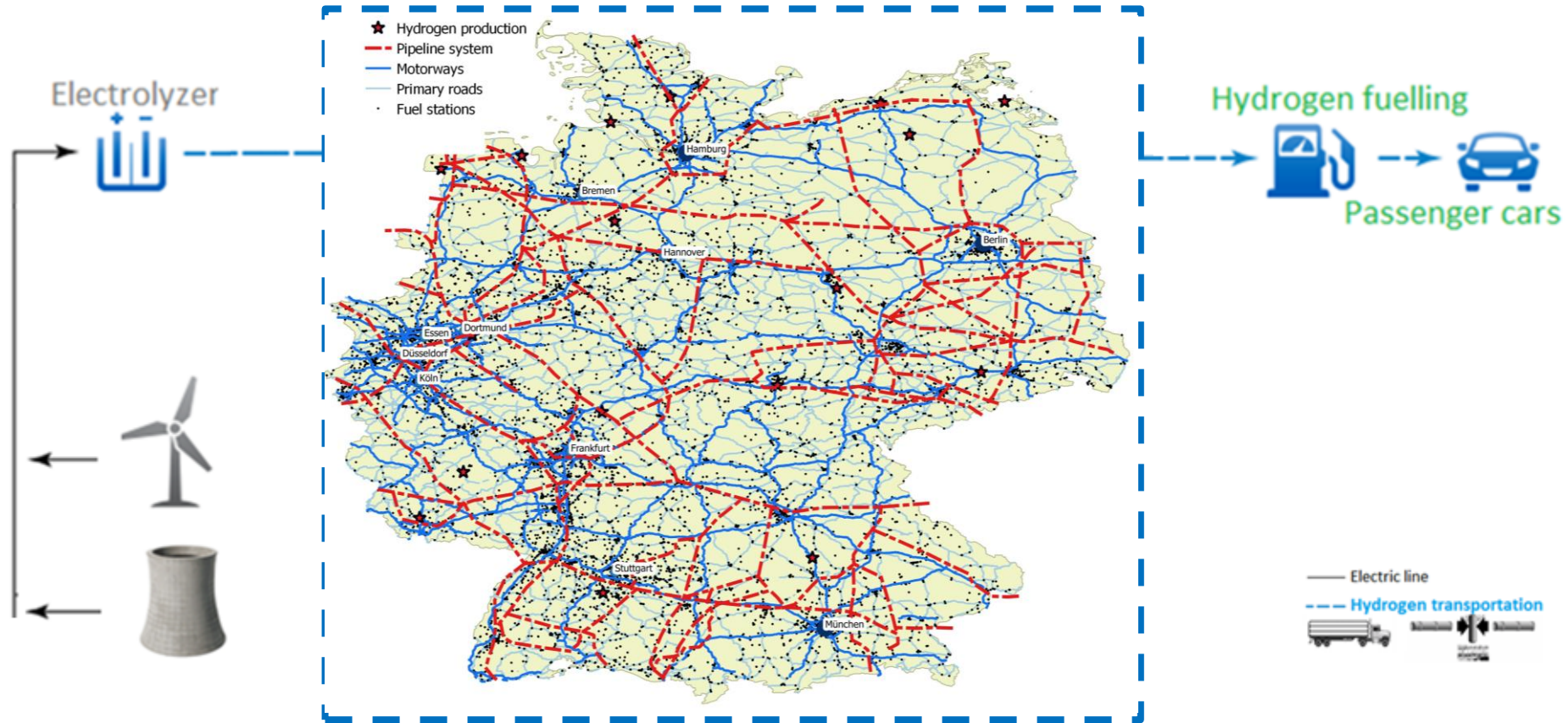
- **Hydrogen infrastructure**
- **Modeling framework**
- **Methodology**
- **Conclusion**



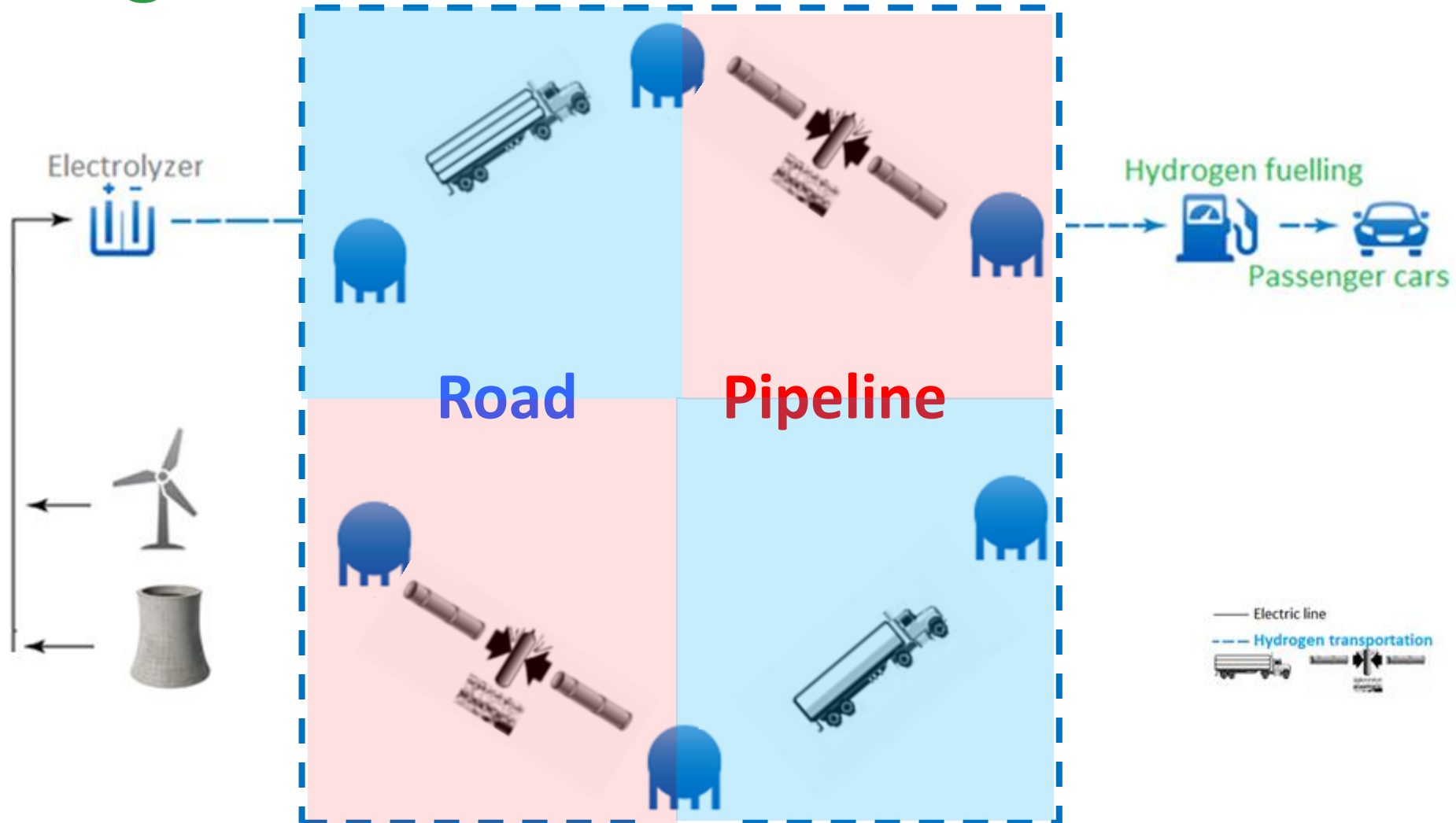
Hydrogen infrastructure, supply chain



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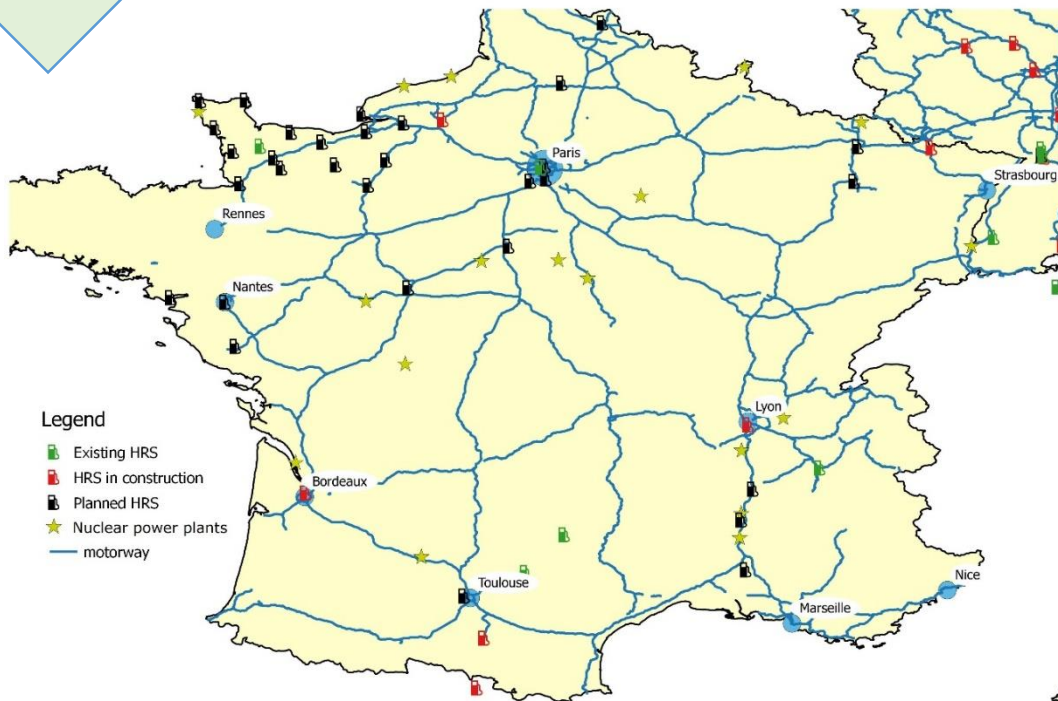
Hydrogen infrastructure, supply chain



Modeling framework

Electricity mix

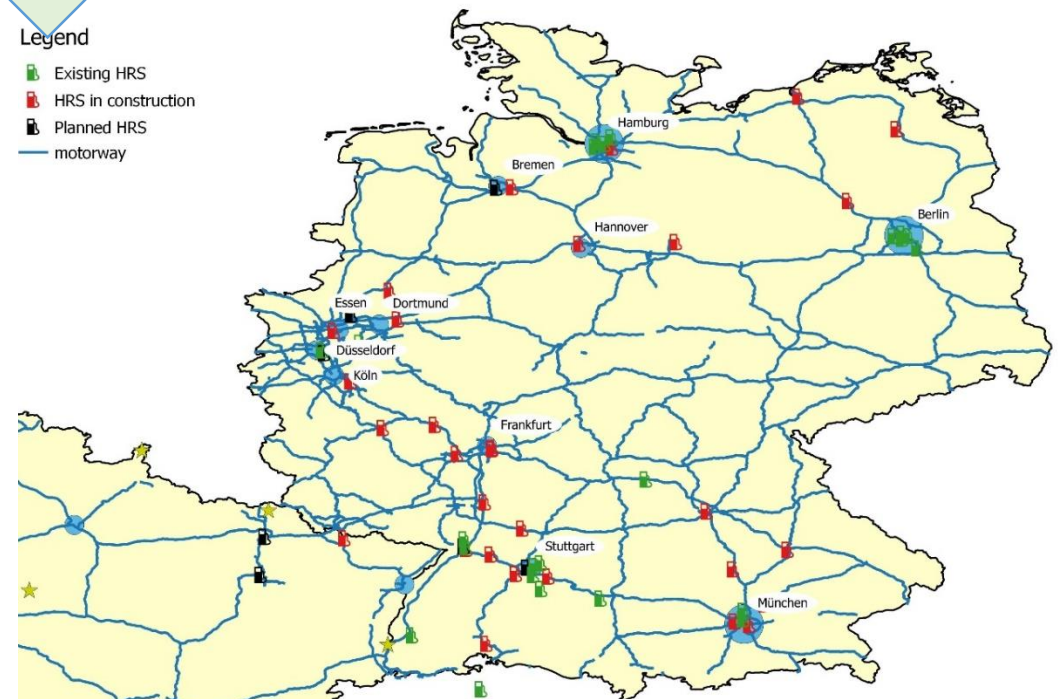
- High share of nuclear in electricity production, followed by hydro



<http://eashymob.normandie.fr/>, <http://www.tenerdis.fr/en/News/hyway-project.html>, <http://h2piyr.eu/> and own presentation

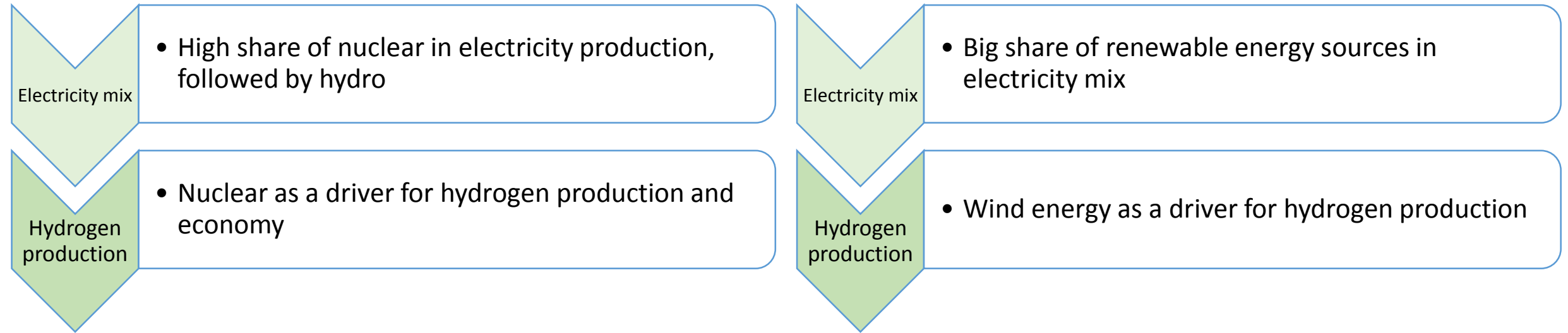
Electricity mix

- Big share of renewable energy sources in electricity mix

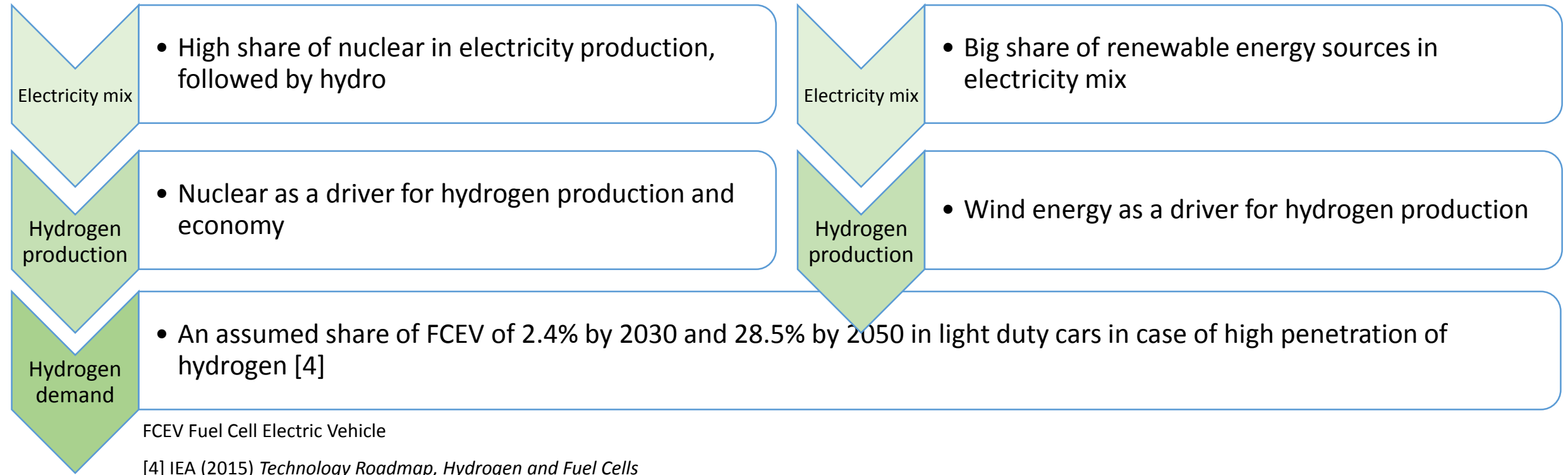


<https://www.netinform.de/H2/H2Stations/Default.aspx> and own presentation

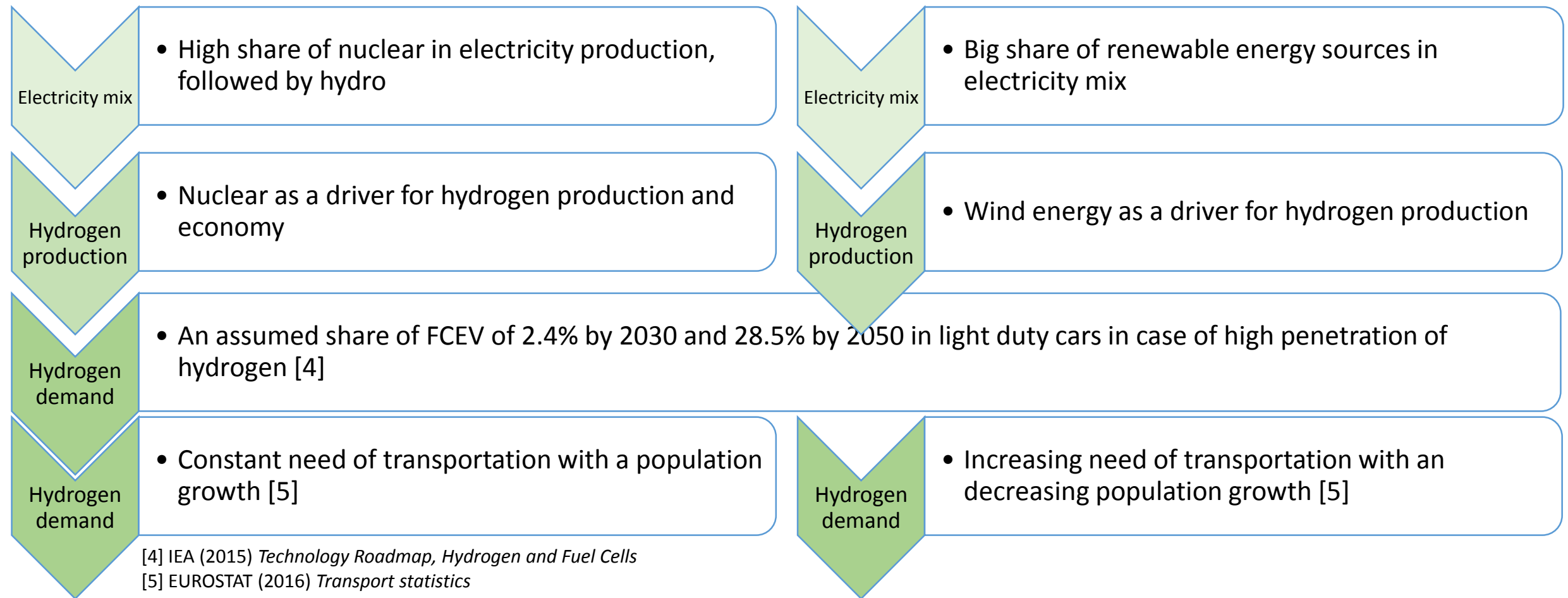
Modeling framework



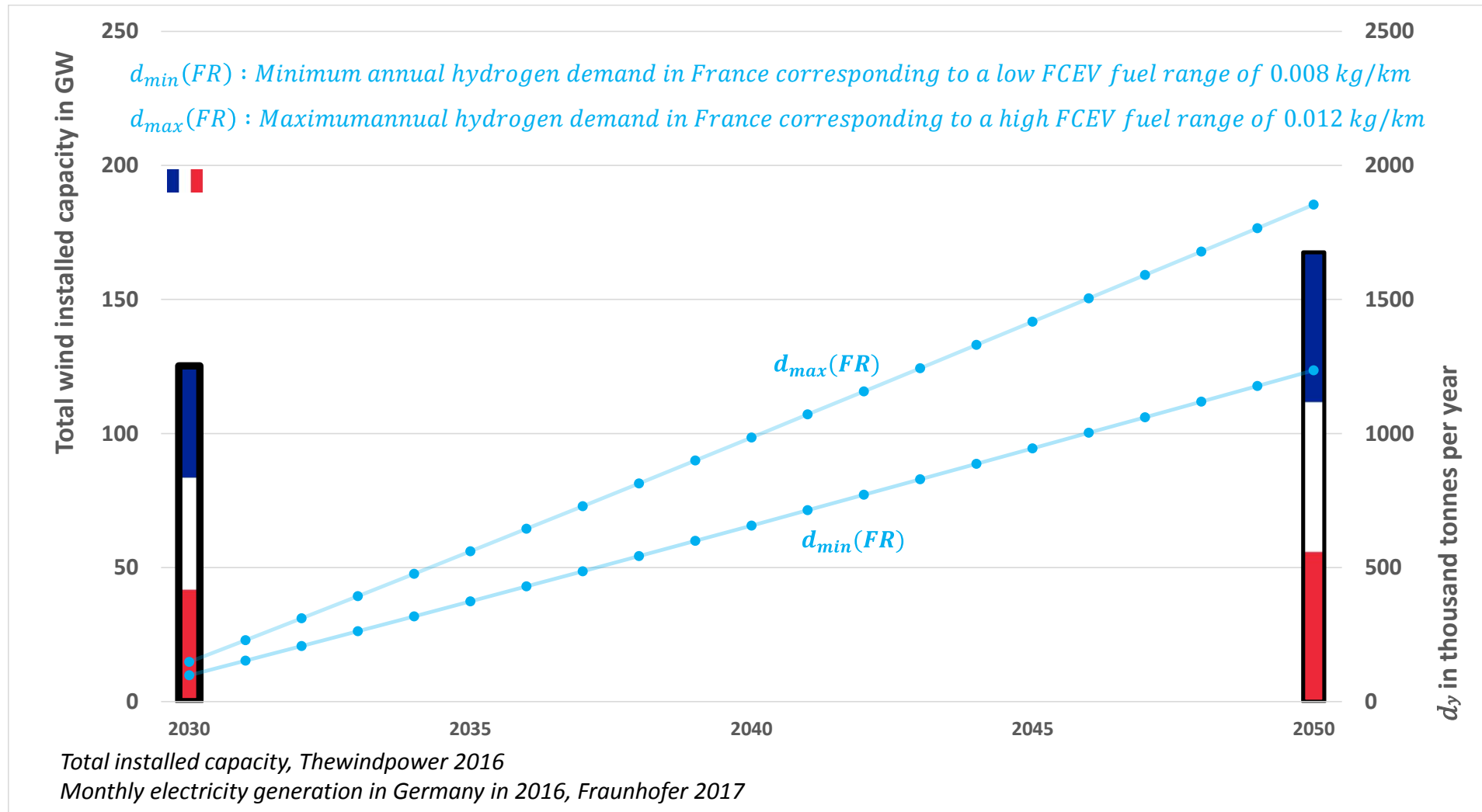
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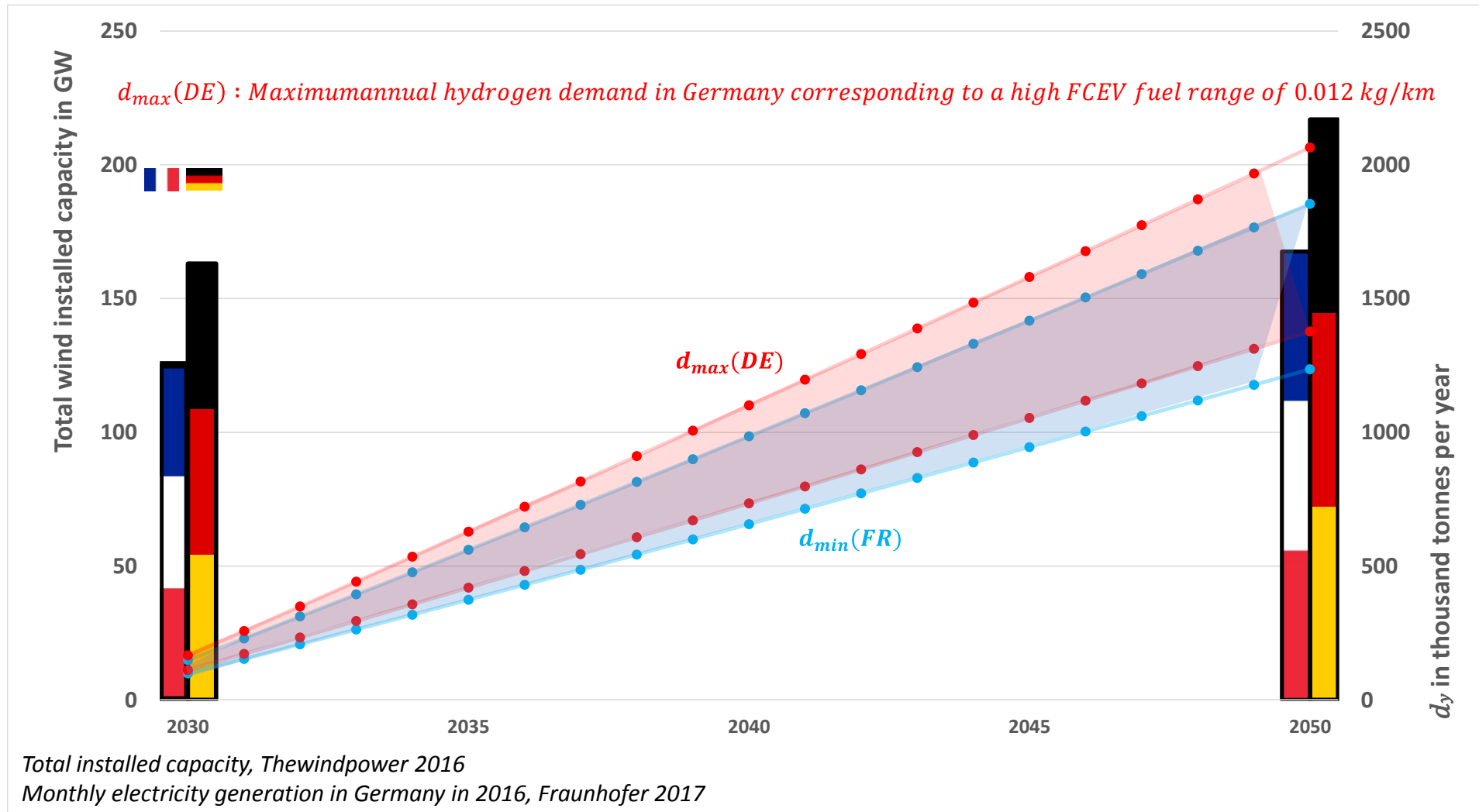
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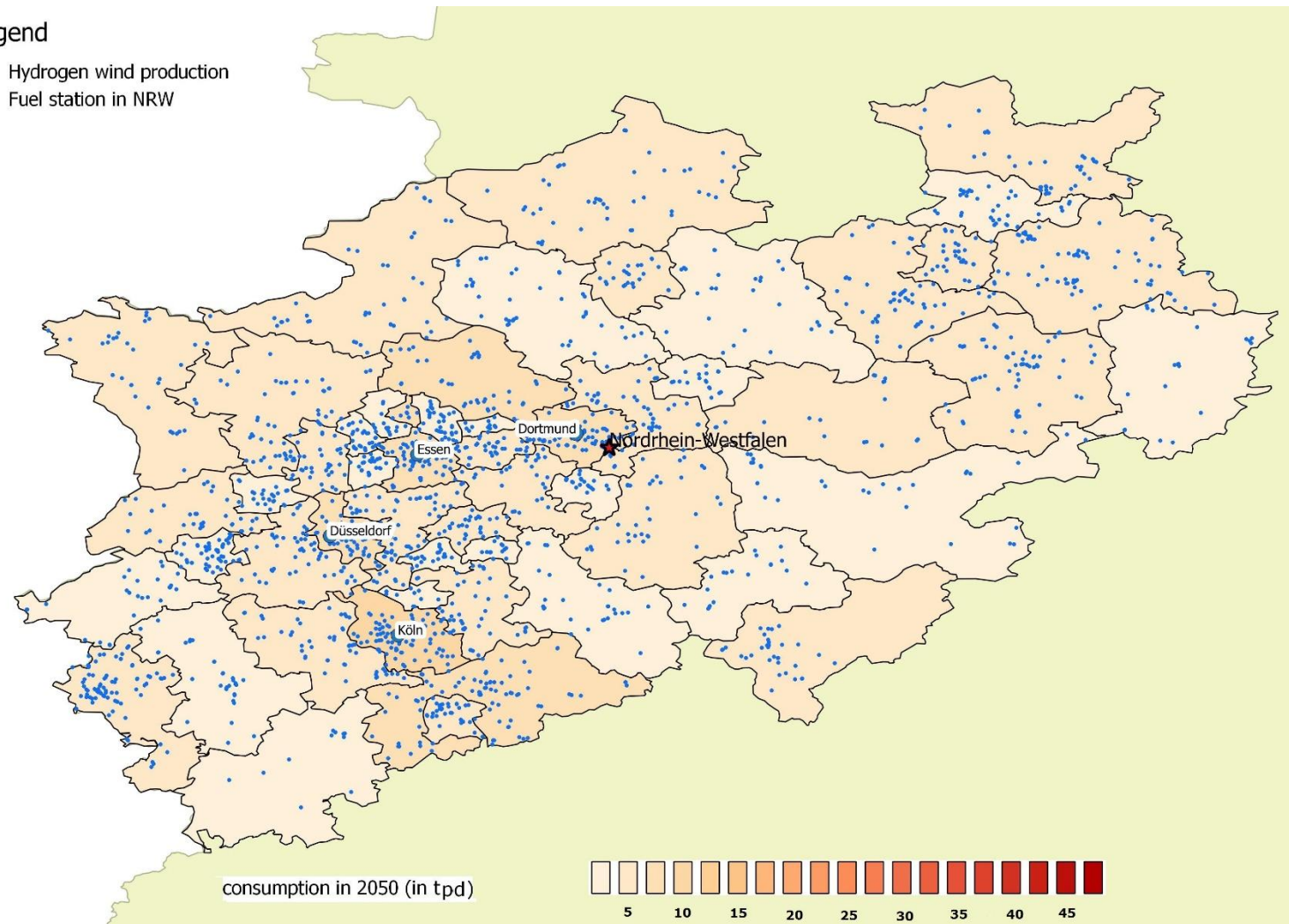
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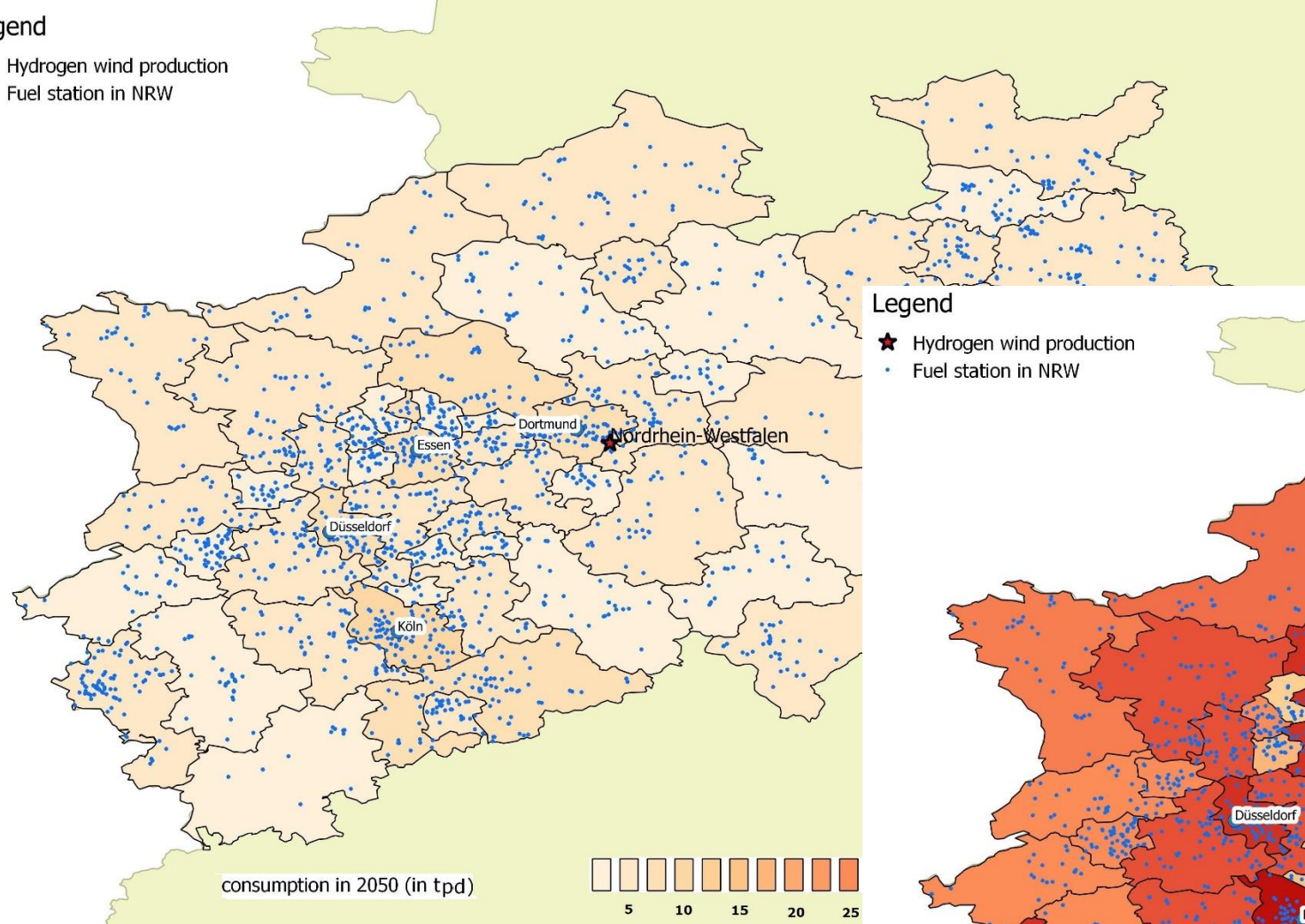
Results, NRW Hydrogen demand in 2030

Legend

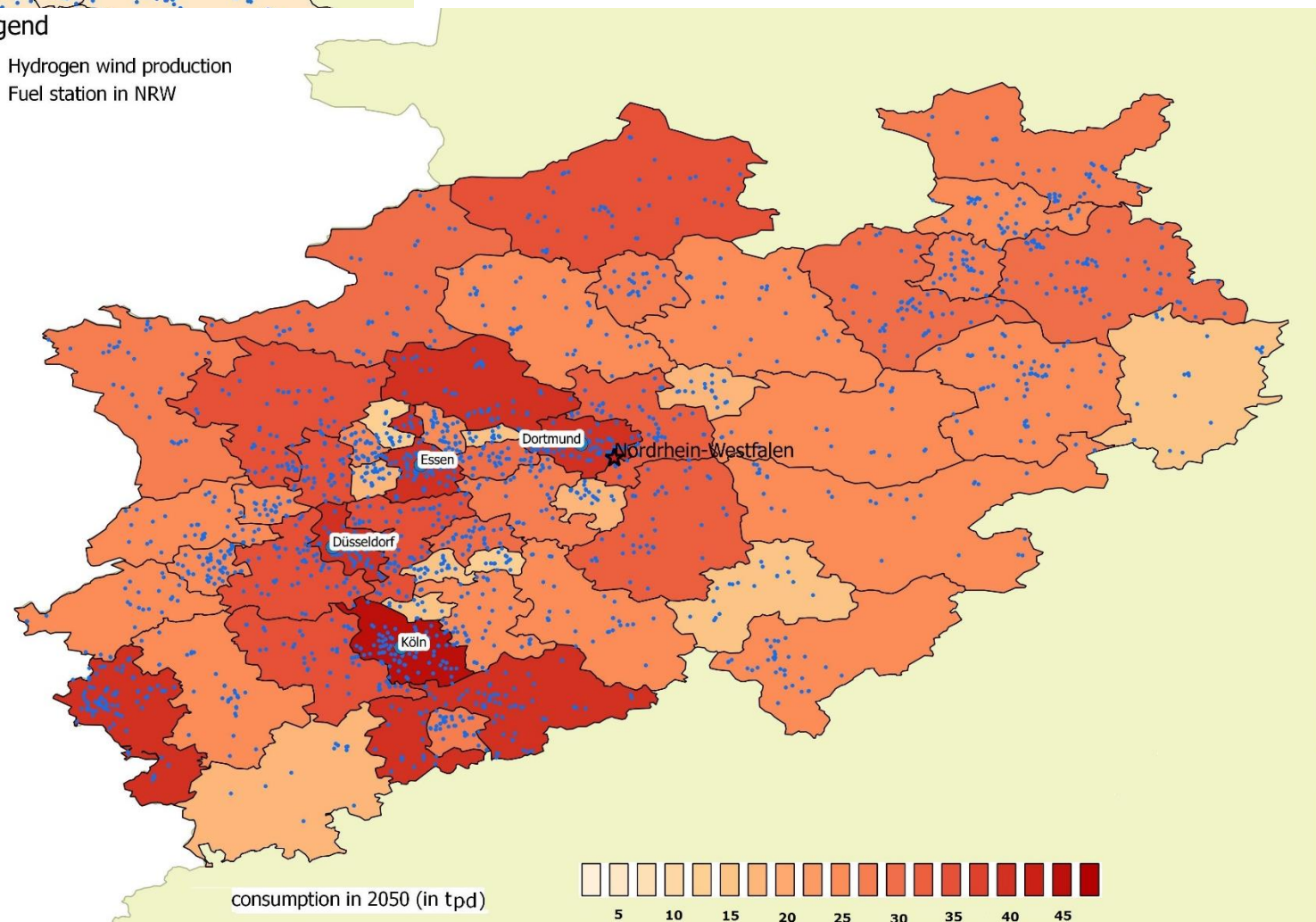
- ★ Hydrogen wind production
- Fuel station in NRW



2050



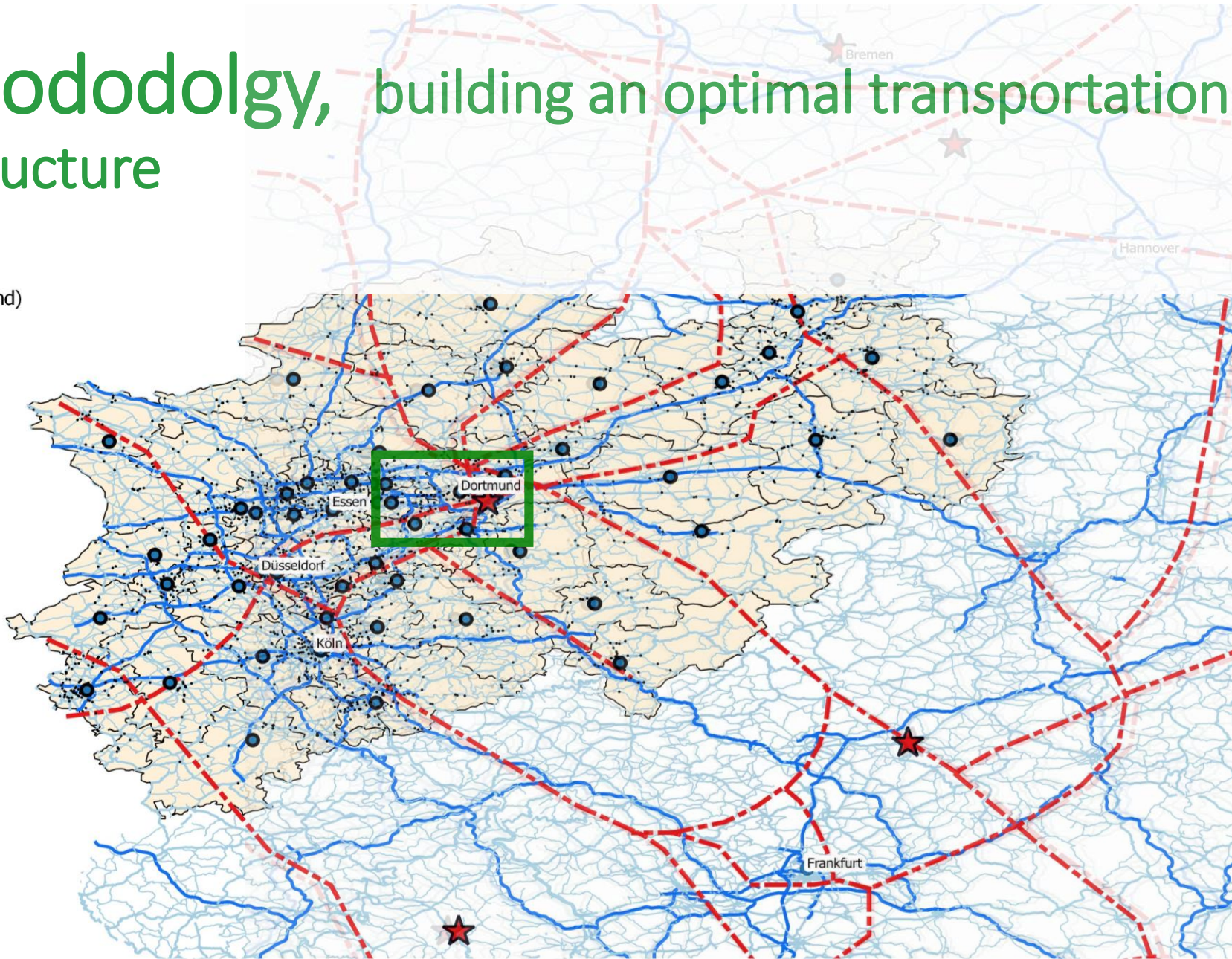
2030

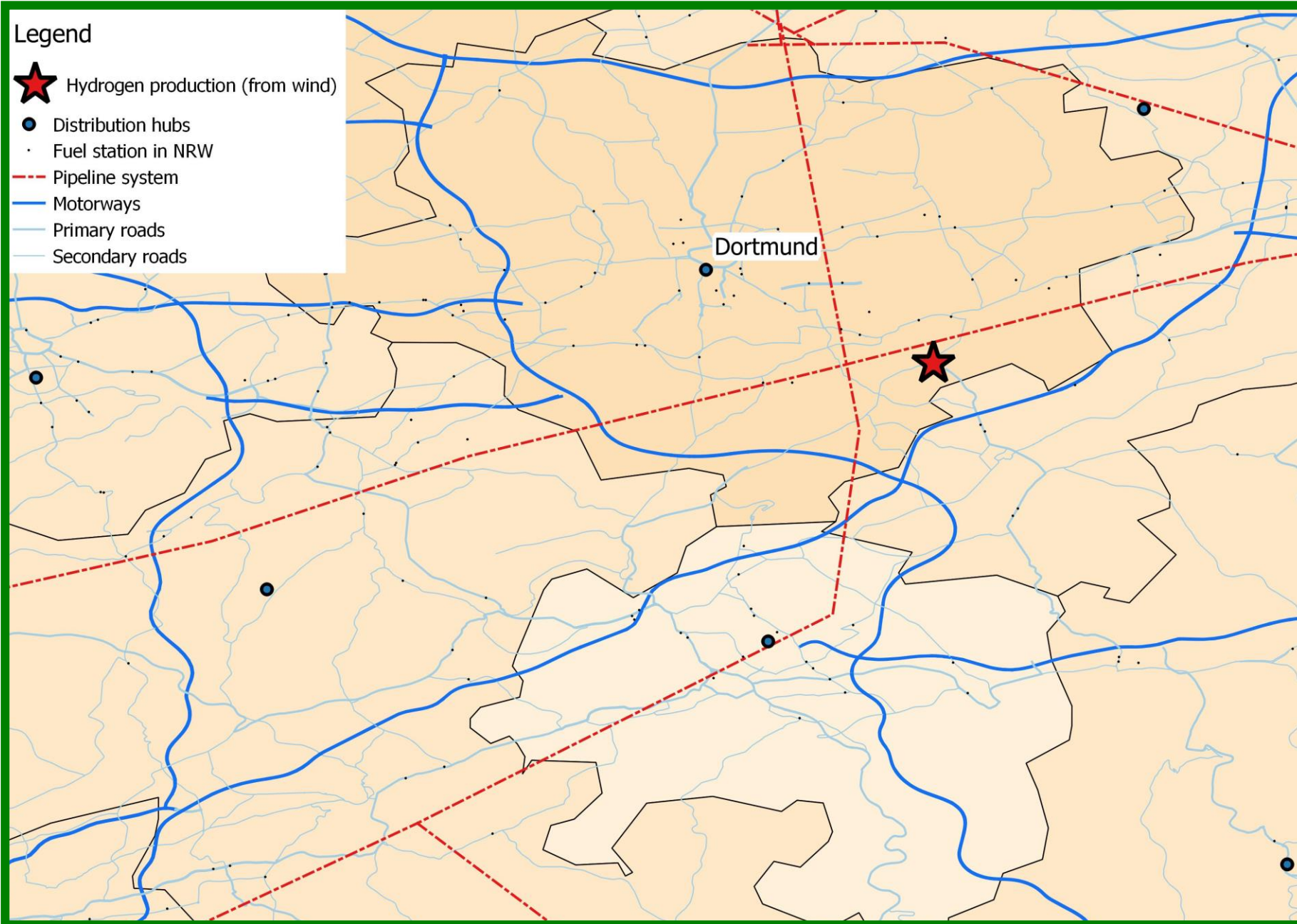


Methodology, building an optimal transportation infrastructure

Legend

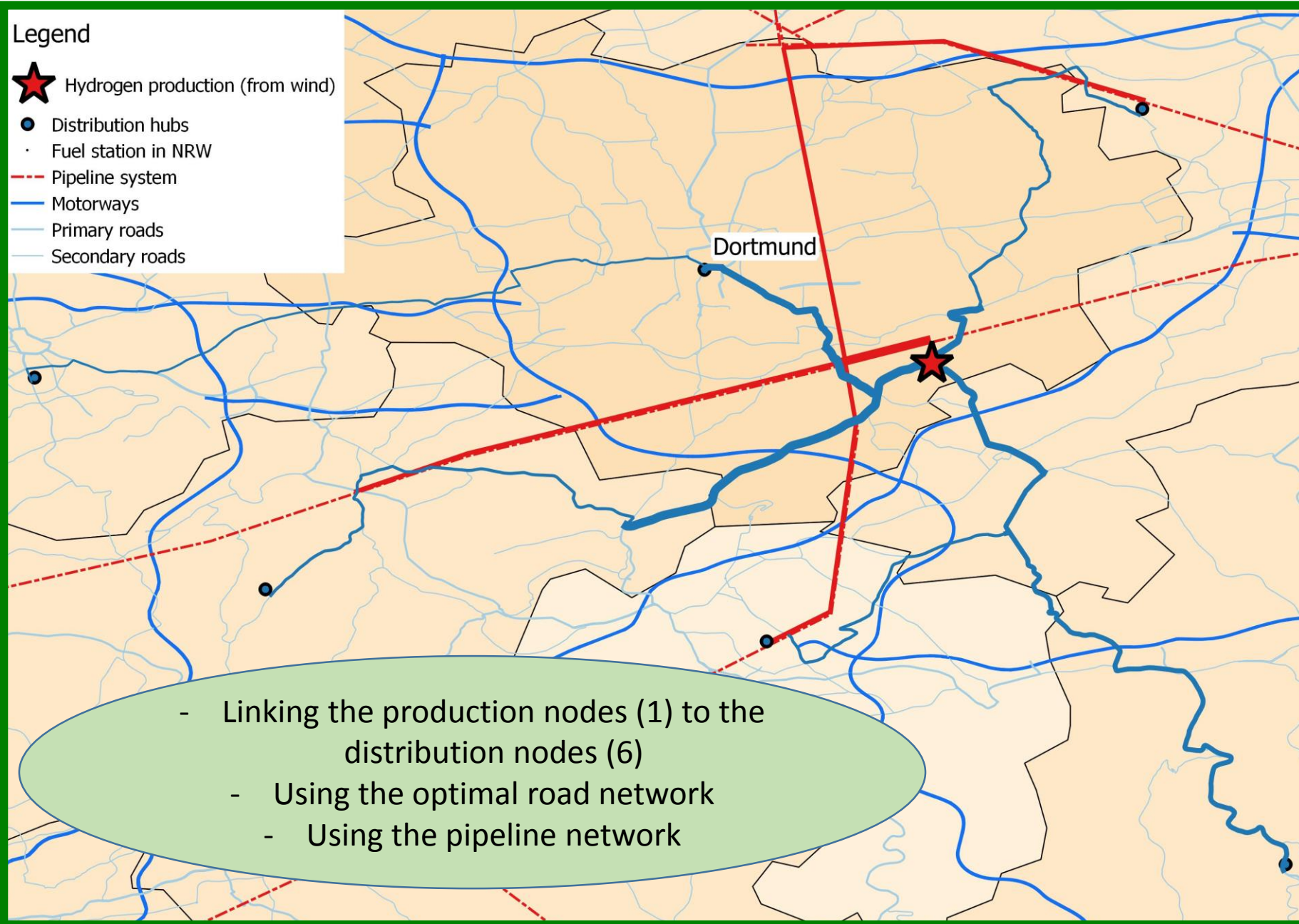
- ★ Hydrogen production (from wind)
- Distribution hubs
- Fuel station in NRW
- Pipeline system
- Motorway
- Primary roads
- Secondary roads
- NRW region





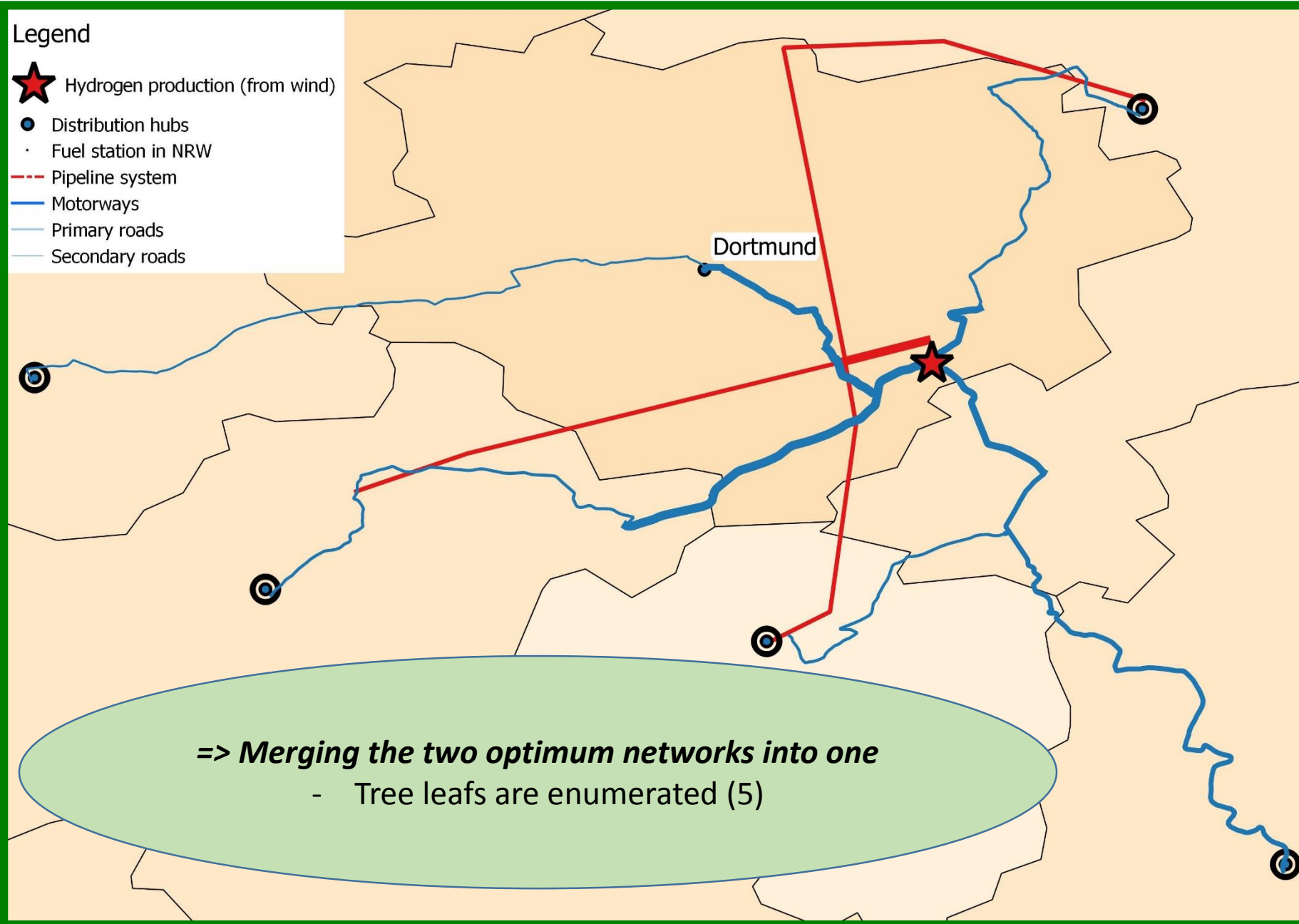
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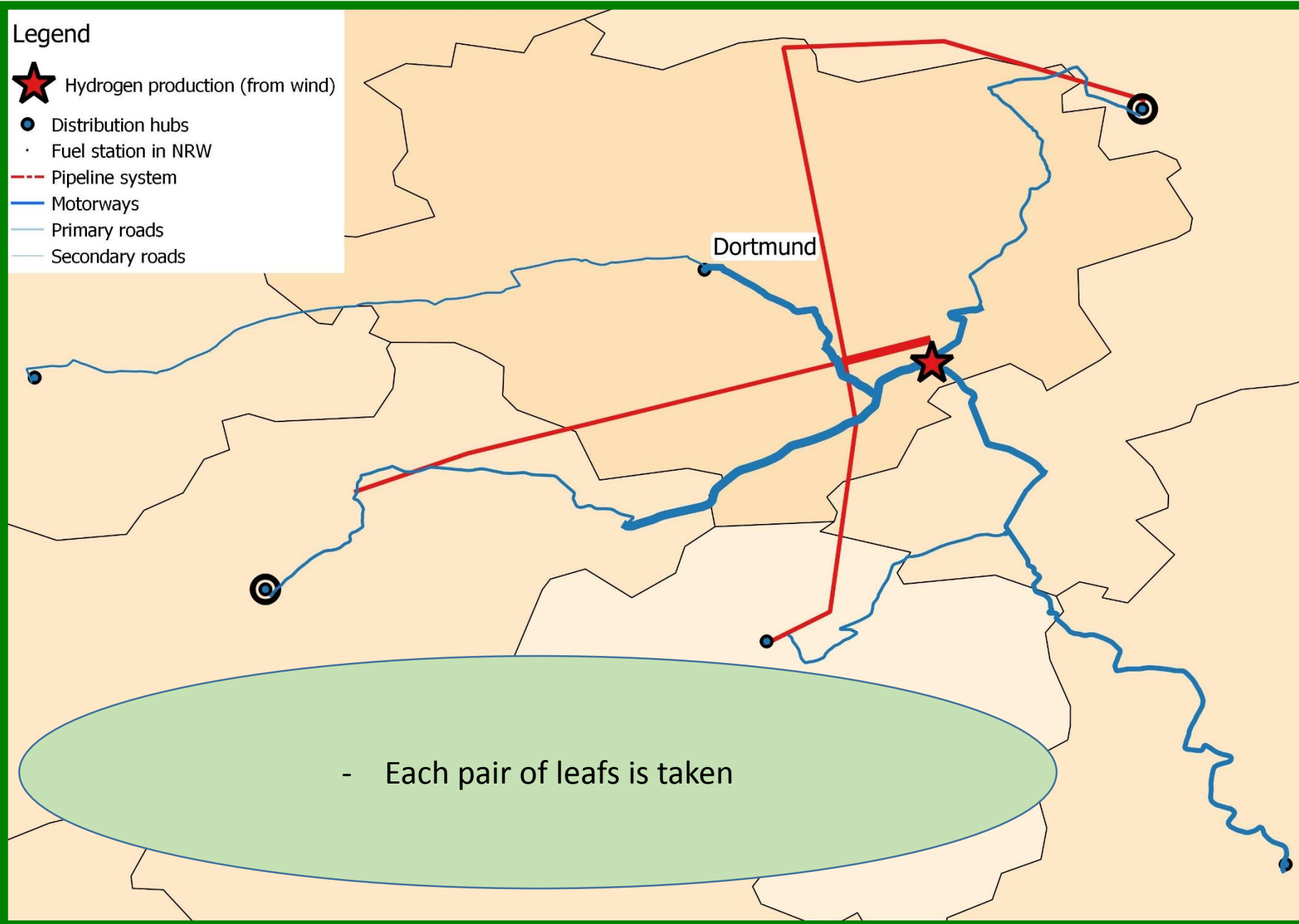
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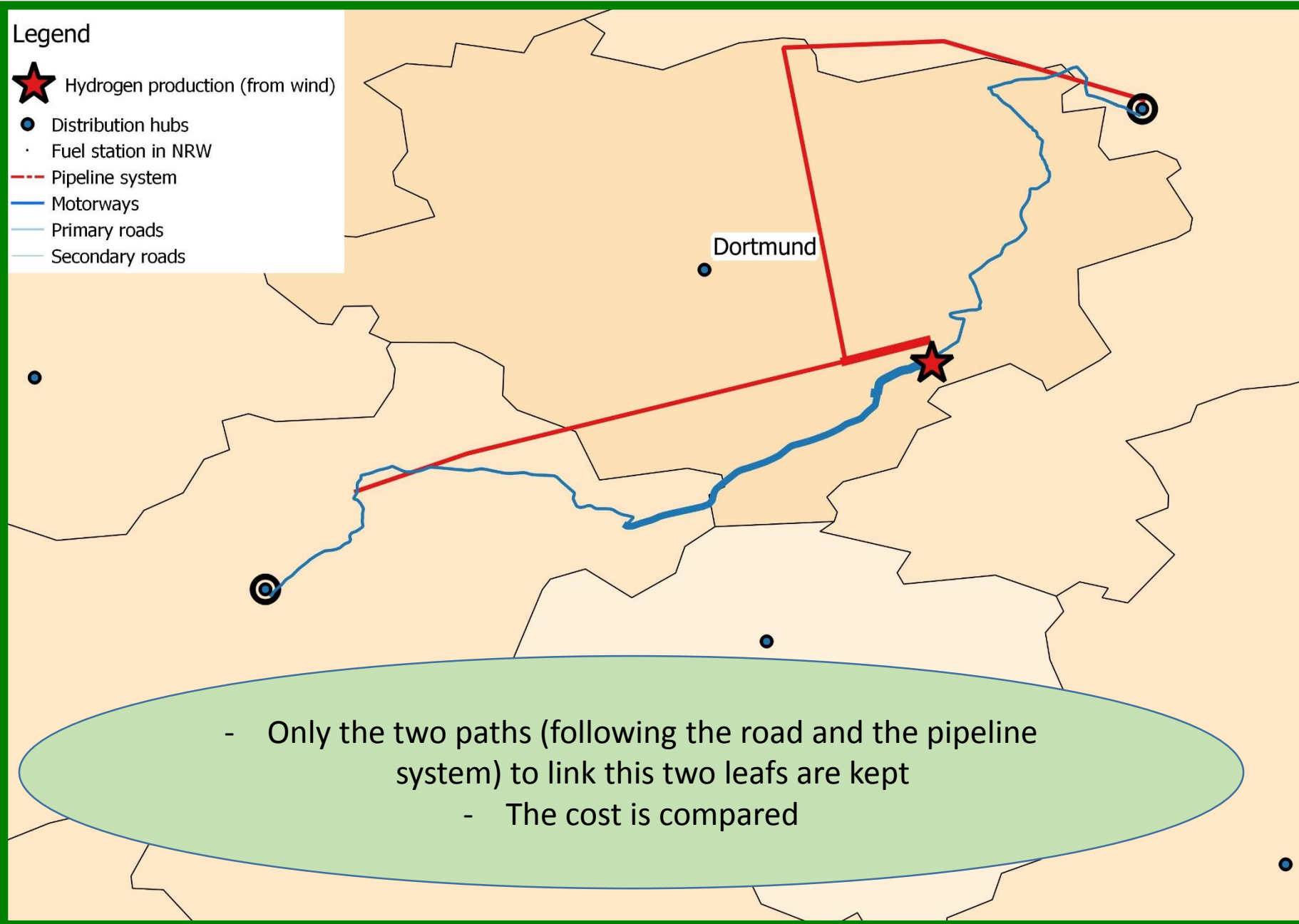
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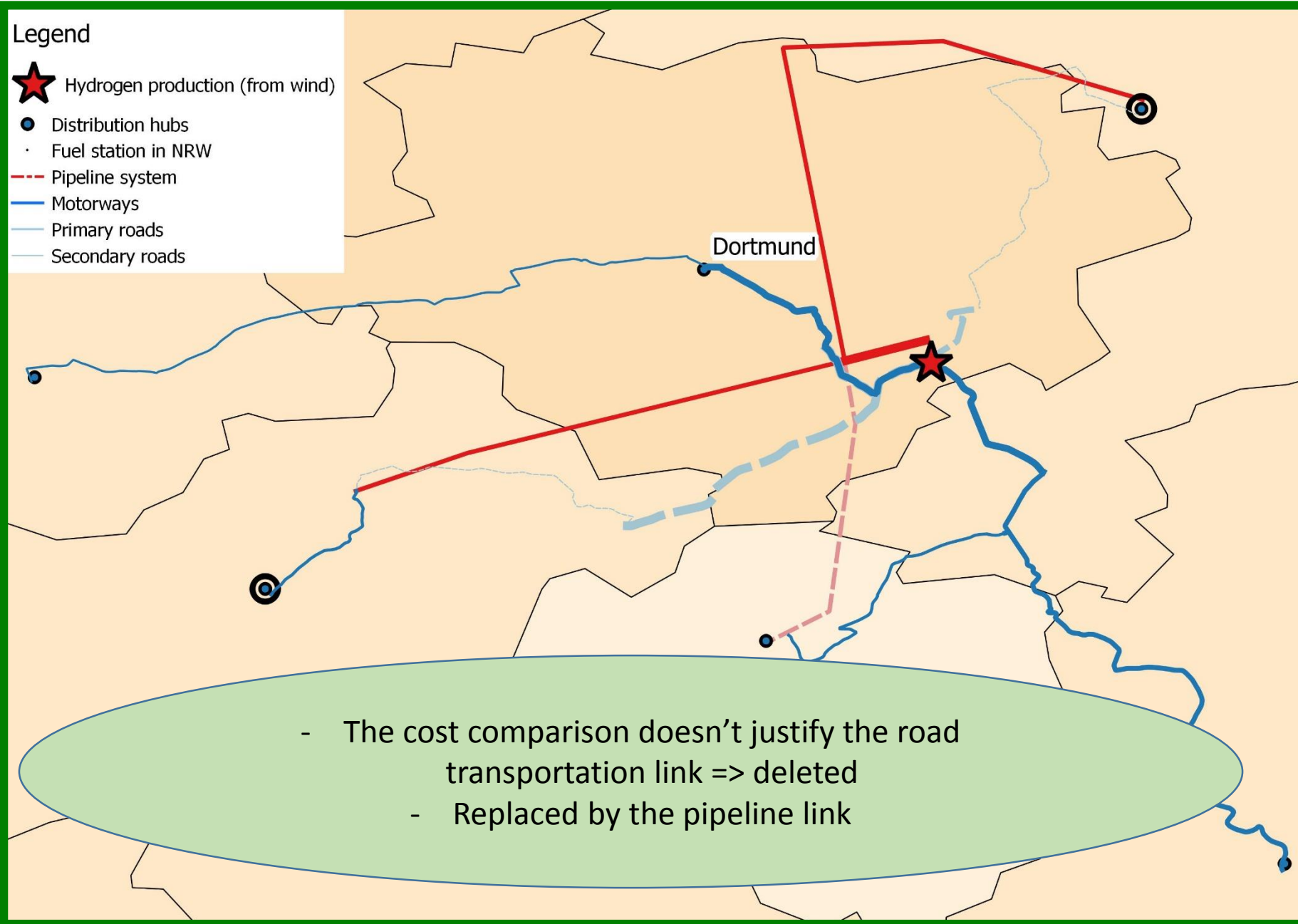
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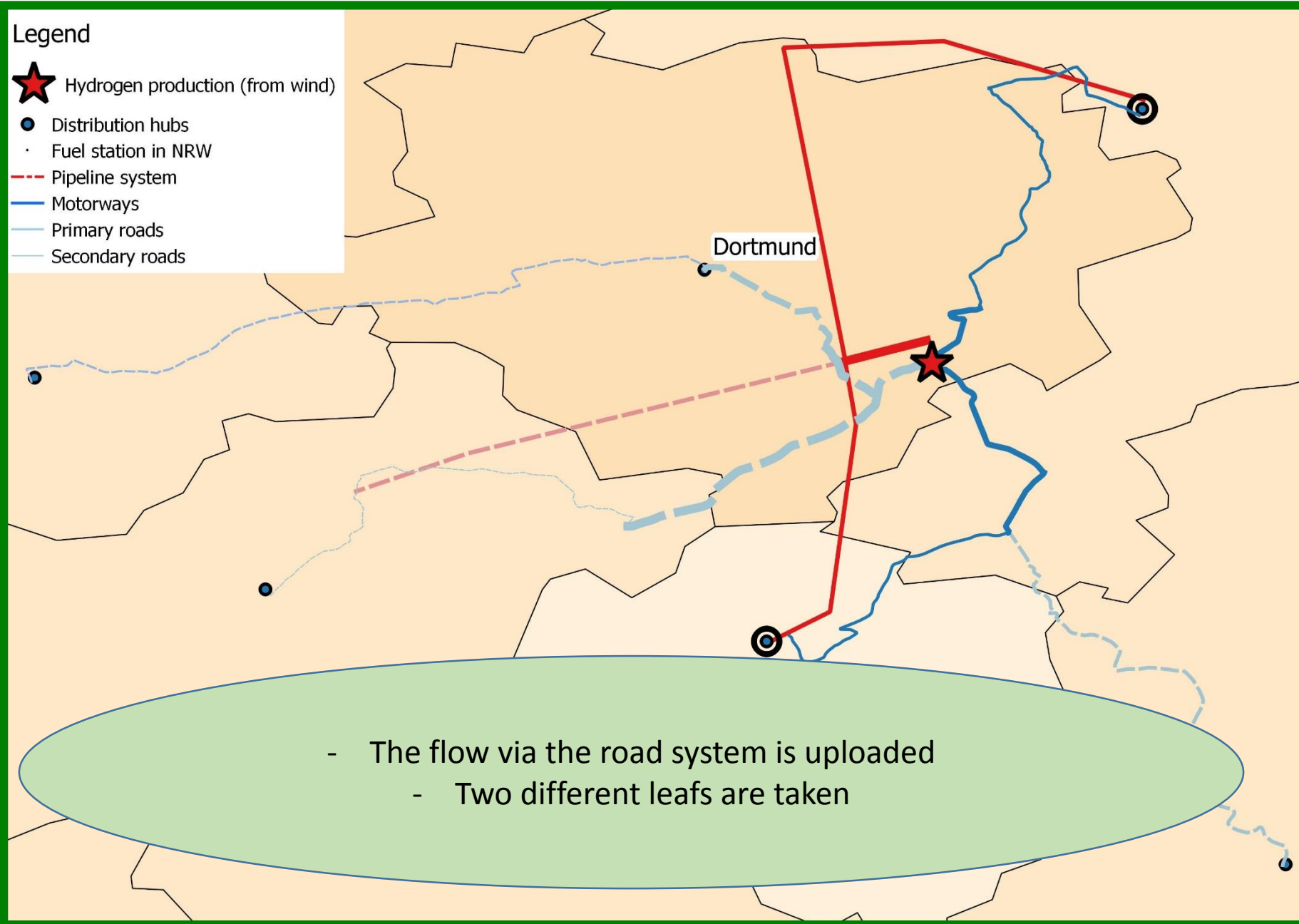
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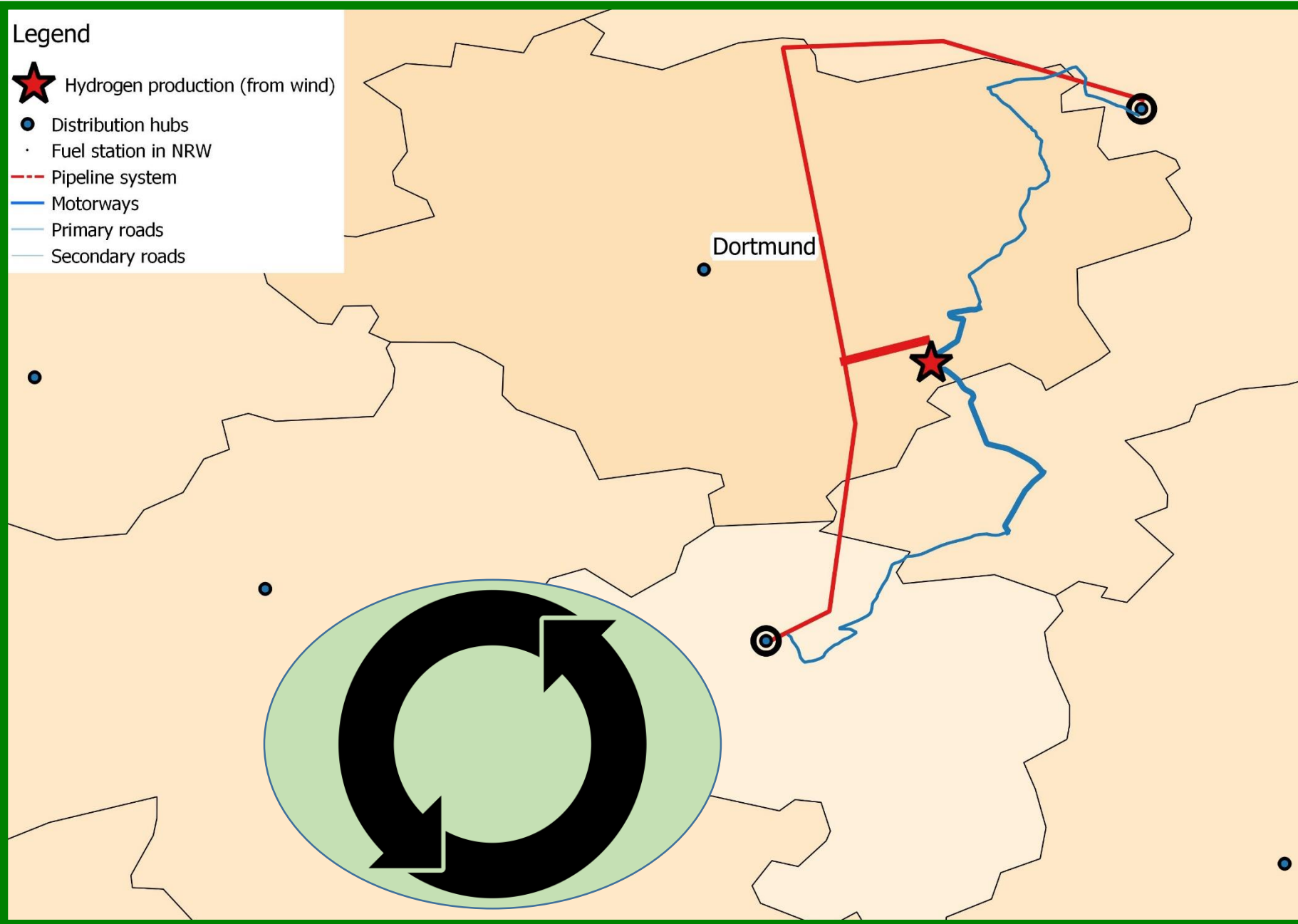
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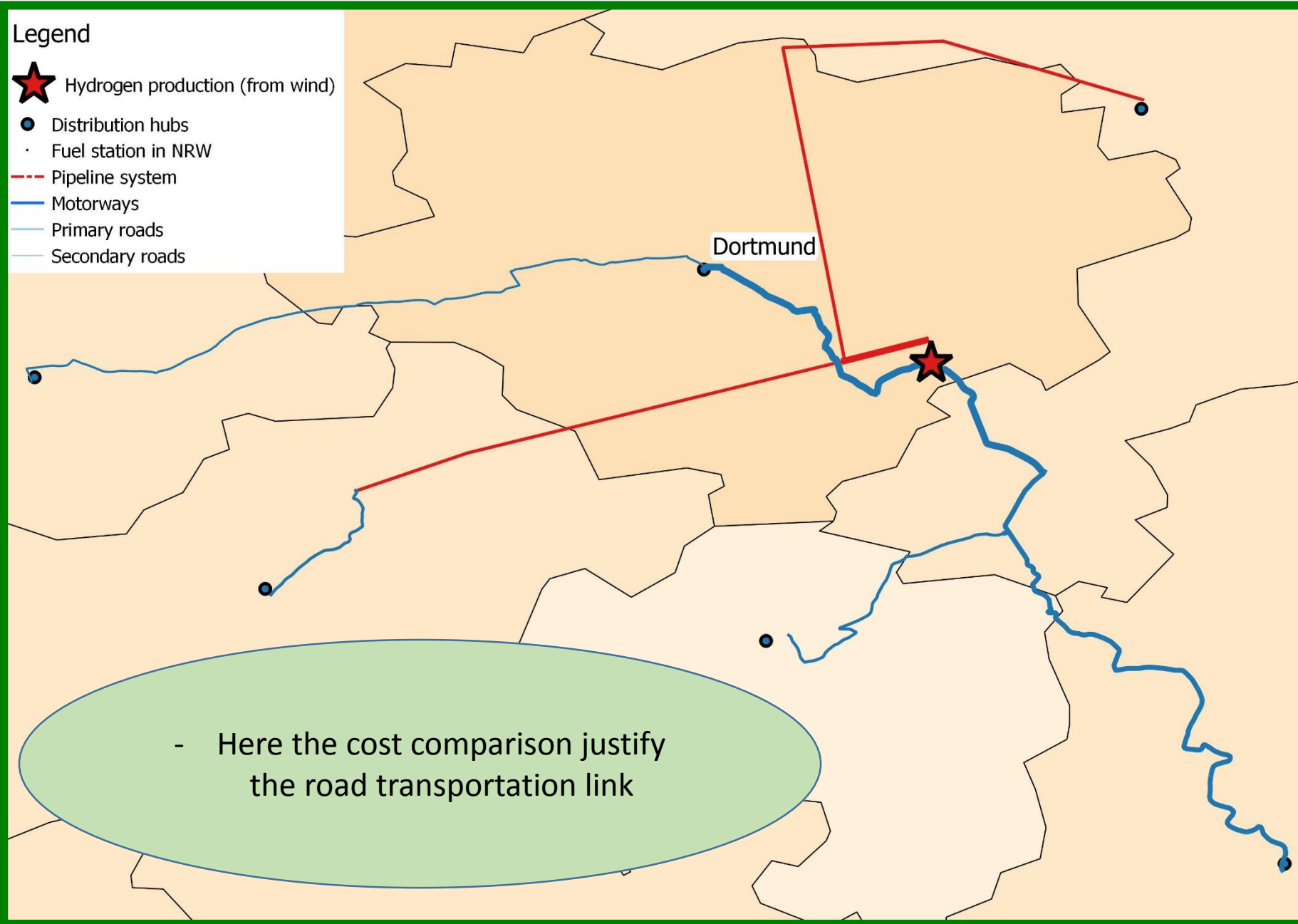
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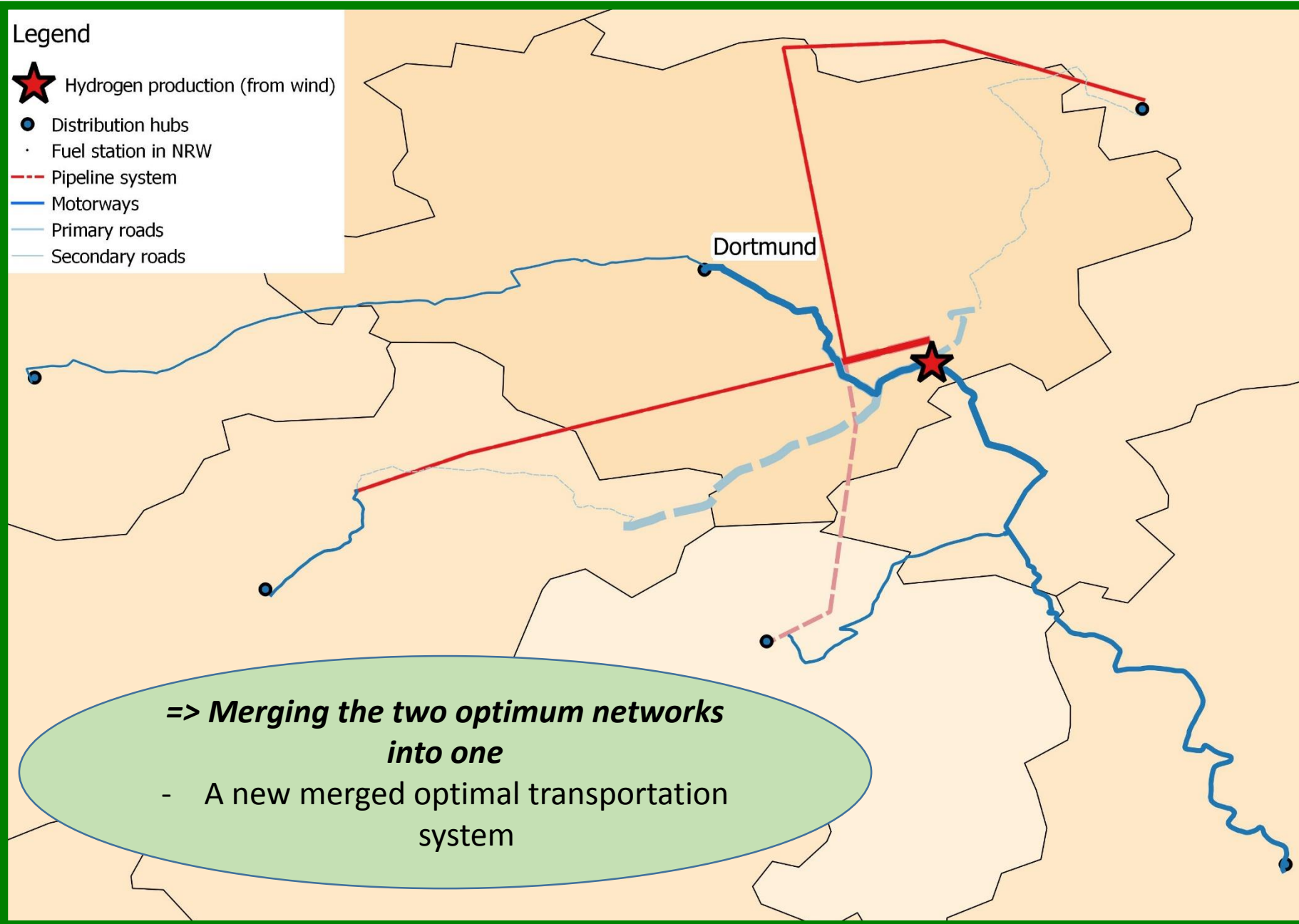
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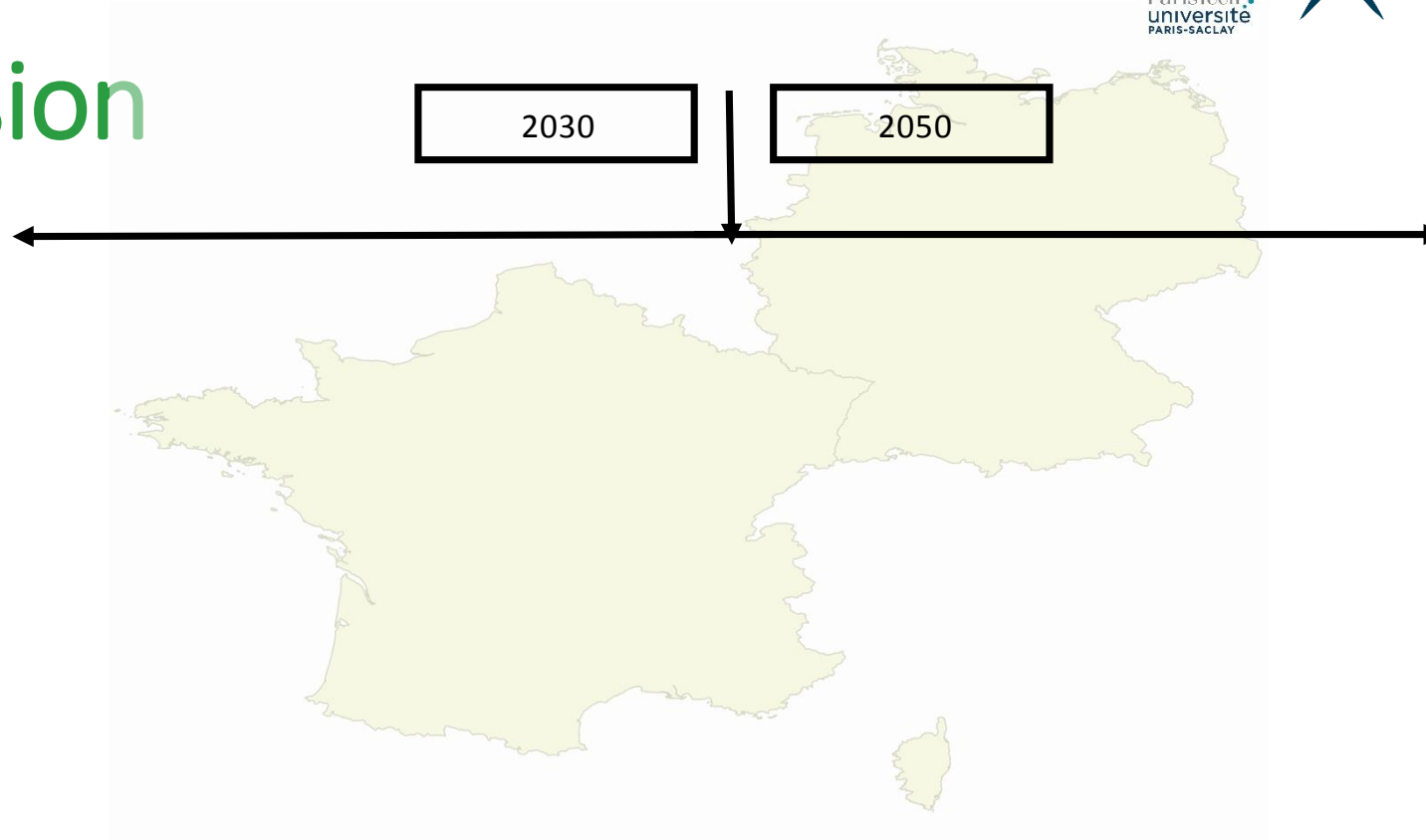
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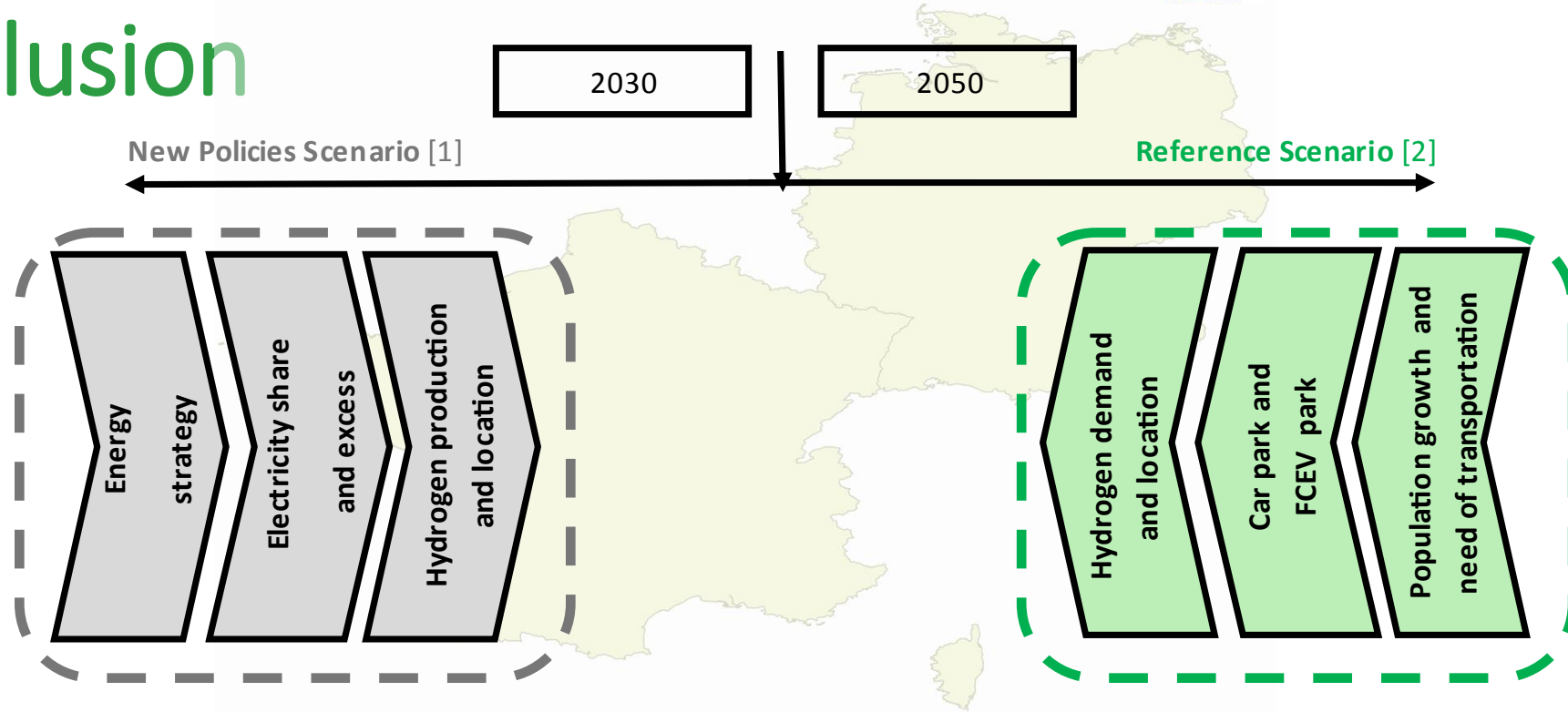
Conclusion



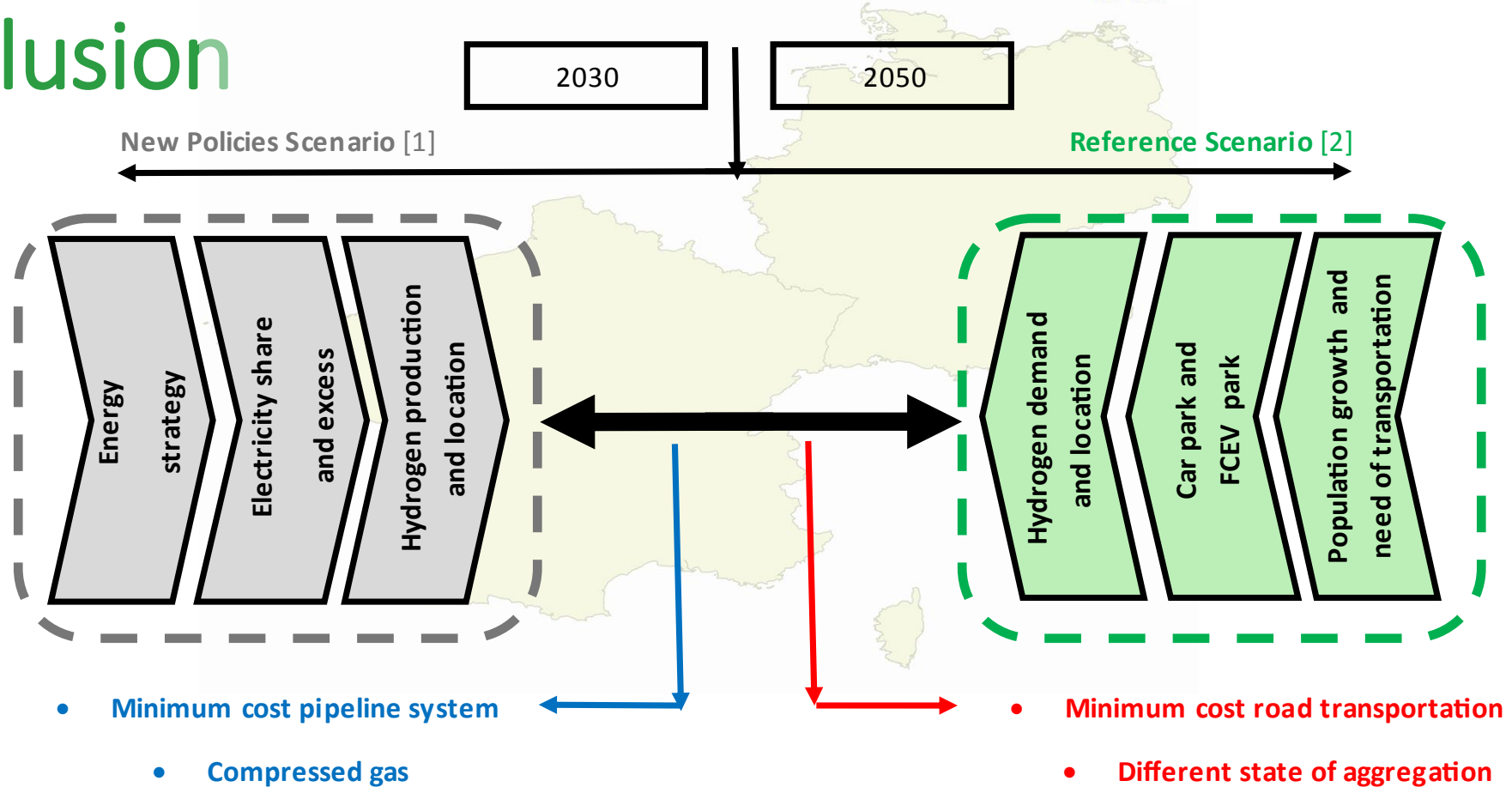
Conclusion



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