



Winter 2021
ETSAP meeting

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Energy system analysis of politics of Norwegian parties

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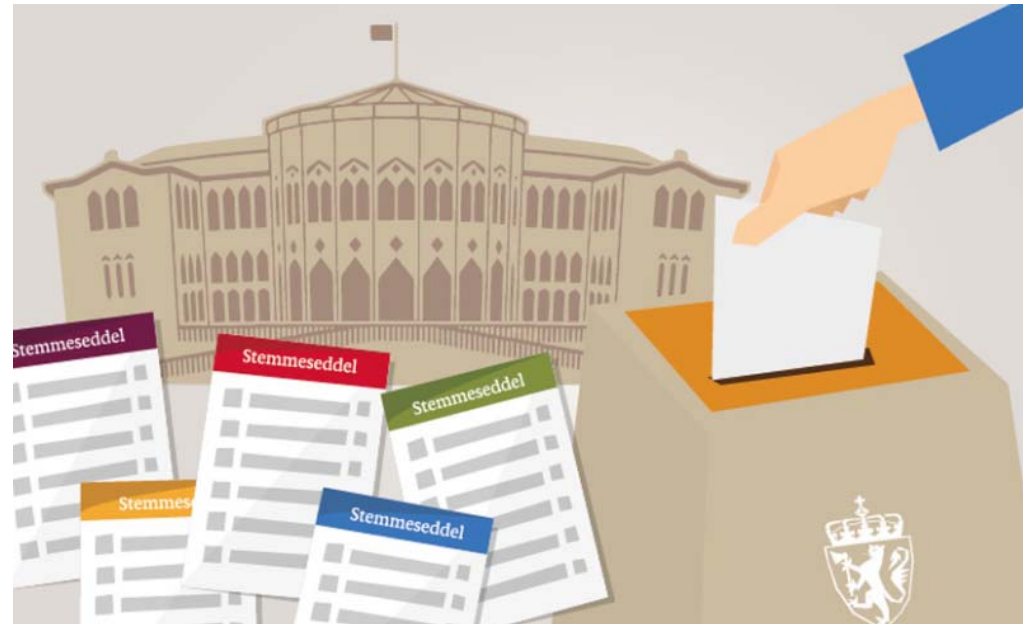
Kari Aamodt Espegren

Energy system analysis

Institute for Energy Technology (IFE)

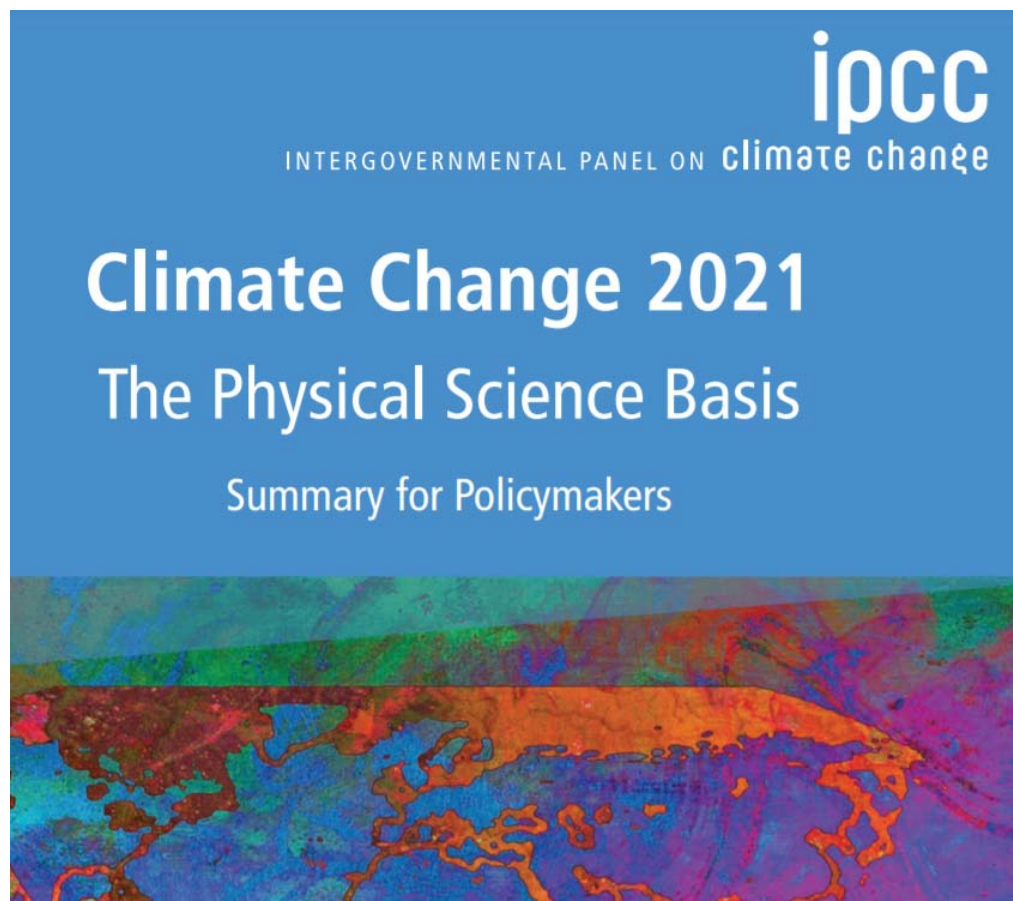
Background and motivation

- Parliament election, 13.09.2021
- Climate and energy high focus in election debate
 - Petroleum activity
 - CO₂ tax
 - Nature conservation
 - EU-cooperation
 - New industries and technology
- Focus on individual topics rather than holistic solutions



Our study: What are energy system effect of political party manifestos?

Background and motivation



How will different politics affect the energy system?

An energy politic analysis of the political parties in Norway

Jørgen Osnes

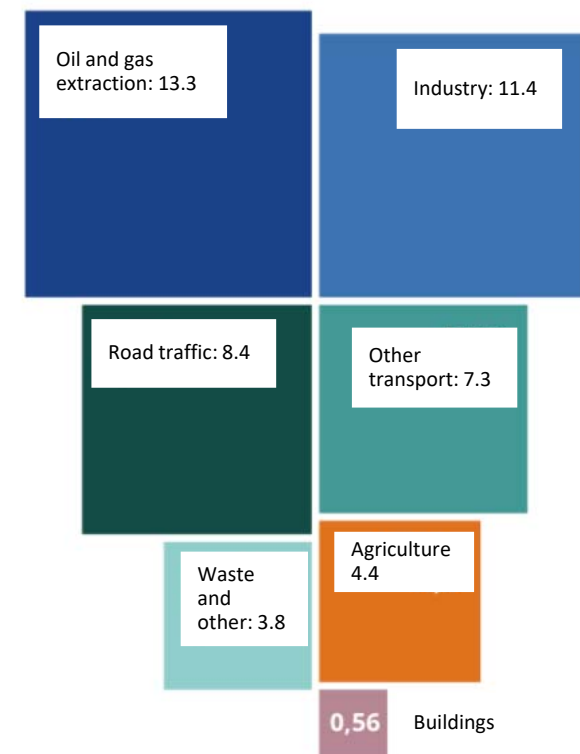


Thesis submitted for the degree of
Master in Renewable Energy Systems
30 credits

Norwegian energy system and emissions

- Electricity generation mainly hydropower
 - 2019: 93%
 - Large water reservoirs - 50% of European capacity
- Cold climate → High demand for space heating
- Historically inexpensive electricity
 - Energy-intensive industry
 - Electricity based heating system
- Large potential & good conditions for onshore and offshore wind power

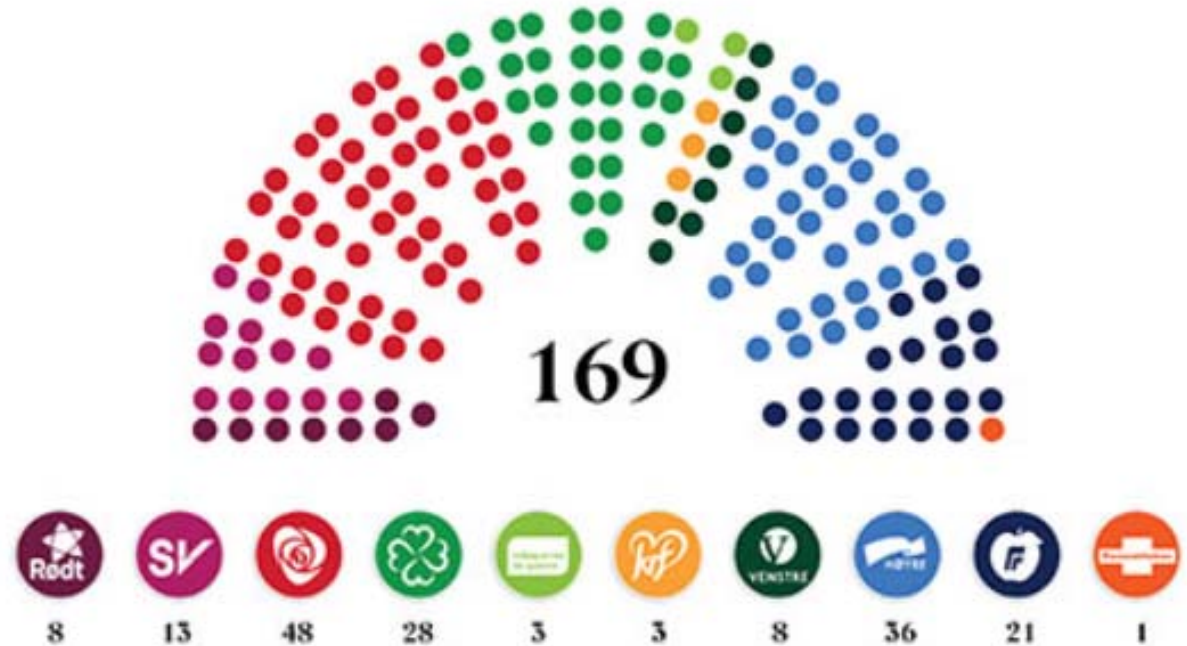
Norwegian GHG emissions 2020
Mt CO₂ equivalents: 49.3 Mt



Norwegian political parties

Parties with representative at the parliament 2021-2025 (2017- 2021)

- Ap: 48 (49)
- H: 36 (45)
- Sp: 28 (19)
- FrP: 21 (27)
- SV: 13 (11)
- R: 8 (1)
- V: 8 (8)
- MDG: 3 (1)
- KrF: 3 (8)
- PF: 1 (-)



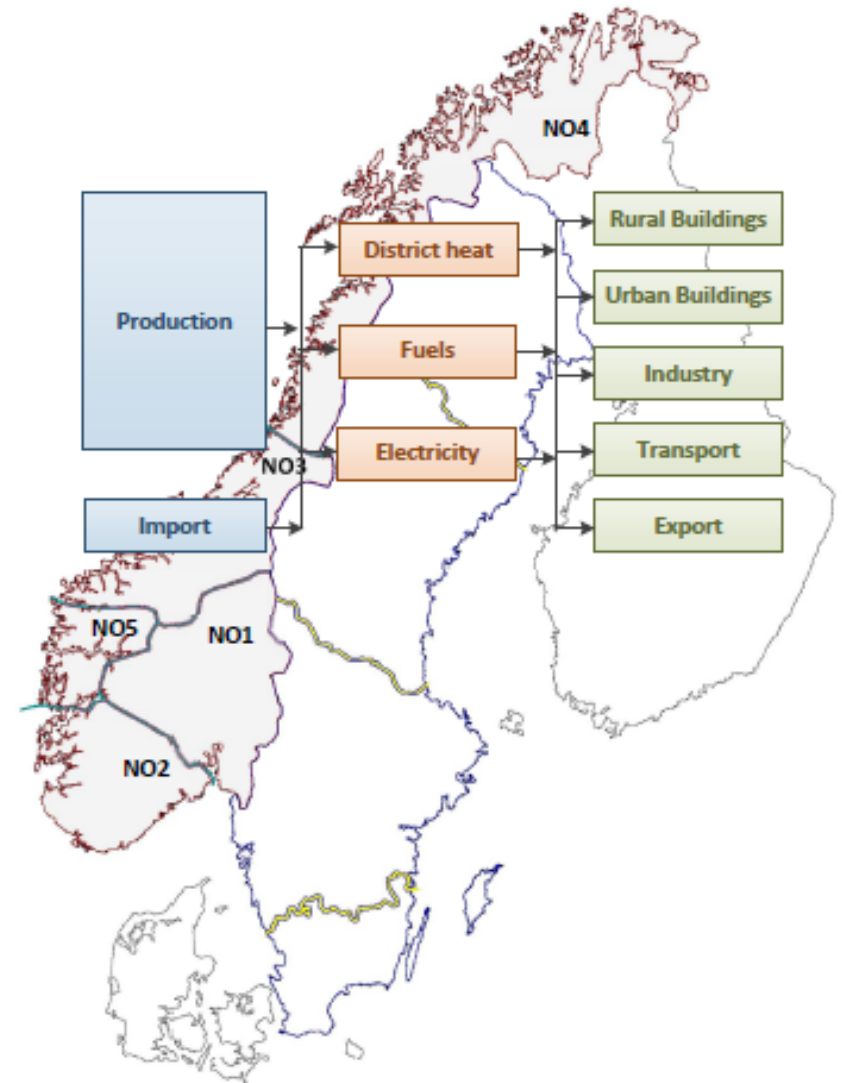
Methodology

1. Review of the political manifestos
2. Convert policy to model input to IFE-TIMES-Norway
3. Analyze effect of politics on the Norwegian energy system towards 2030



IFE-TIMES-Norge

- Developed in collaboration with NVE
- Model strengths
 - Covers the energy system
 - High detail level of end-use
- Model specifications
 - Region: Spot price regions
 - Model horizon: 2018 to 2050
 - Temporal resolution: 4 seasons x 24 h
 - Highly interconnected to the European power market



Policy: Electricity generation

- **Hydropower:** Disagreement about the expansion of new hydropower
- **Onshore wind power:** Large political disagreement related to new onshore parks.
- **Solar power:** No negative policy. Two parties wish solar power on all new commercial buildings.
 - One party has a specific target of 5 GW within 2030.

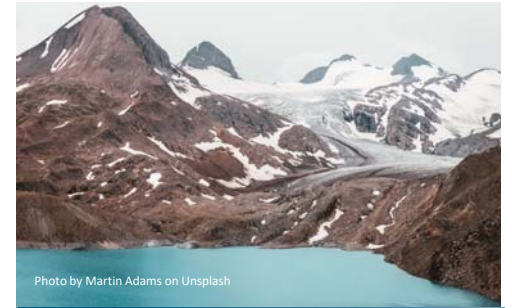


Photo by Martin Adams on Unsplash



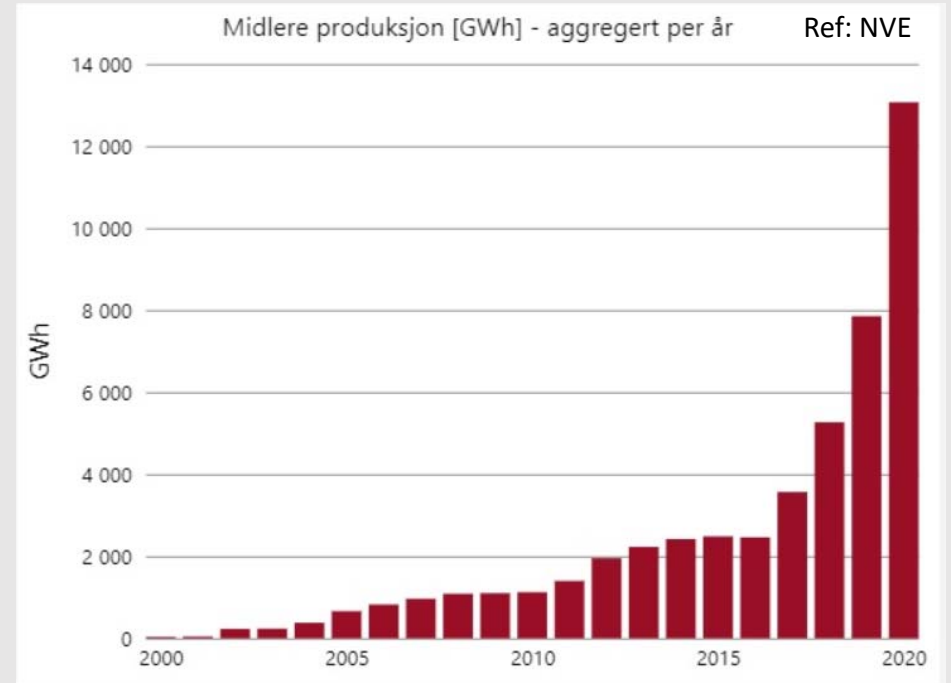
Photo by Jason Balckeye on Unsplash



From Lisa Kvalbein, IFE

Input on onshore wind power

Political party	Lifetime extension	New potential
A	No	No
B	Yes	No
C	Yes	Low: 3.9 TWh
D	Yes	Low: 3.9 TWh
E	Yes	No
F	Yes	5.5 TWh
G	Yes	Applied: 10.9 TWh
H	Yes	5.5 TWh
I	Yes	Low: 3.9 TWh



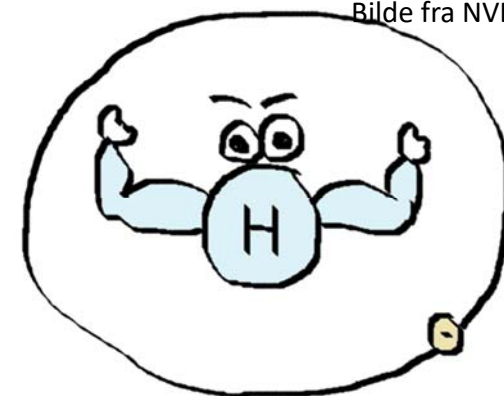
Policy on hydrogen and electricity grid

• Hydrogen

- Several parties want incentives for hydrogen production through reduced taxes and public support
- Availability of blue hydrogen linked to politics related to Norwegian oil and gas extraction
- One party has a goal of 400 000 tons of hydrogen production per year.

• Power grid

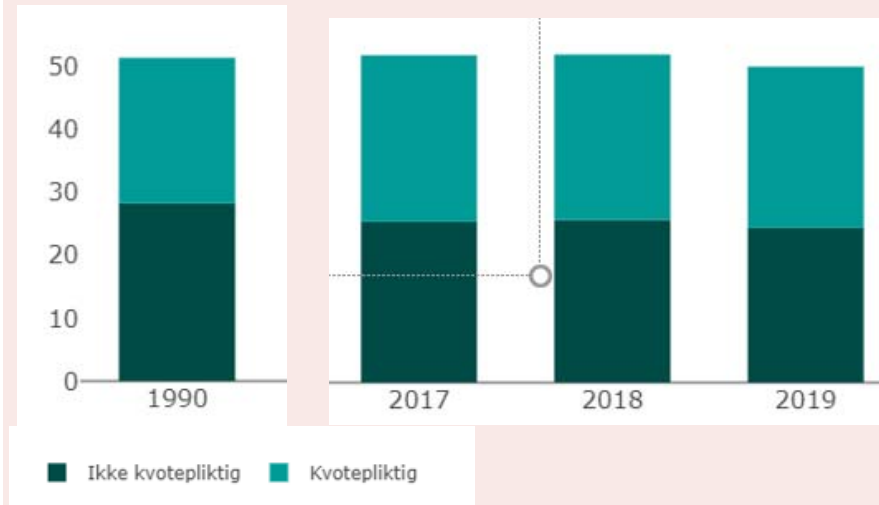
- No policy on domestic transmission grids.
- Disagreement on new export cables.
 - Two parties wish to limit trade with European countries on existing cables.



Politics on GHG emissions

Political party	CO ₂ price 2000 NOK/ton	Zero emission target
A	Yes	Yes (2050)
B	Yes	Yes (2040)
C	Yes	
D	No	
E	Yes	Yes (2050)
F	Yes	Yes (2050)
G	Yes	
H	Yes	
I	No	

Norwegian GHG emissions, Mt CO₂ eq. Ref: SSB



2000 NOK/ ton = 200 EUR/ ton

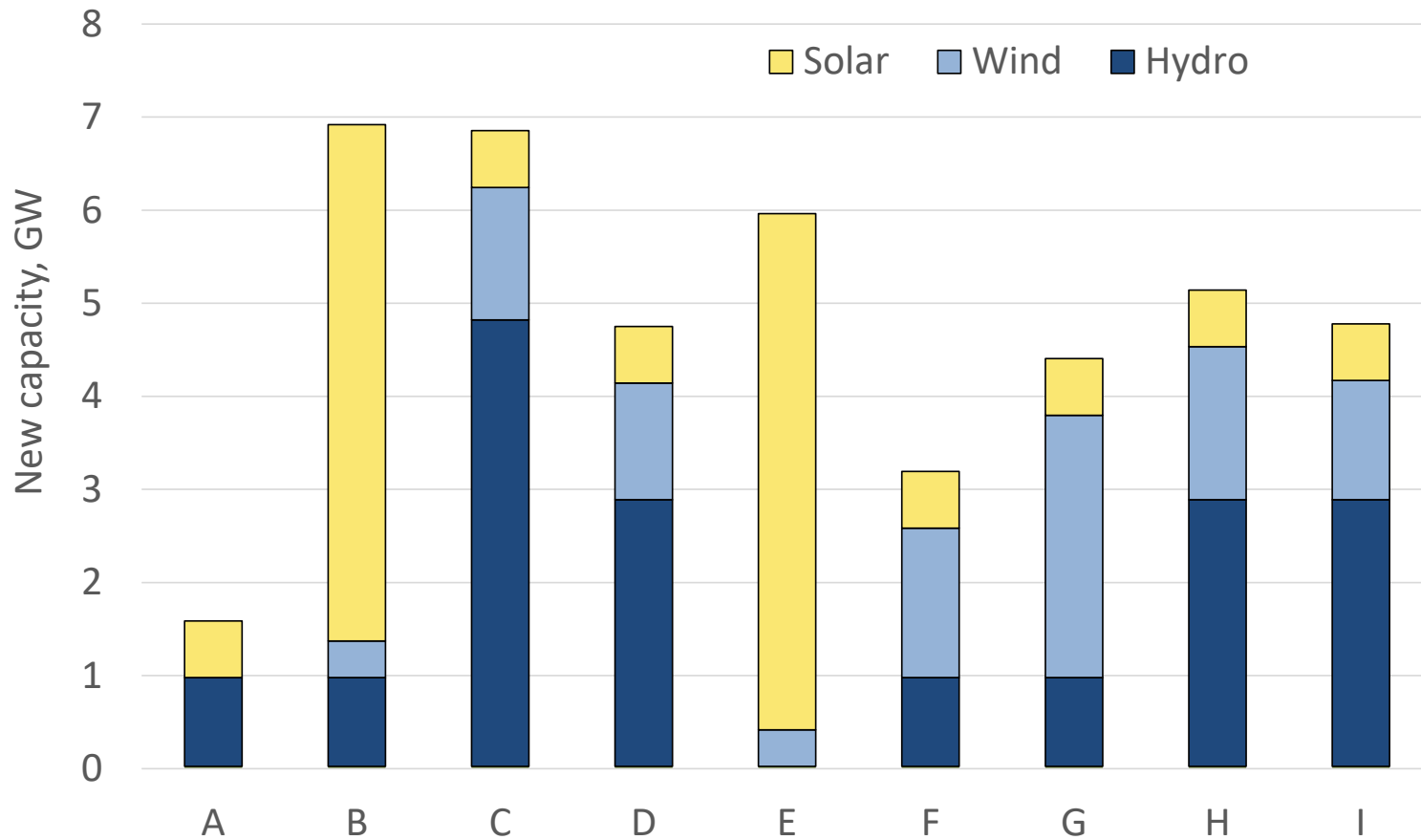


Politics influencing energy service demand

Party	A	B	C	D	E	F	G	H	I
Buildings	No increase	No increase	Increase	Increase	No increase	Increase	Increase	Increase	Increase
Transport									
- Road	No incr.	No incr	NTP	NTP	No incr	NTP	NTP	NTP	NTP+5%
- Air	No incr	No incr	NTP	NTP	No incr	NTP	NTP	NTP	NTP+5%
- Sea	NTP	NTP	NTP	NTP	NTP	NTP	NTP	NTP	NTP
- rail	NTP	NTP	NTP	NTP	NTP	NTP	NTP	NTP	NTP
Industry									
- Electrification offshore			+4.75 TWh	+4.75 TWh		+2.375 TWh	+4.75 TWh	+4.75 TWh	
- Battery plants	+10 TWh	+10 TWh	+10 TWh		+10 TWh			+10 TWh	+10 TWh
- Data center				+ 3 TWh				+ 3 TWh	+ 3 TWh
- Metal production			+5 TWh	+5 TWh				+5 TWh	+5 TWh

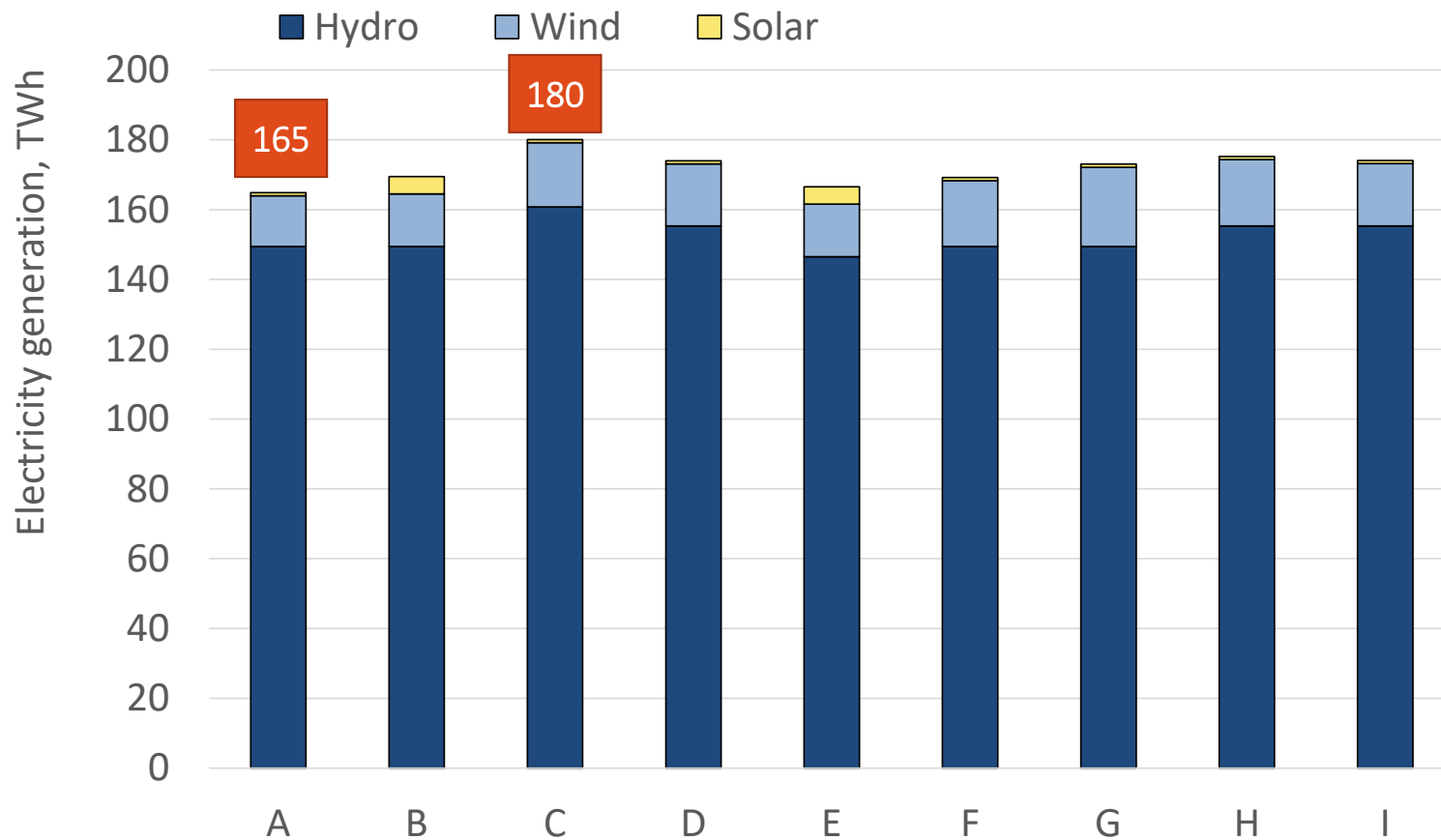
Results: Largest differences in electricity sector

New capacity 2030



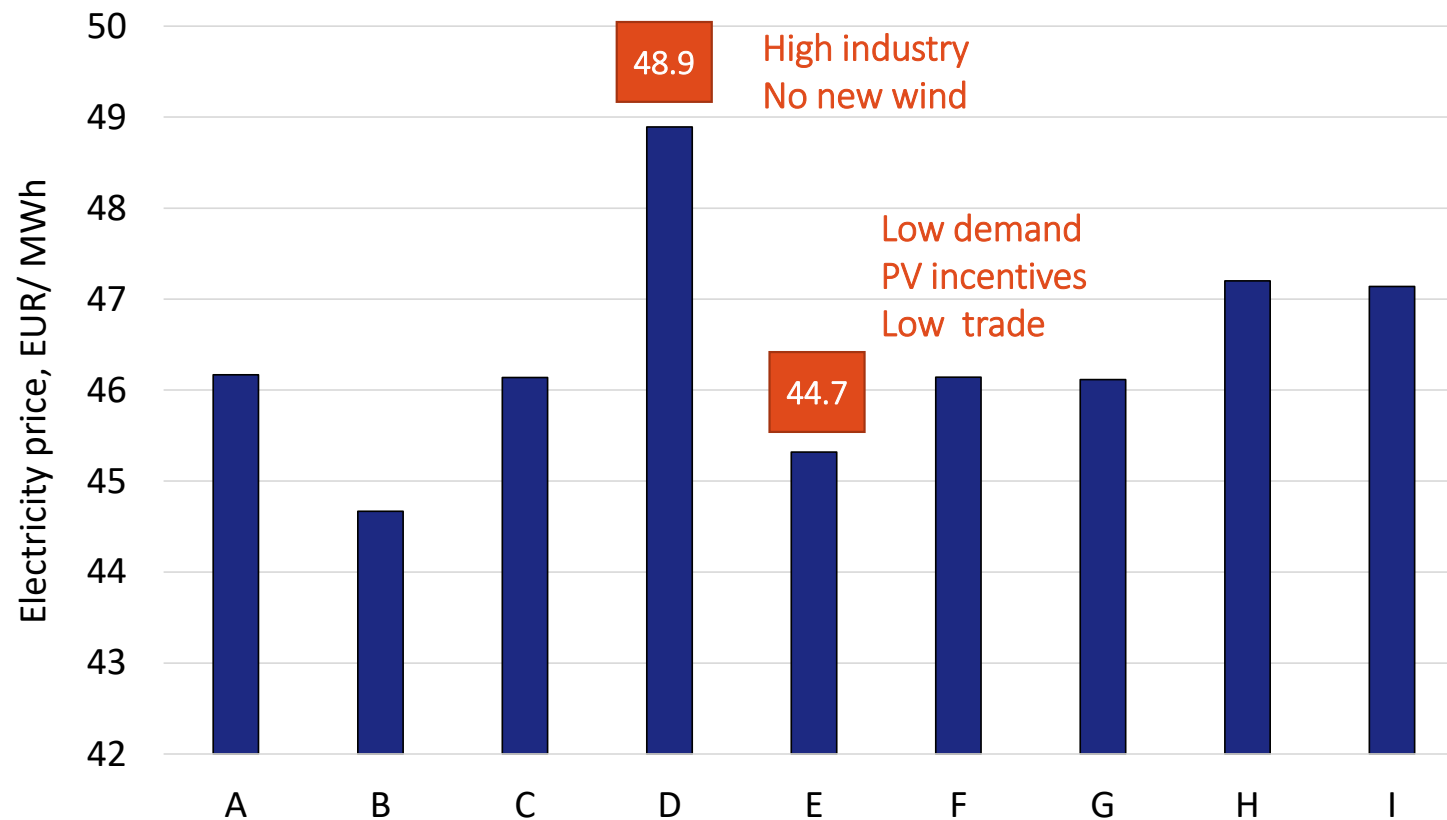
Results: Largest differences in electricity sector

Electricity generation 2030



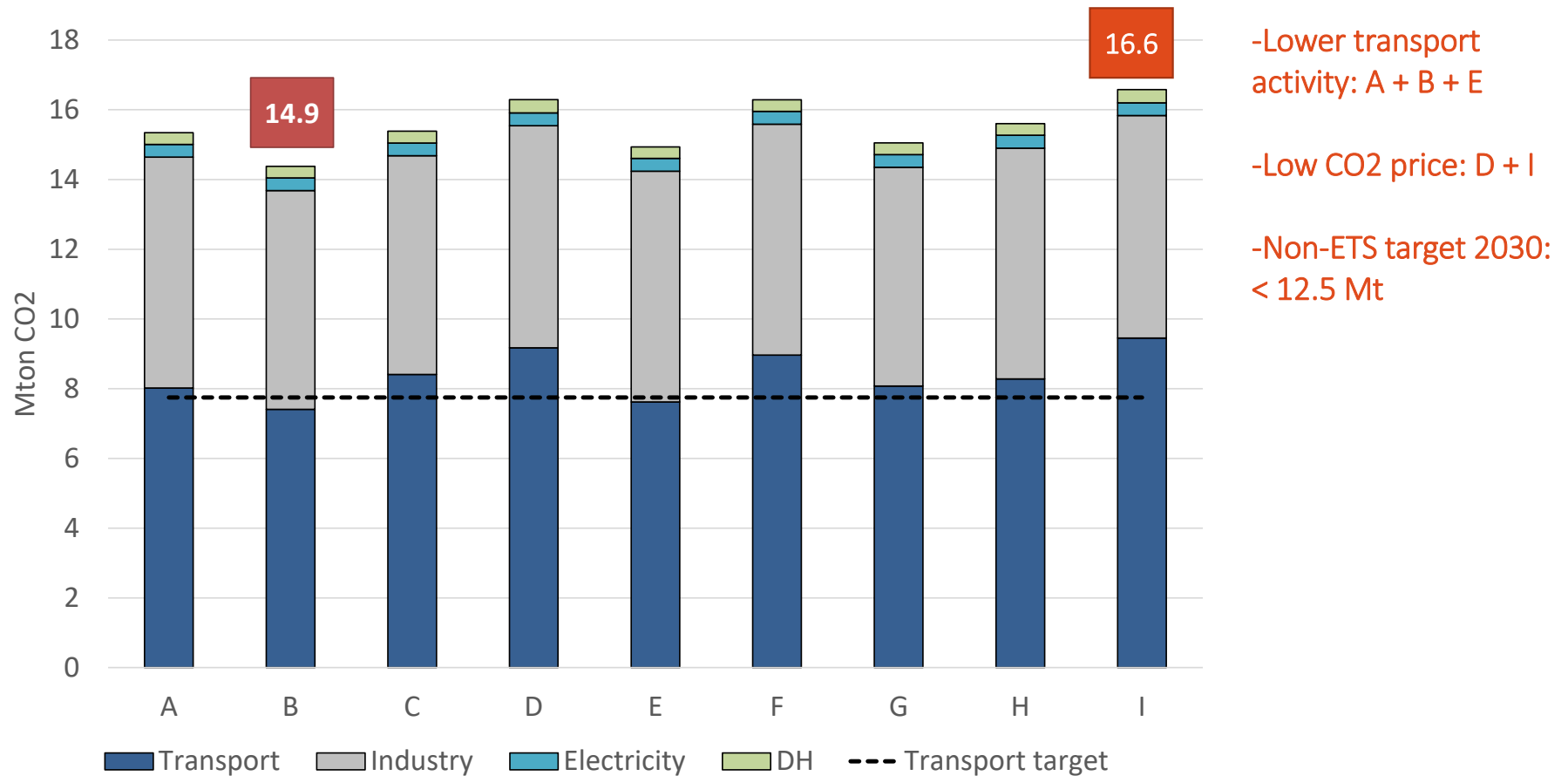
Results: Largest differences in electricity sector

Average electricity price in 2030



Results: Minor differences in emissions

CO2 emissions per sector in 2030



Concluding remarks

- Analysis of the IFE-TIMES-Norway is used to quantify energy system effects of political manifestos
- Manifestos seem to be based on individual topics rather than an energy systems thinking.
- High political focus on the Norwegian electricity sector & new industries and less focus on measures that contributes to lower emissions.
- Input from other modelling teams on the way forward is highly welcome!