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Competence supply for electrification in Sweden

An initial mapping of skills supply critical for electrification

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Electrification is one of the key solutions for a sustainable energy system

The Swedish energy system:

- Fossil-free electricity production
- Almost fossil-free heat production
- Low CO_2 emissions per capita
- Energy intensive industry
- High export dependency

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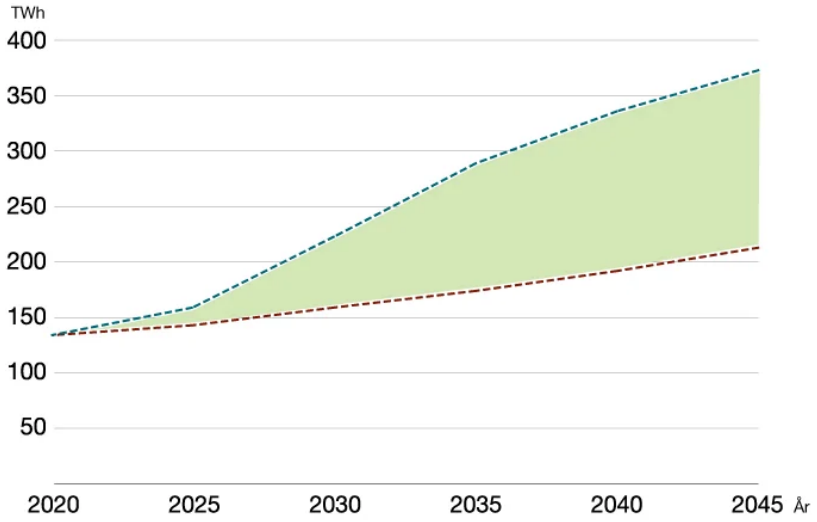
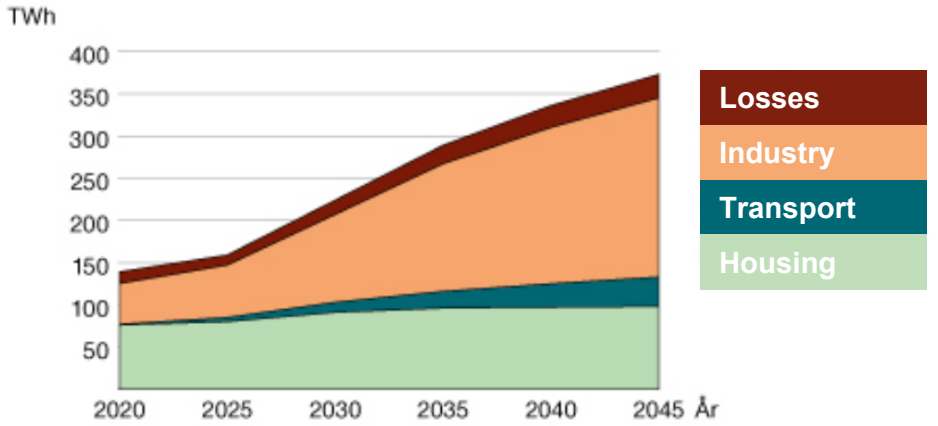
Electricity demand is expected to increase in the range of 210-370 TWh until the year 2045

dec 2022





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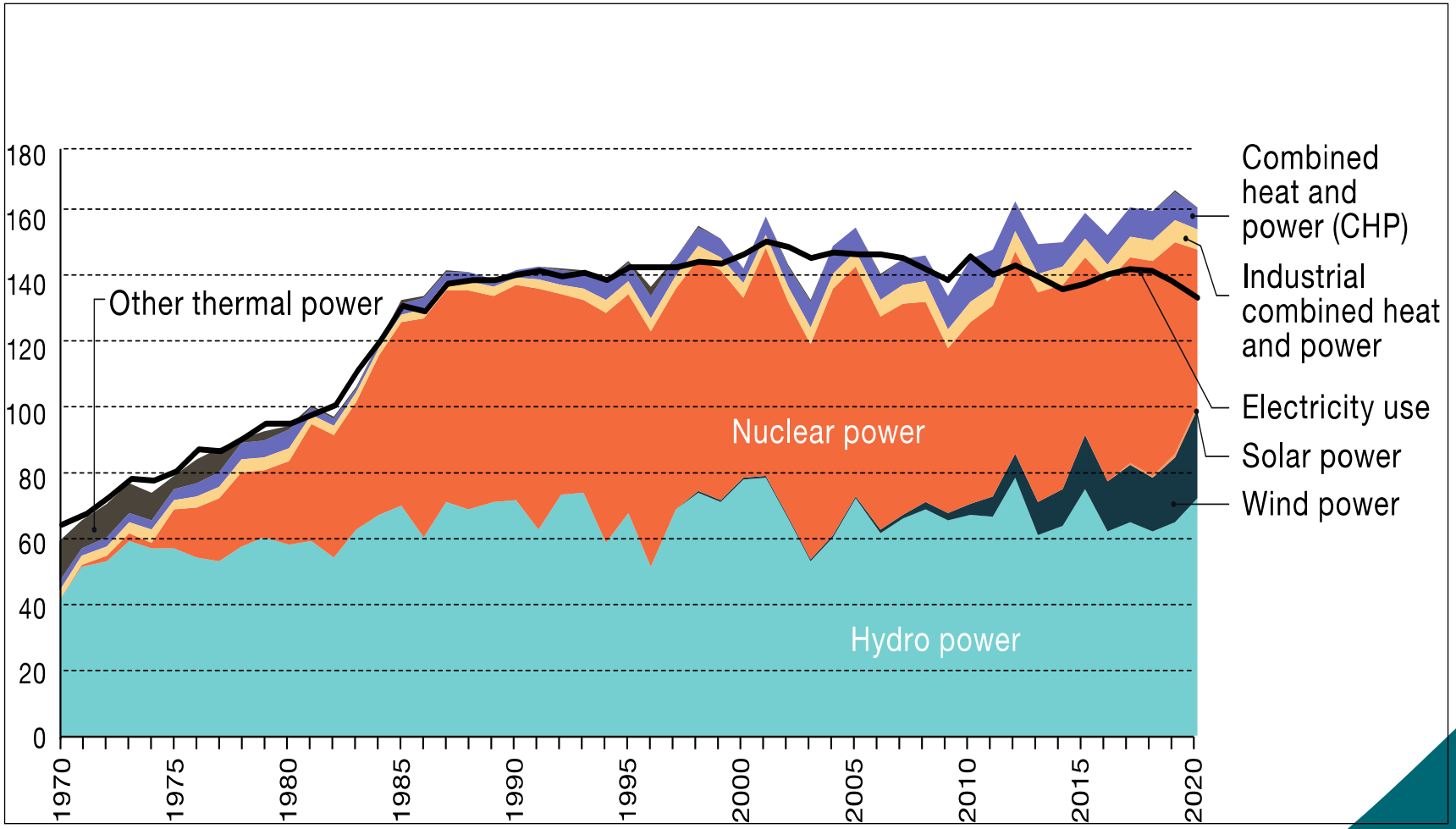
Electricity use and electricity generation per type of power 1970–2020, TWh



Electricity use 2045

210-370 TWh

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Competence supply

National Mobilisation

The Swedish Energy Agency coordinates a national mobilisation for skills and occupational supply/needs in electrification

Map, analyse and clarify the need of skills and occupations in relevant professional categories. The mapping takes a holistic outlook on electrification and the transition to a fossil free energy system

Identify barriers and propose measures for skill supply within the energy sector and associated sectors in the short and long-term

Enable close and coordinated cooperation between authorities and industry actors to strengthen joint action in questions related to skills supply for electrification

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Mapping and analysis

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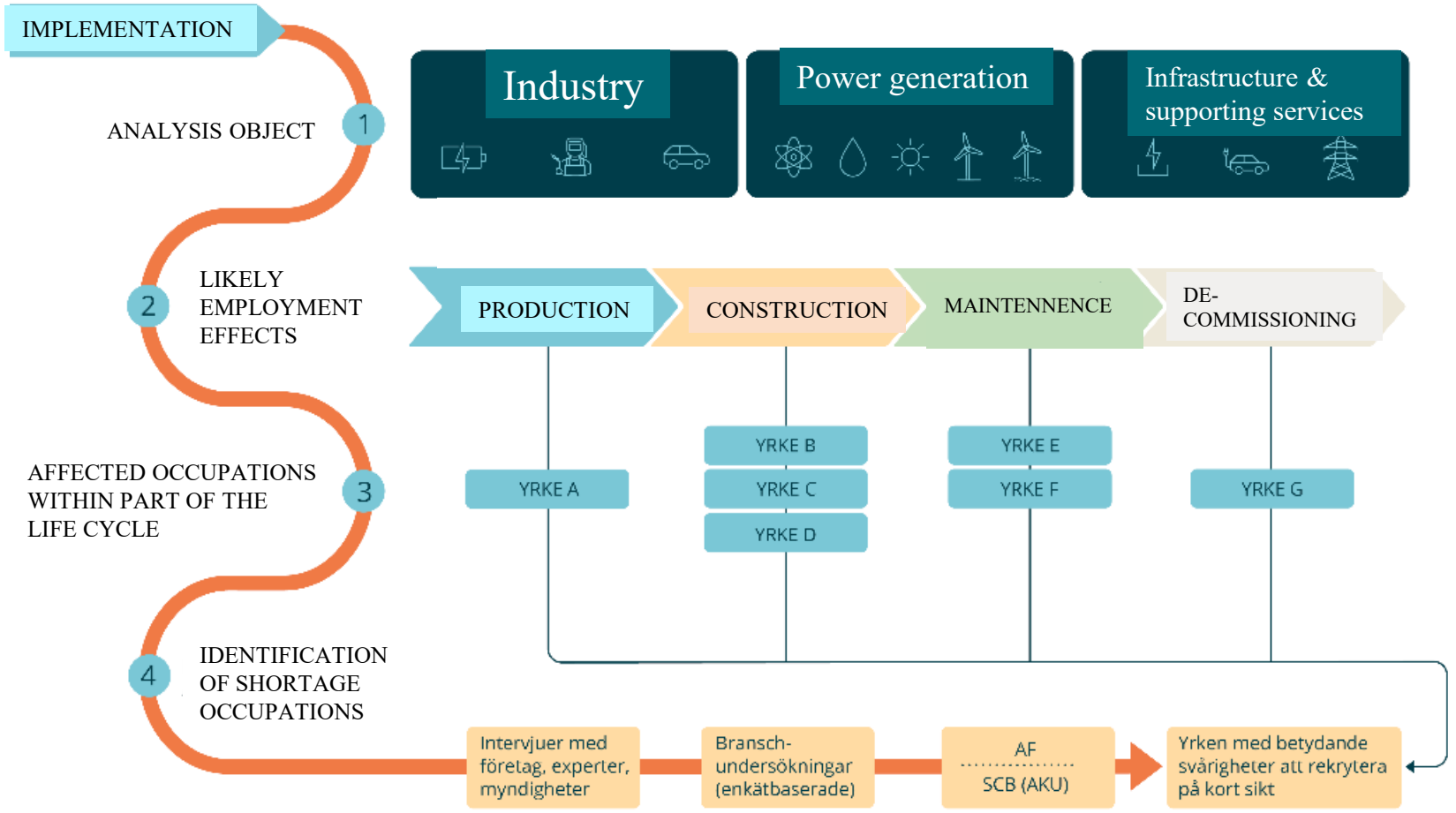
Initial mapping of skills and occupations



THE EDUCATIONAL SYSTEM

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Results

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Employment effects of electrification

Energy sources

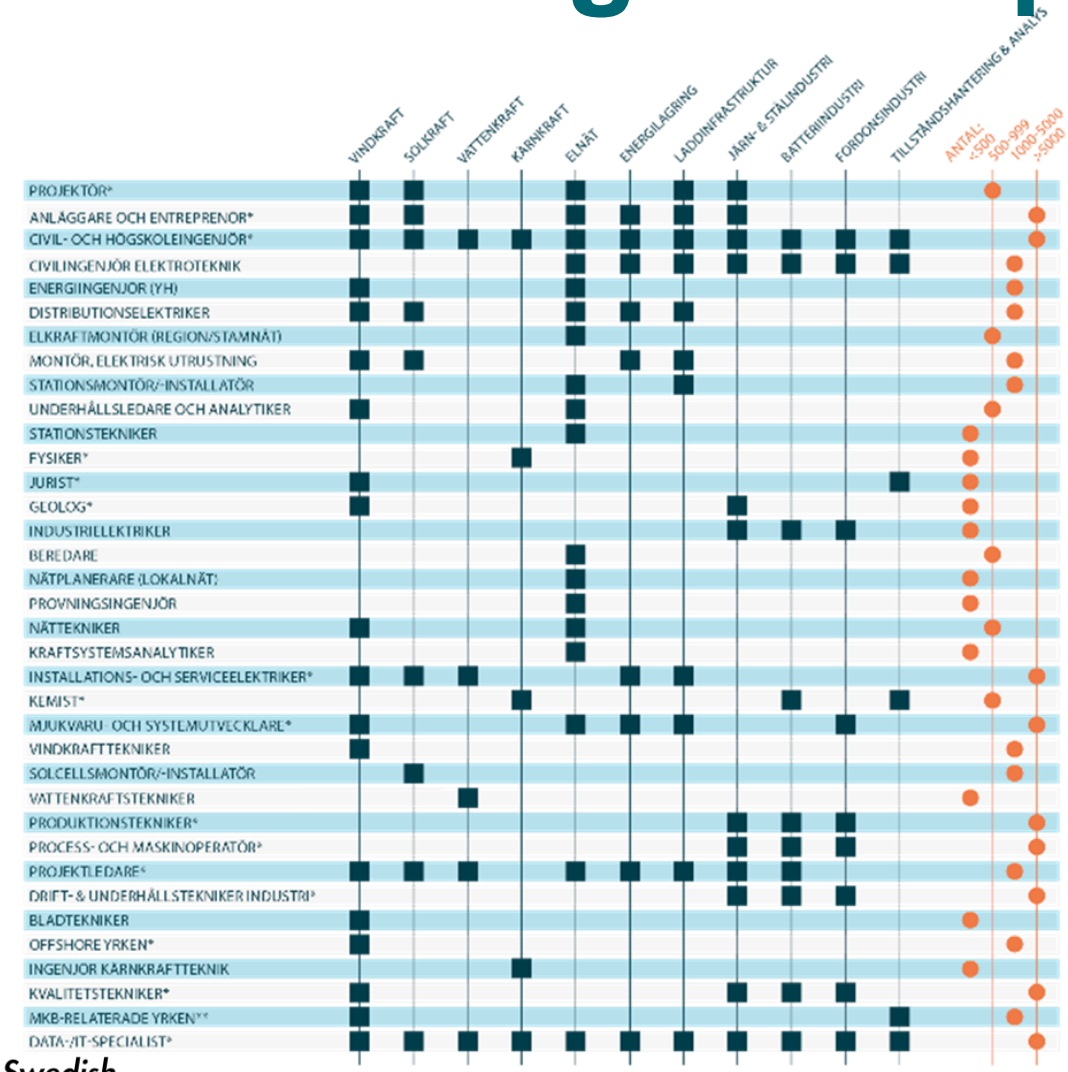
- Wind power (expanding)– establishment, operation and maintenance phases, new competence needs for offshore wind power
- Solar power (expanding)- effects appear mainly at large parks, installation and connections
- Hydropower (stable)- subject to new regulations, effects in operation and maintenance
- Nuclear power (large potential development)- large potential effects from development to waste phases

Employment effects of electrification

Industry sectors, infrastructure and supporting services

- Iron and steel industries- transforming and electrifying their processes, large investments and new industry sites, large need of employment to build, operate and maintain the facilities, reskilling existing workforce
- Automotive industry- specific and technical skills and effects related to batteries, energy storage,power grid and charging infrastructure etc
- Power grids at all levels in need of upgrading and development, effects related to production and establishment of new grids as well as the maintenance of the existing system
- Supporting services and licencing authorities- effects seen in new establishments

35 shortage occupations identified



* Avser yrken på arbetsmarknaden som helhet

** Avser yrken som krävs för genomförande av miljökonsekvensbeskrivning och motsvarande utredningar

- Shortage occupations key to enable a rapid electrification and a timely energy transition
- Short-term perspective > 5 years
- Occupations characterised by a high average age
- Men dominate the majority of occupations

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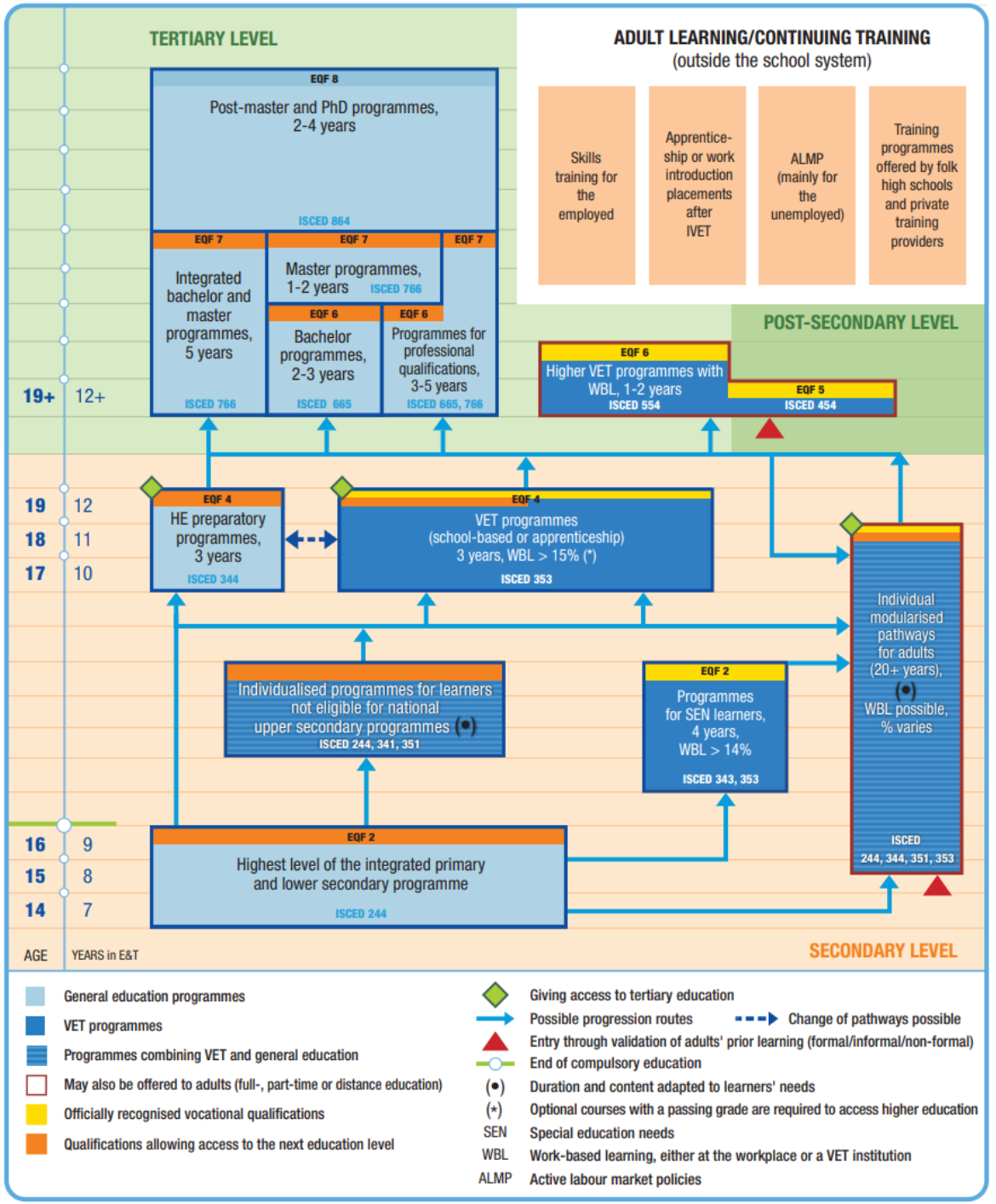
Matching occupations with educational pathways

Educational pathways characterised by few applicants and low examination rates



Source: Cedefop and ReferNet Sweden, 2019

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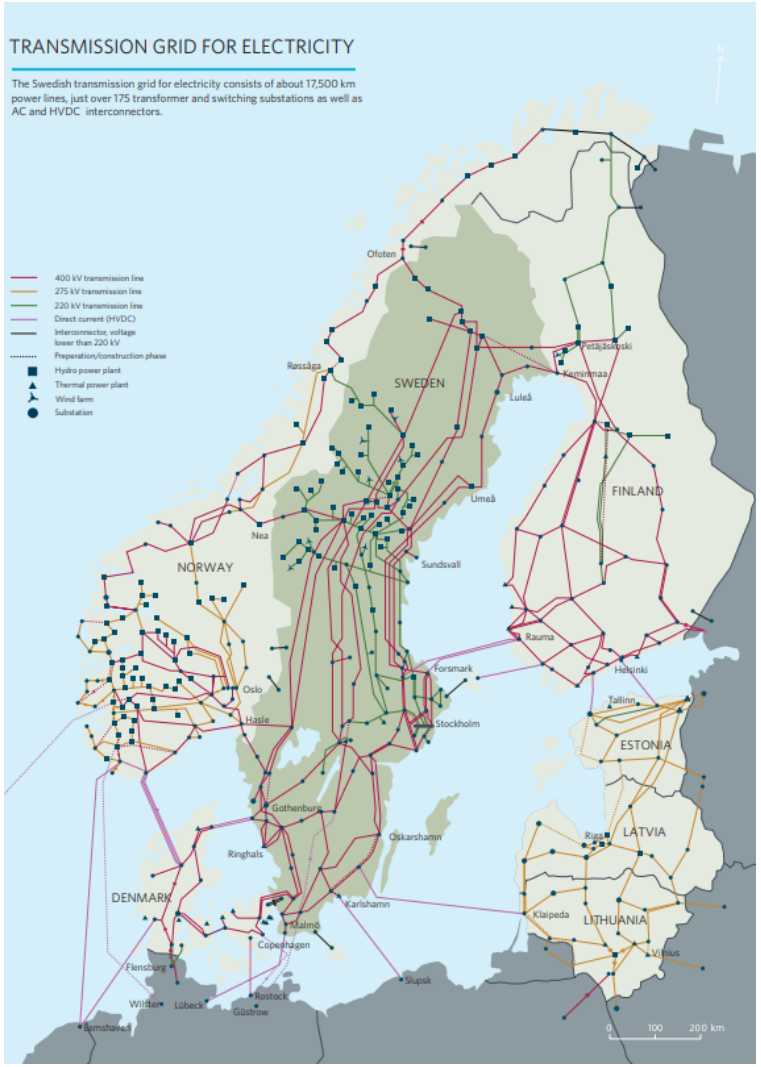
Main conclusions

- Many skills and occupations linked to electrification
- Gender structure with few women aggravates the supply of competence
- The effects of electrification varies between sectors and industries and give rise to diversified competence needs
- Additional and larger competence supplies are needed at a later stage of industrial investments and establishment
- Several of the identified shortage occupations can become bottlenecks for society's electrification
- Increasing demand for both traditional and new competences
- Larger employers have advantages in finding, recruting and educating workers compared to smaller employers



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Next steps

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Work in progress

- United action and cooperation
- Challenges, opportunities and hindrance
- Analysing and proposing measures

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