

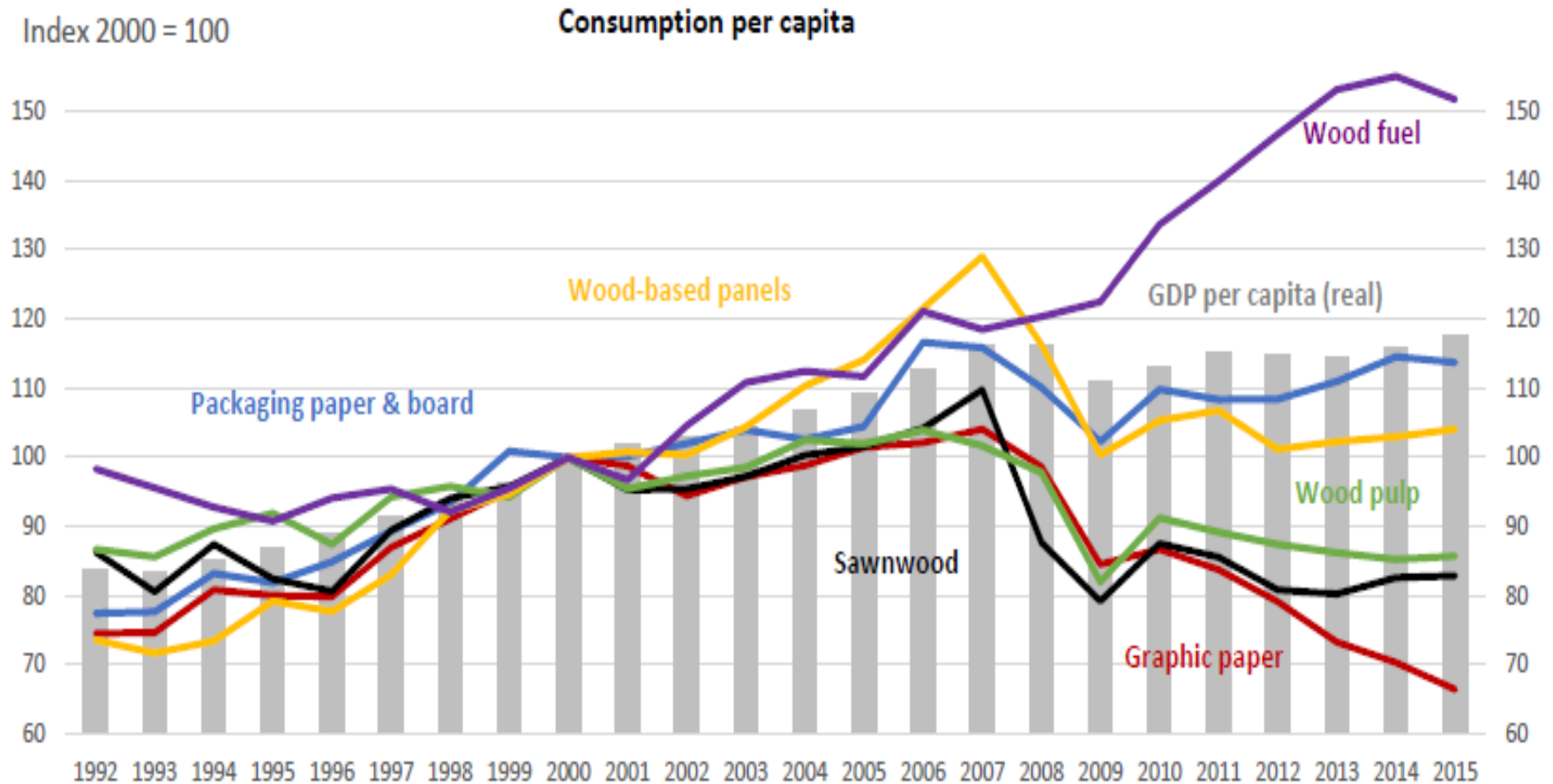
FREMTIDENS ETTERSPØRSEL ETTER BIOMASSE

Bioenergidagene, 27/11- 2017

Torjus Folsland Bolkesjø

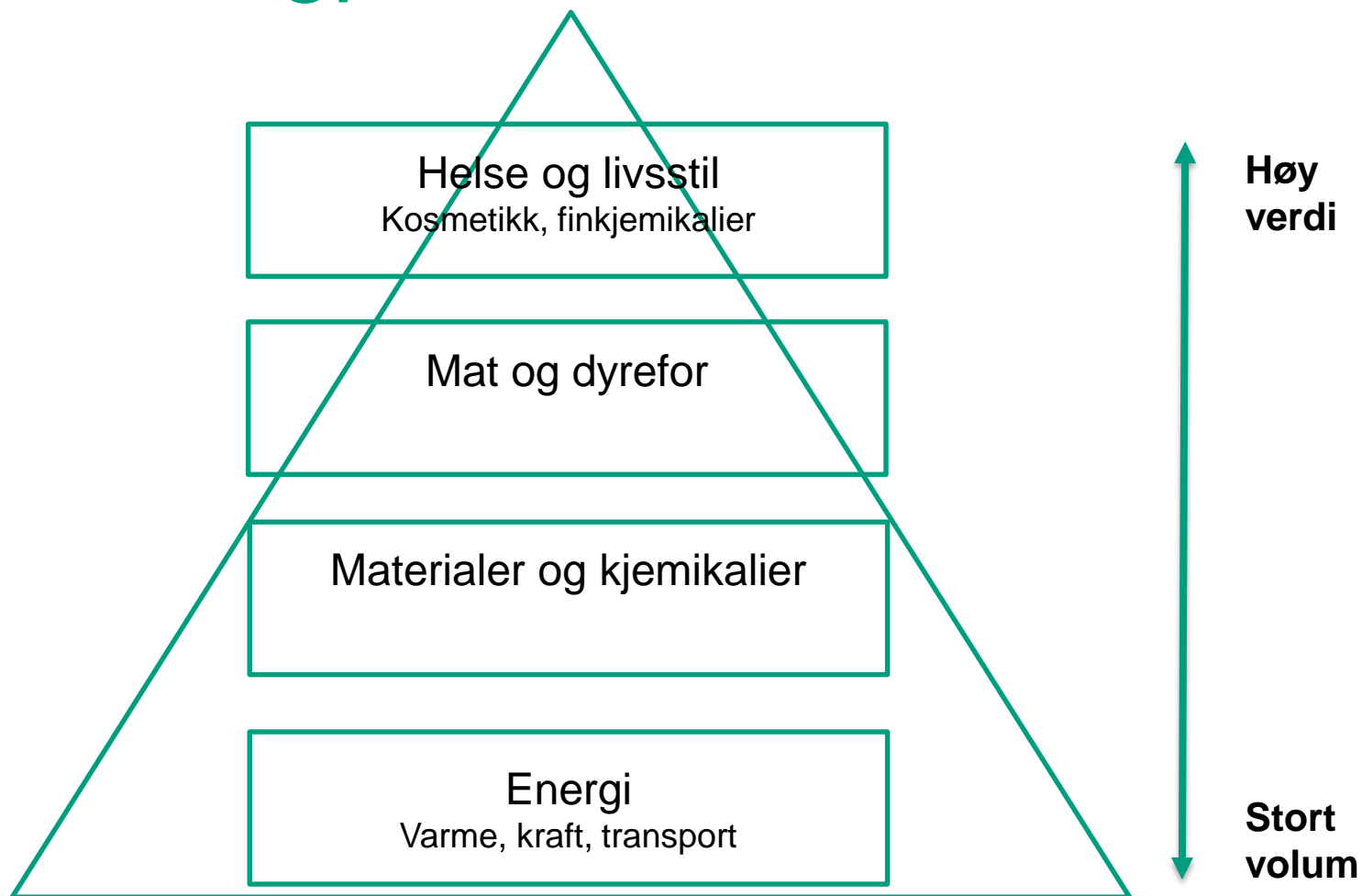
Professor, NMBU

Etterspørselen etter skogprodukter i Europa, 1992-2015

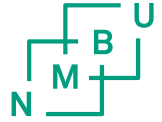


Consumption per capita of forest-biomass-based products and GDP growth in Europe
(Data: FAOSTAT, World Bank, here Sec. 3.9: Jonsson, Hurmekoski, Hetemäki, Prestemon)

«Nye» skogprodukter



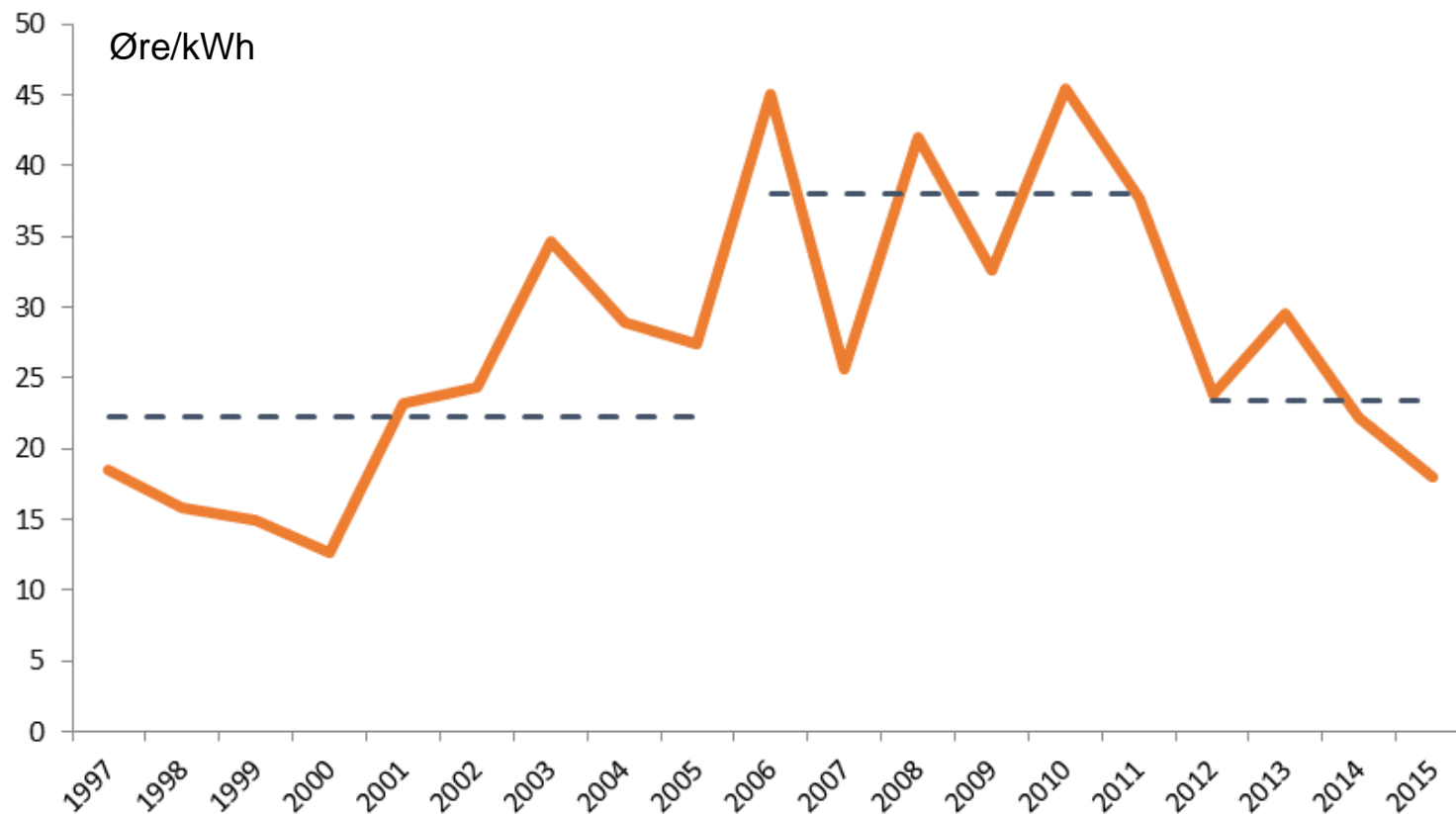
Andre produkter og tjenester fra skogarealet



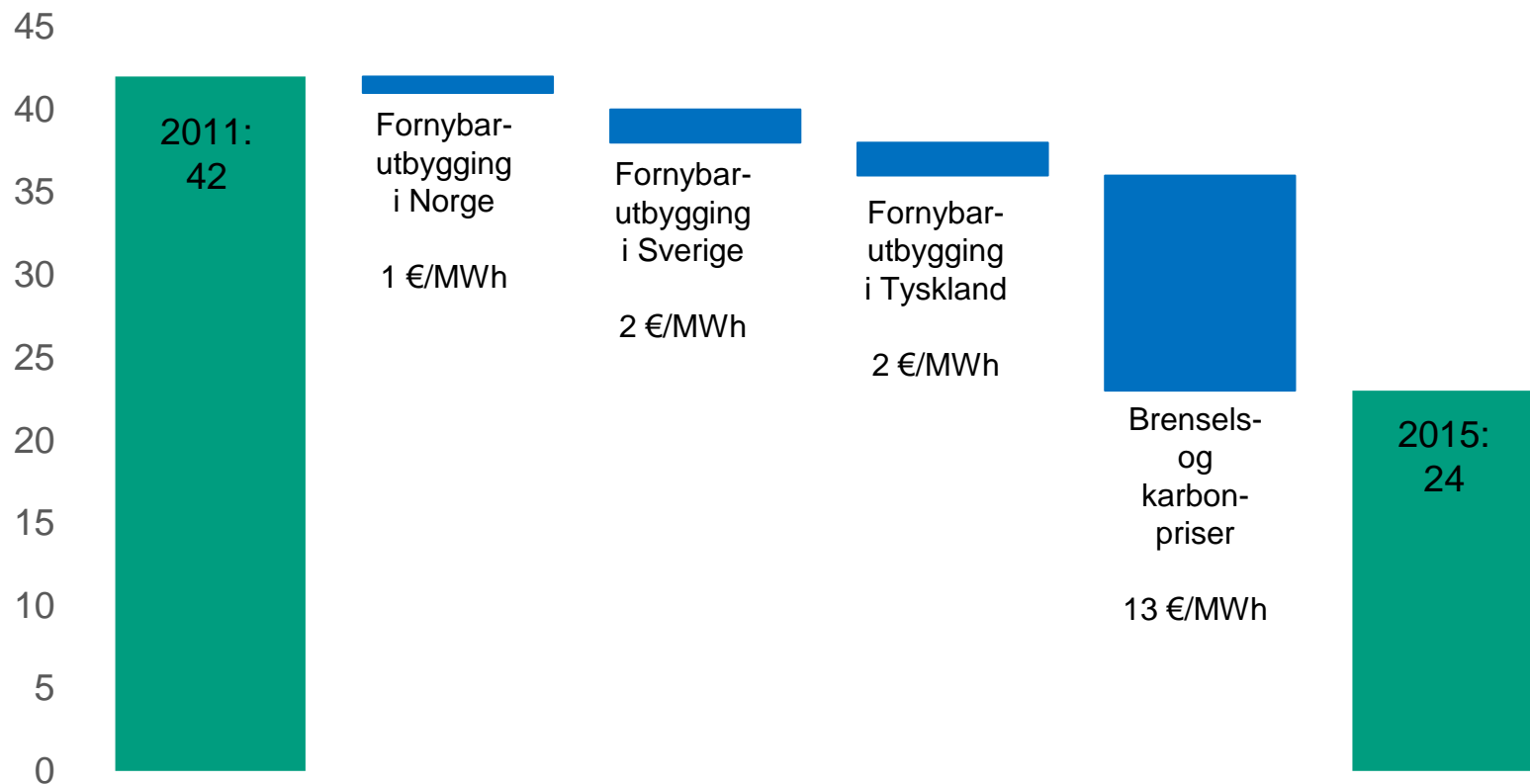
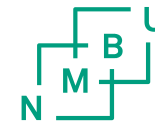
- Karbonlager
 - Skog og skogprodukter fanger ca 13% av antropogene utslipp i EU (Lindner, Hanewinke, Nabuurs)
- Biodiversitet
 - Bruk eller vern?
 - Eller «ja takk – begge deler»?
- «Non wood» skogprodukter
 - Estimert verdi i Eurpa er €2.2 mrd, eller 10% av verden av tømmer (Winkel, 2017)
 - Nyere forskning indikerer vesentlig høyere verdier enn dette



Kraftprisen er hoveddriveren for bioenergiundersøkelse til varme og kraft



Hvorfor falt elprisene fra 2011 til 2014?

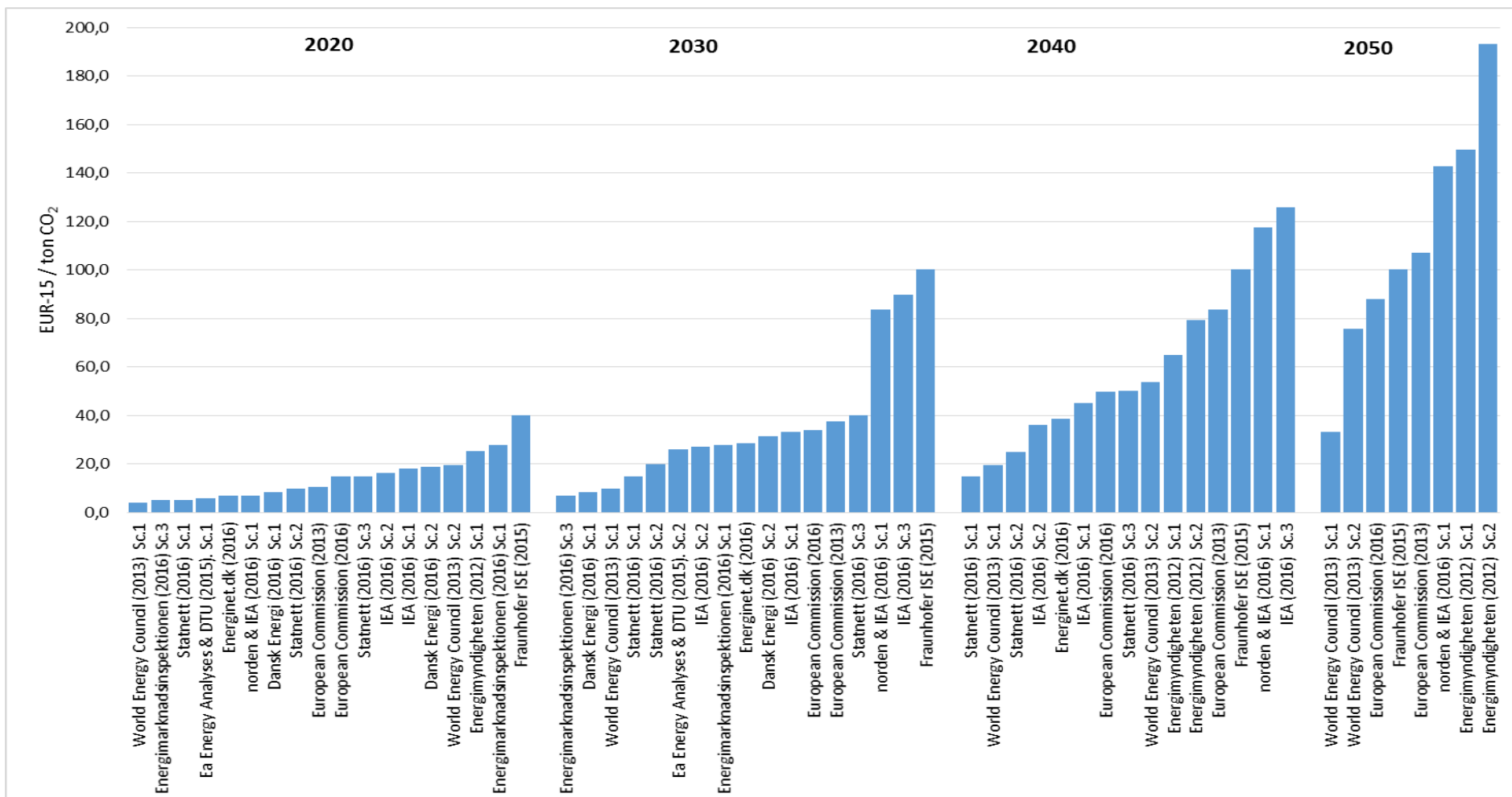


Statnett (2016)

Kvotepriisen framover er usikker



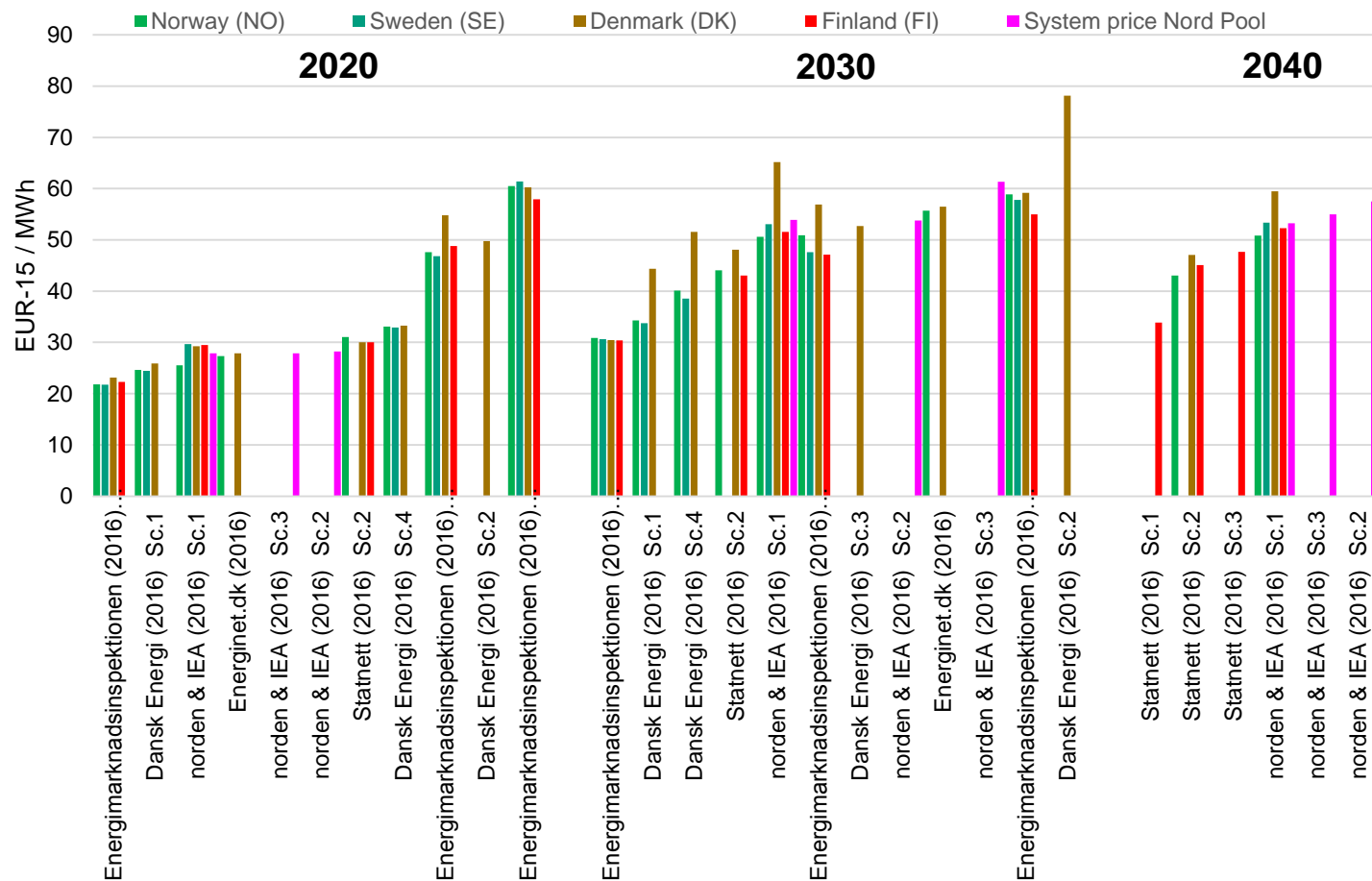
Antatt kvotepriis i ulike energimarkedsanalyser



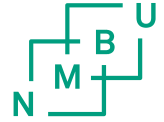
...og fremtidige elpriser er (nesten) like usikre



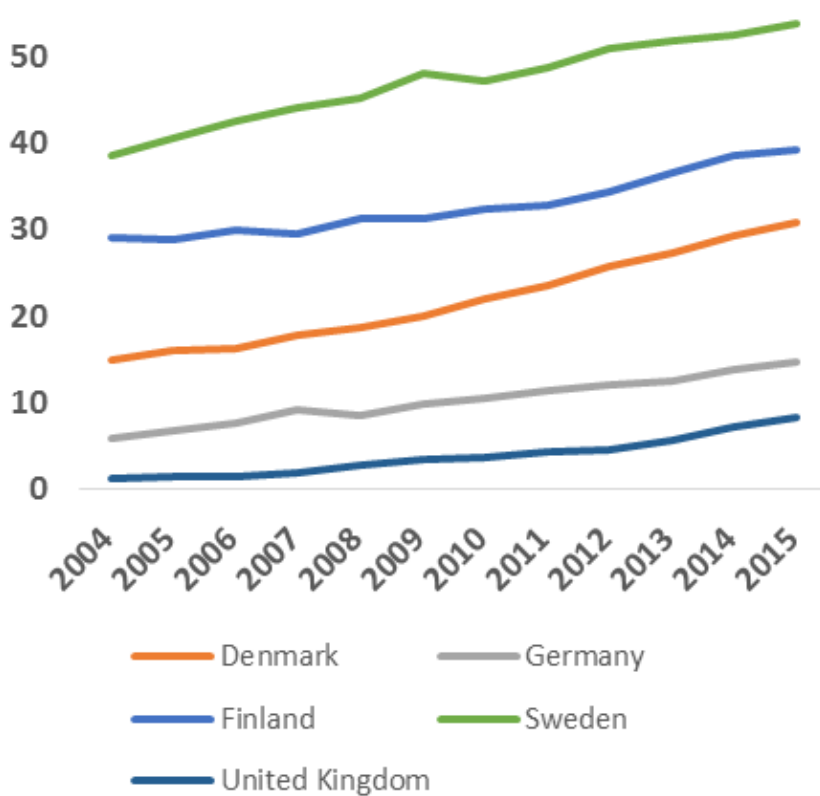
Elpris i ulike energimarkedsanalyser



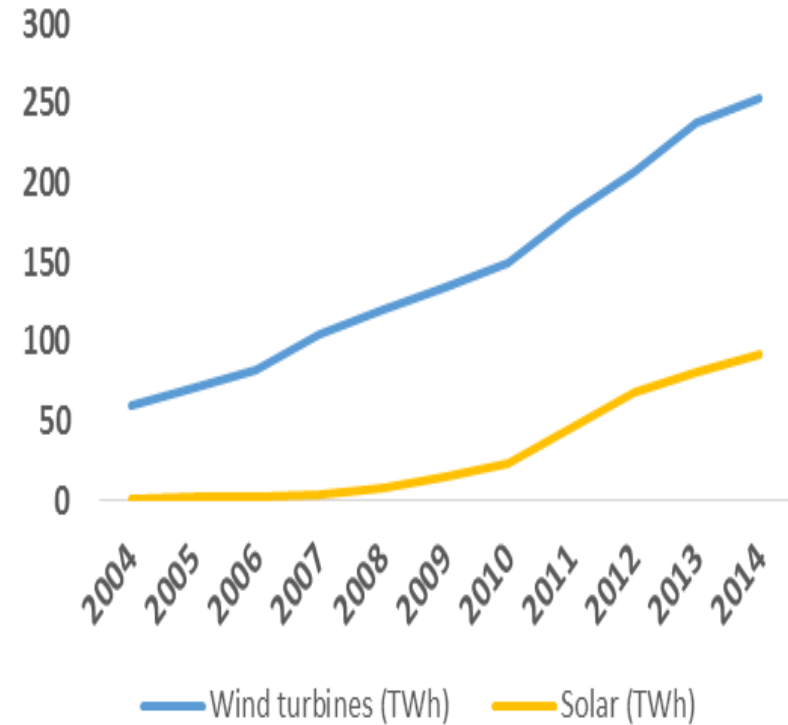
Noen trender er klare



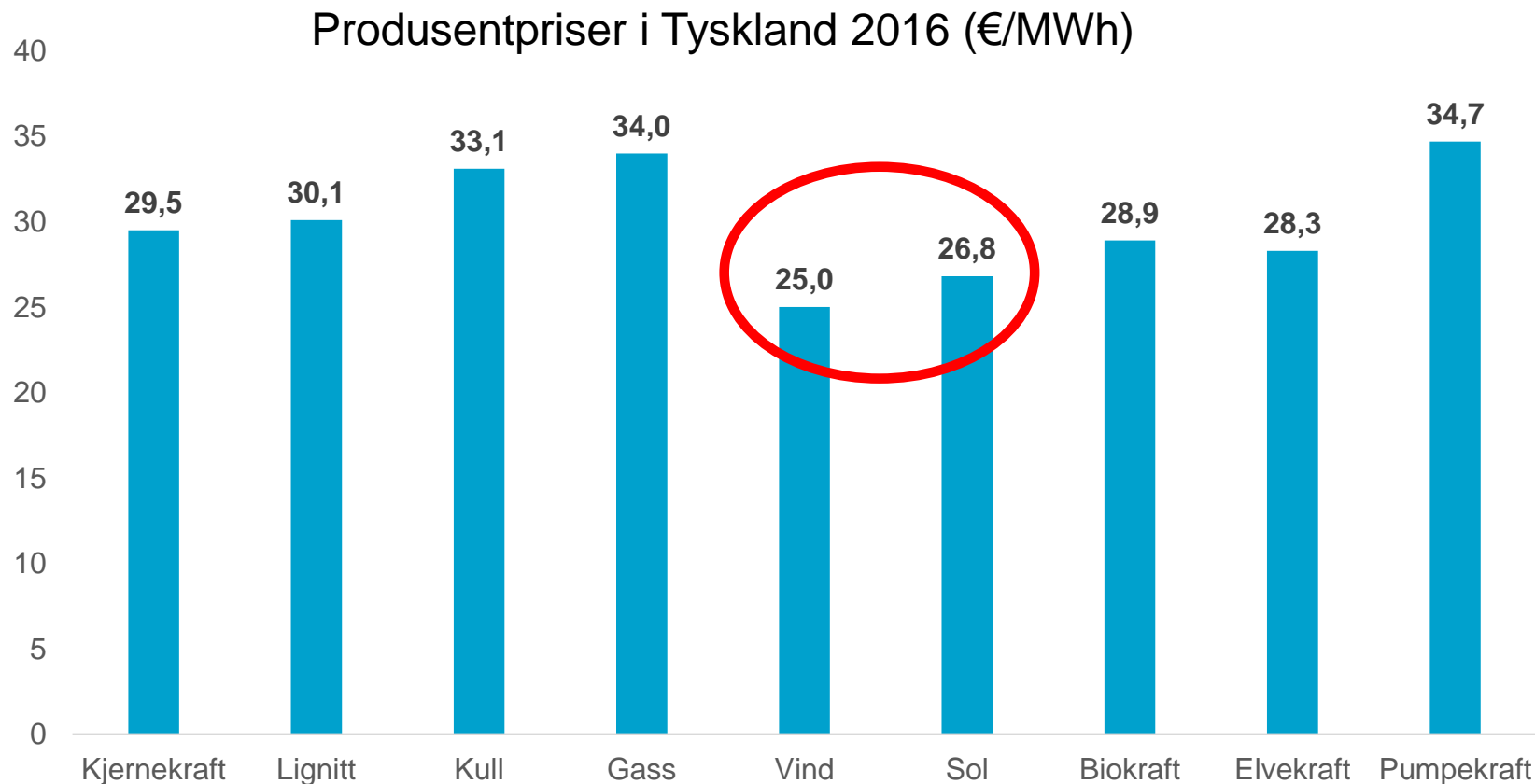
Share of renewable energy in gross final energy consumption (%)



Wind and solar generation in EU-28 (TWh)



Kostnadene for vind- og solkraft synker, men det gjør også markedsverdien

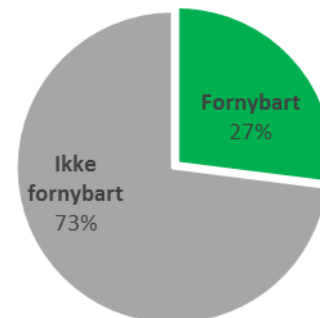
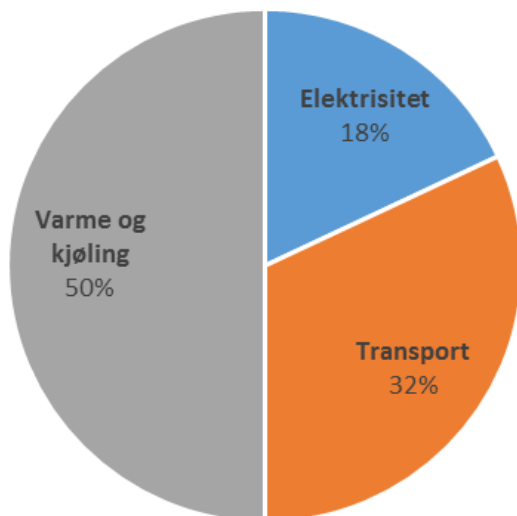


Kilder: EEX & Fraunhofer

En fossilfri energisektor: Store utfordringer innen varme og transport

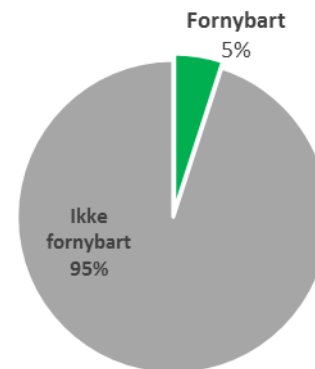


Fordeling av EU's energiforbruk



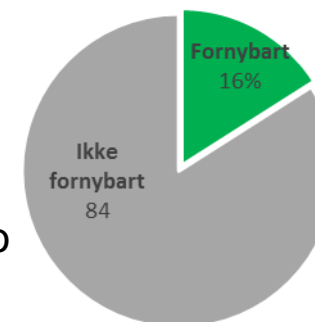
El-spesifikt

Fornybar løsning:
Mix av bio og el



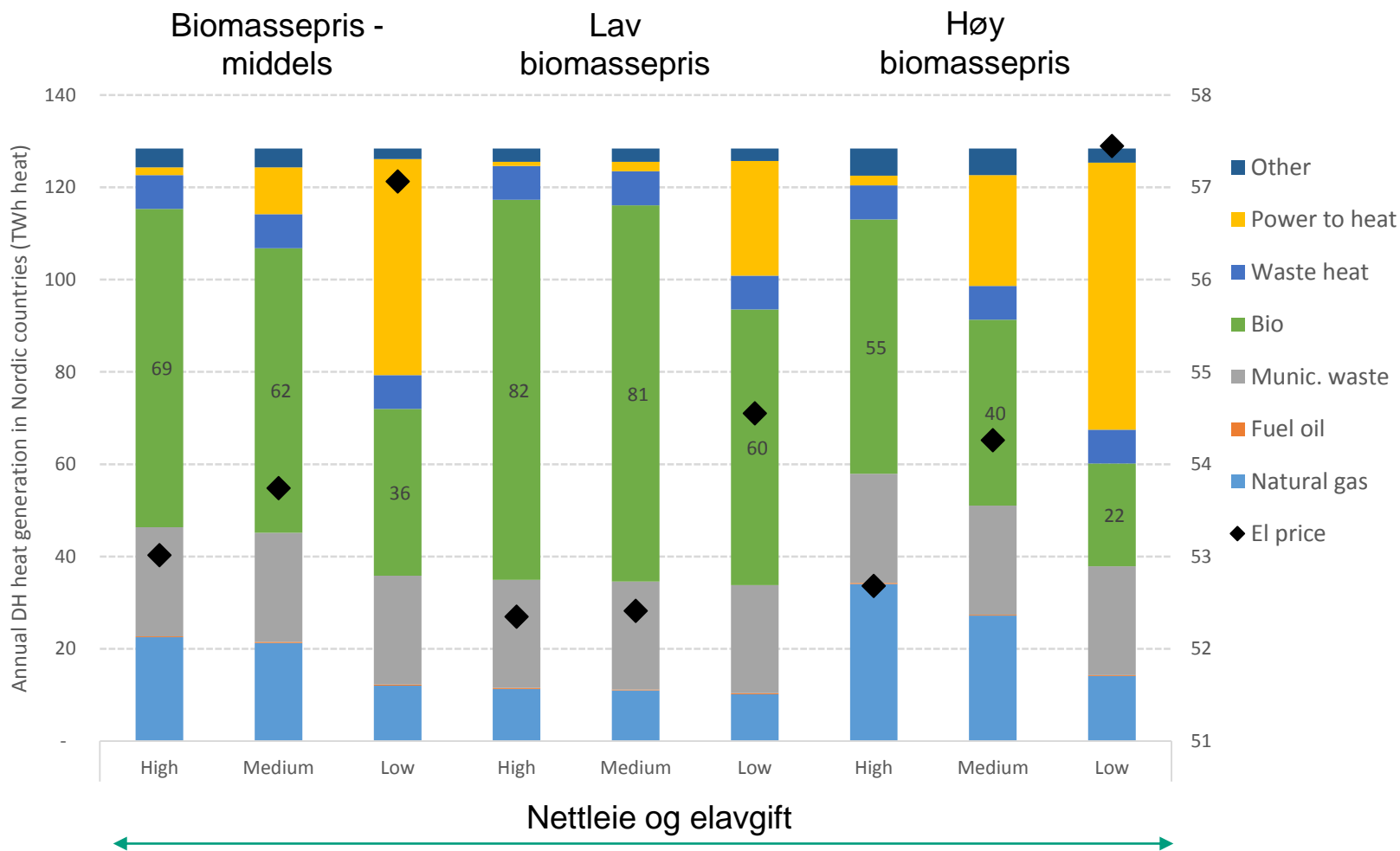
Transport

Fornybar løsning:
Samspill mellom bio og el



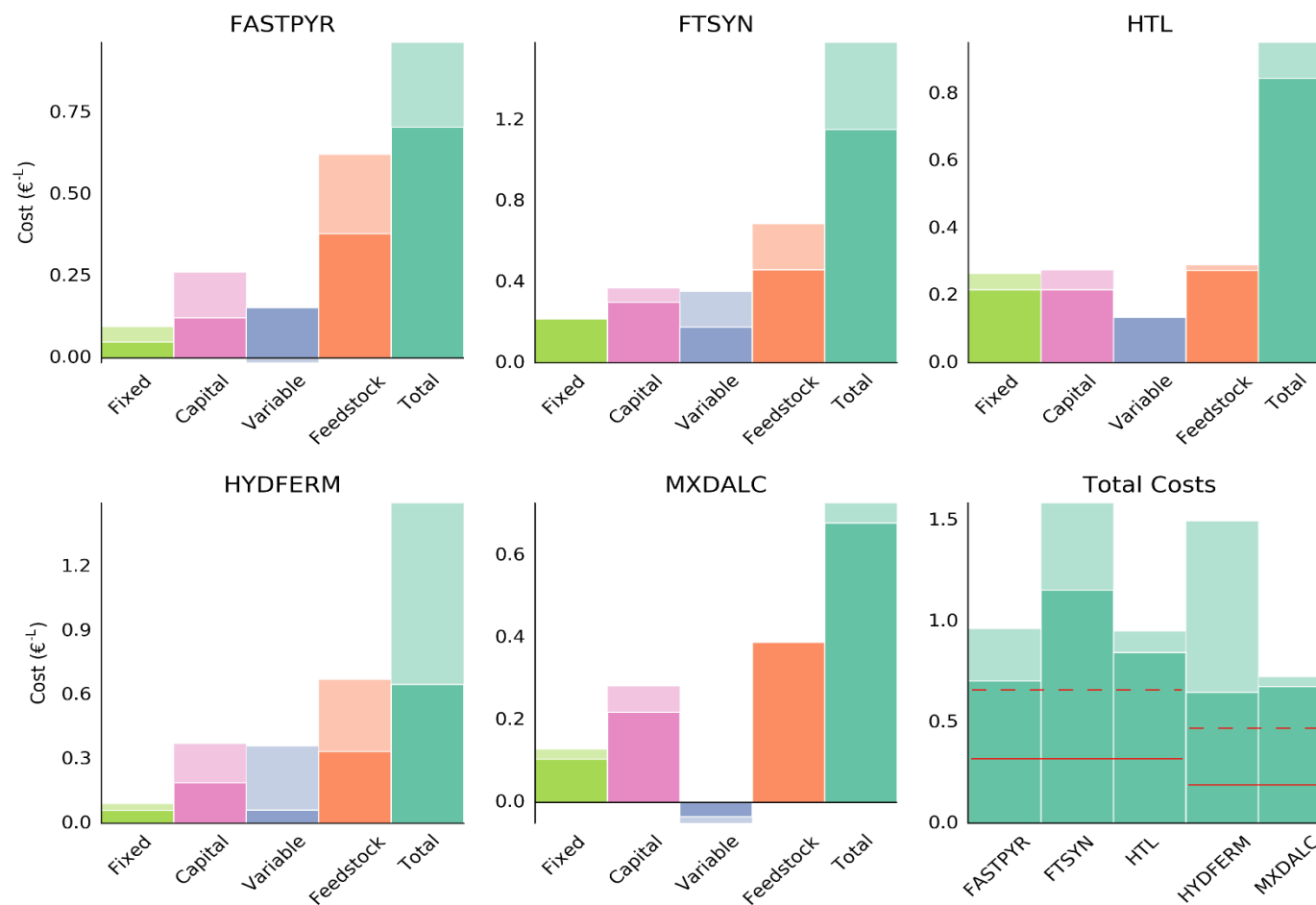
Varme og kjøling

Biomasse versus el i Nordisk fjernvarme – avhenger av marked og reguleringer

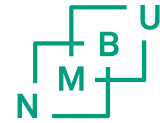


Hva med biodrivstoff?

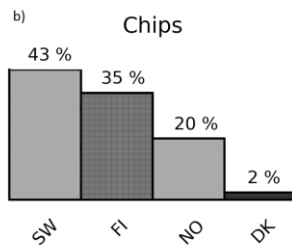
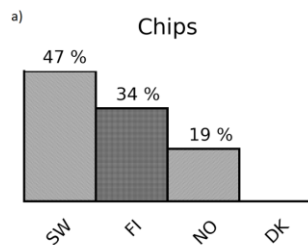
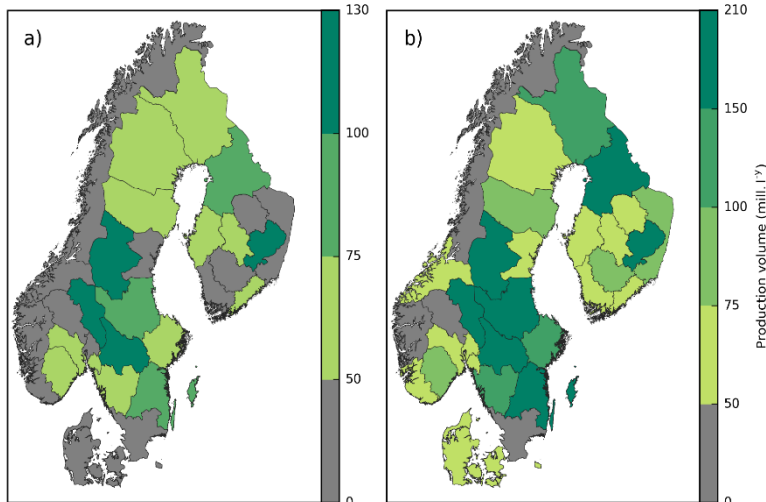
Relativt høye kostnader, men omsetningspåbud



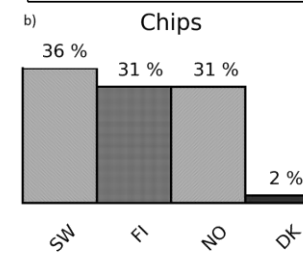
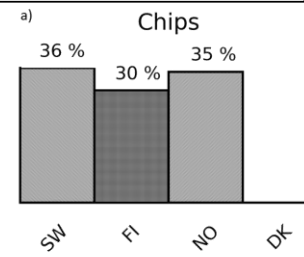
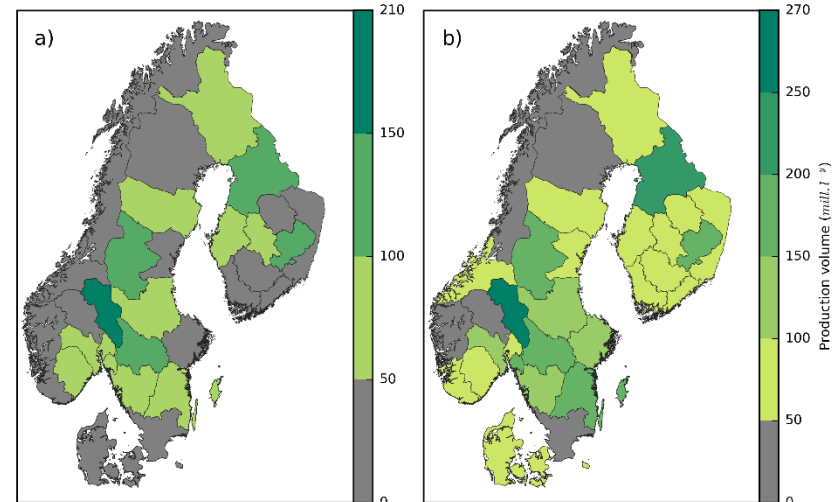
Studie: Optimal lokalisering av nordisk biodrivstoffproduksjon



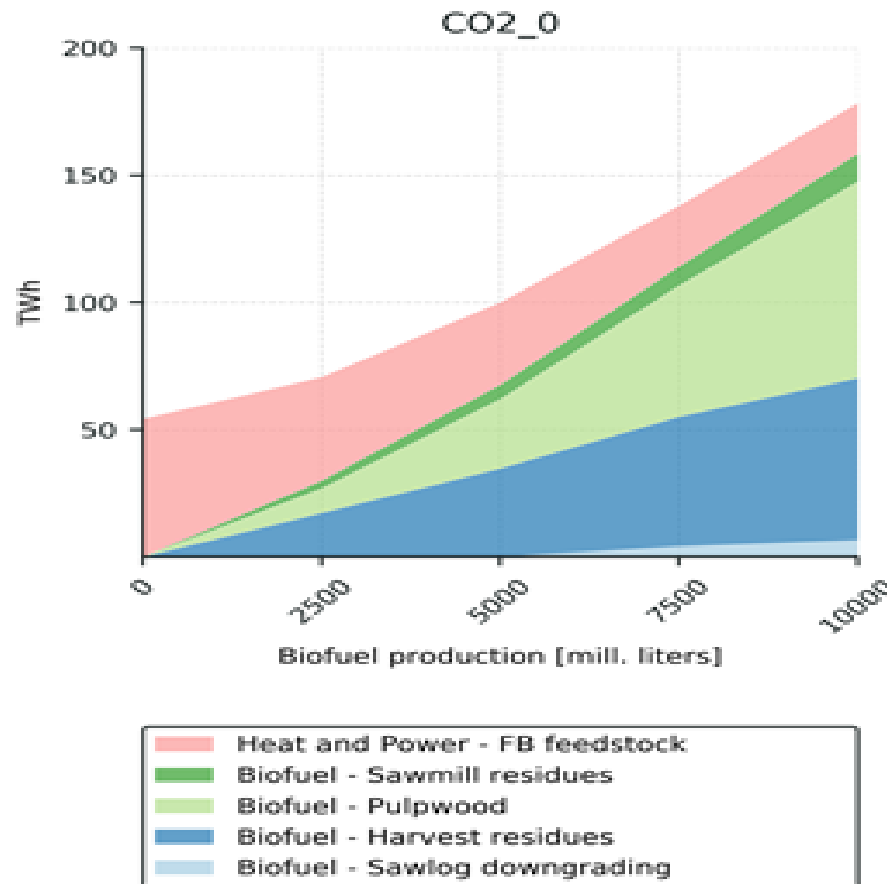
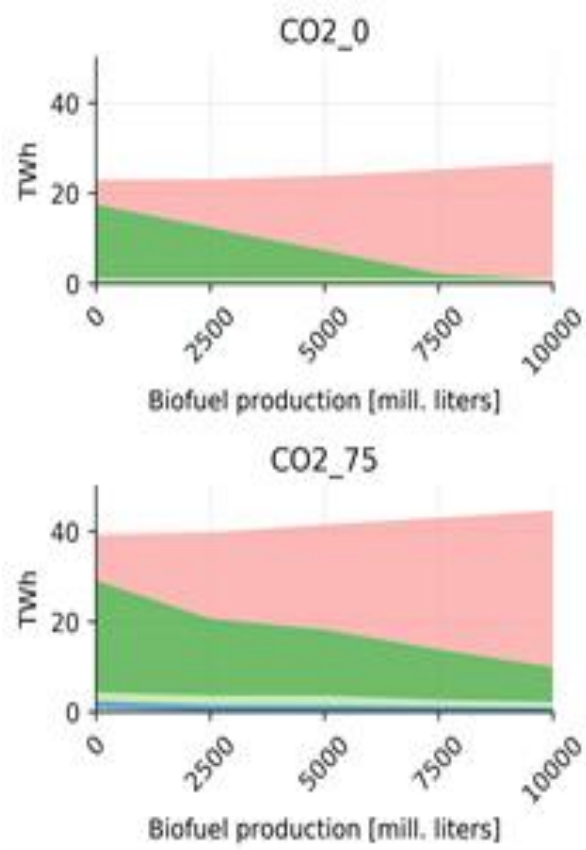
Kurs i 2013: 7.81



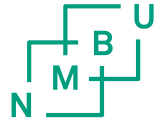
Kurs i 2016: 9.29



Skogbasert biomasse til energi i Norden med økende biodrivstoffproduksjon



Prosjekt: BioNEXT – The role of bioenergy in the future energy system



- What are the **comparative advantages** of different bioenergy solutions in the Nordic countries, and what are the **barriers** to developing them?
- What types of **feedstock, technologies and end-product mixes** are likely to be the most **profitable**?
- What are the expected **long-term developments and underlying uncertainties of market** demand and prices?
- What are the **positive external effects of different bioenergy solutions**
 - GHG emissions from fossil fuels, flexibility and energy security, support for the development of a vital forest sector?
- What are the **policy instruments that can drive the industrial innovation** and learning towards successful commercial breakthrough?



GLOMMEN
SKOG



Forskningsrådet



SINTEF



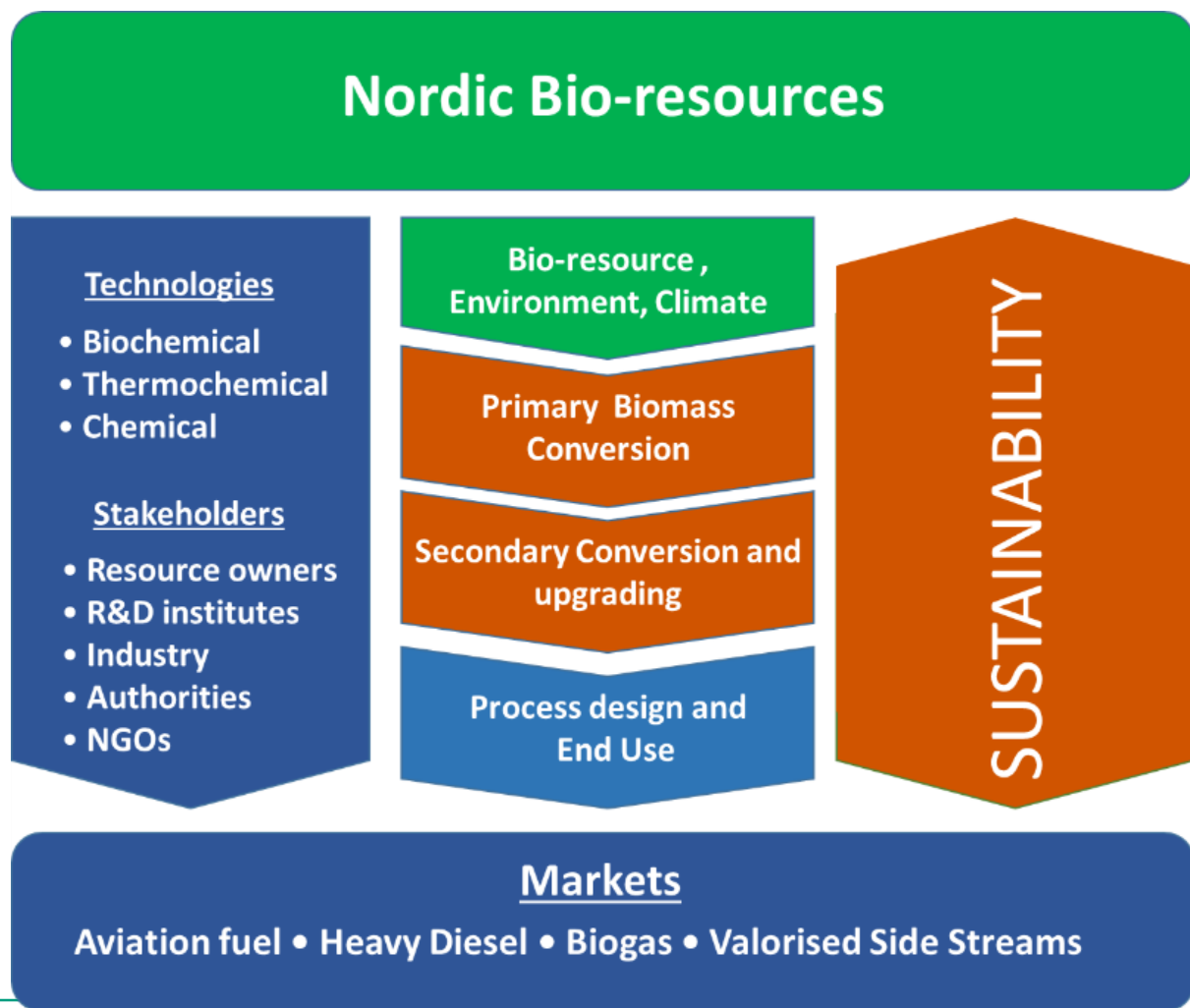
AVINOR



BIO4 FUELS

**Norwegian
Centre
for Sustainable
Bio-based
Fuels
and Energy**

~ 50 partners
Budget ~270 MNOK, 8
years



Takk for oppmerksomheten!

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