Hvordan kan Europas energirevolusjon påvirke nordisk og norsk skogsektor?

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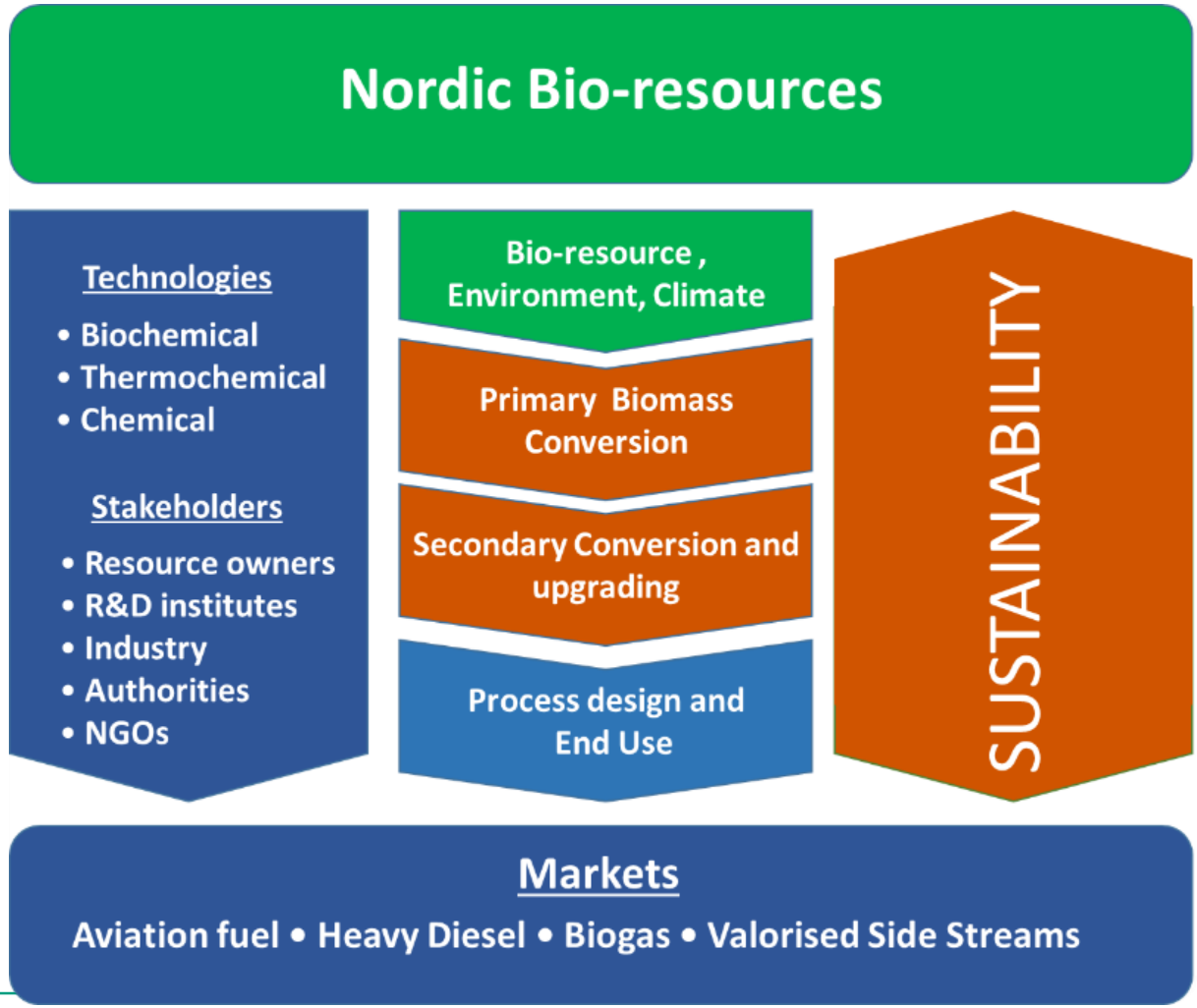
Prosjekt: BioNEXT – The role of bioenergy in the future energy system

- 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?

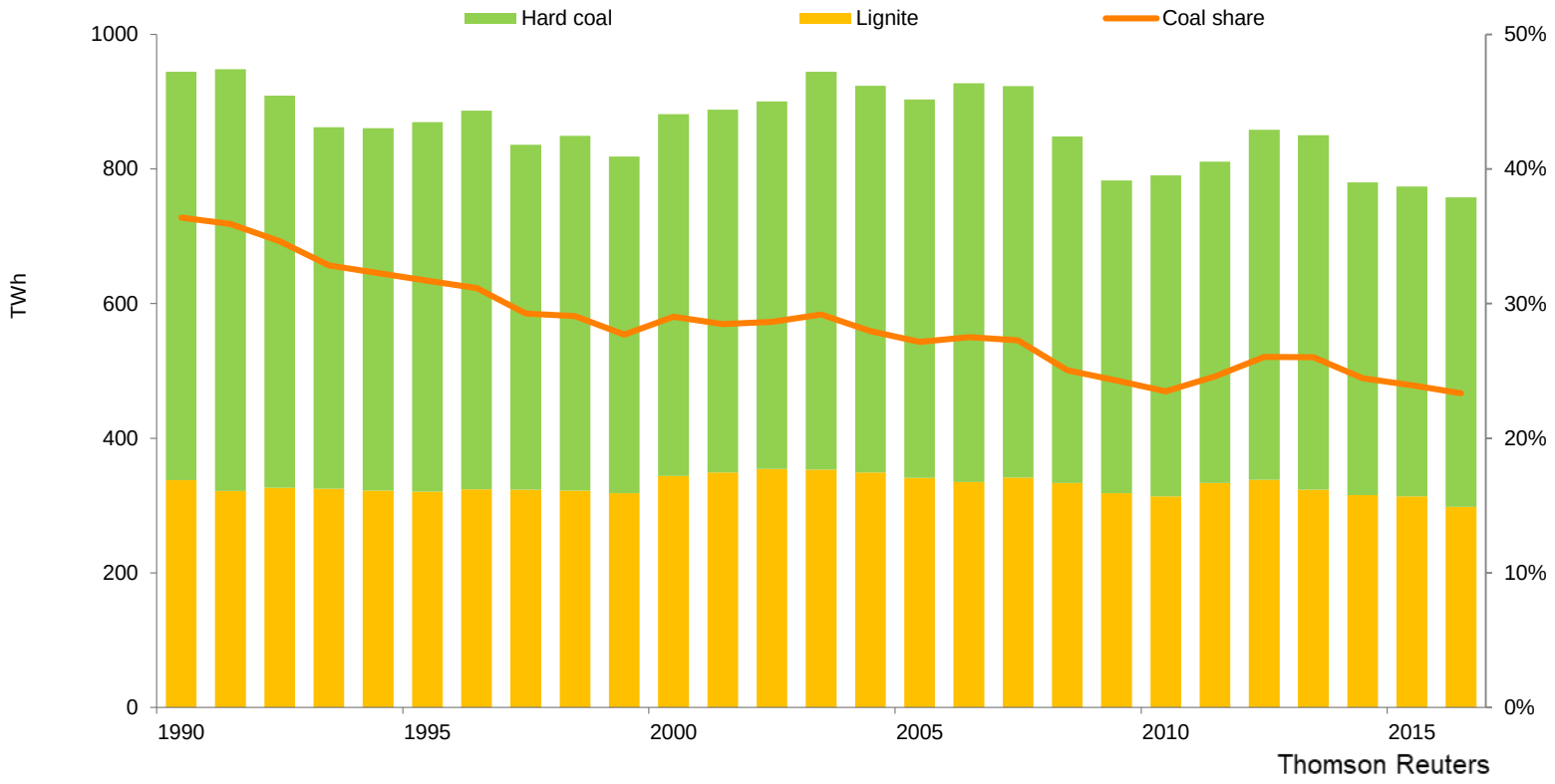
BIO4FUELS

Norwegian Centre for Sustainable Bio-based Fuels and Energy

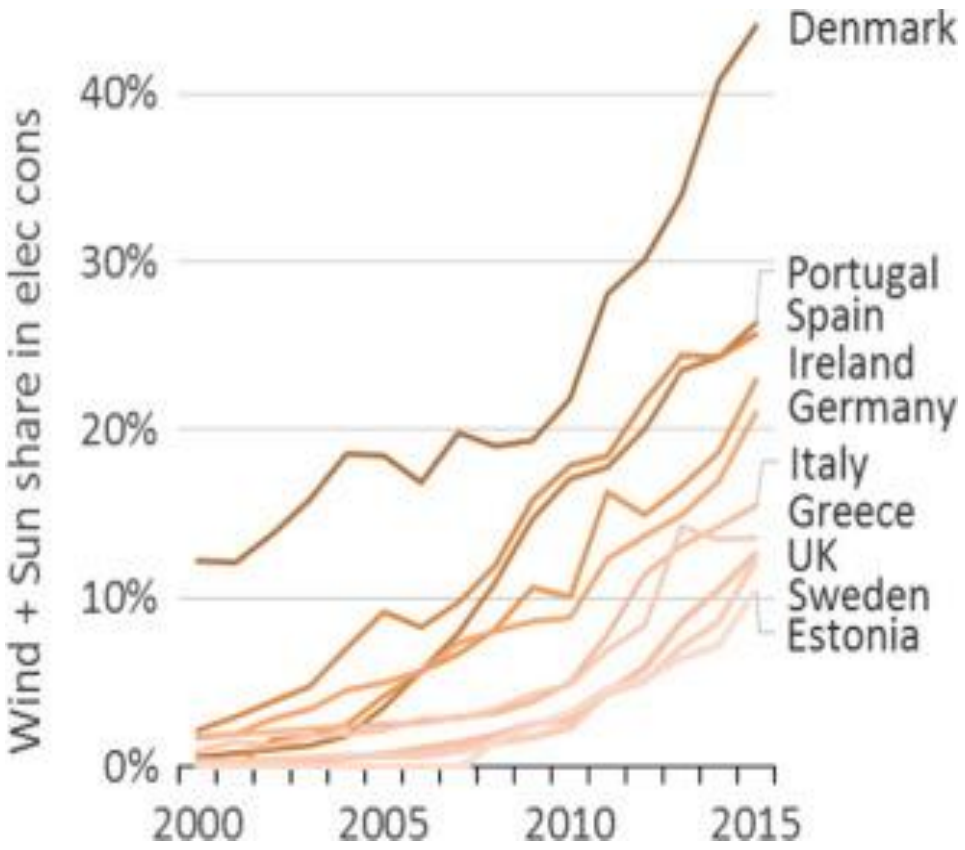


~ 50 partners
Budget ~270 MNOK, 8 years

Europas kullandel faller



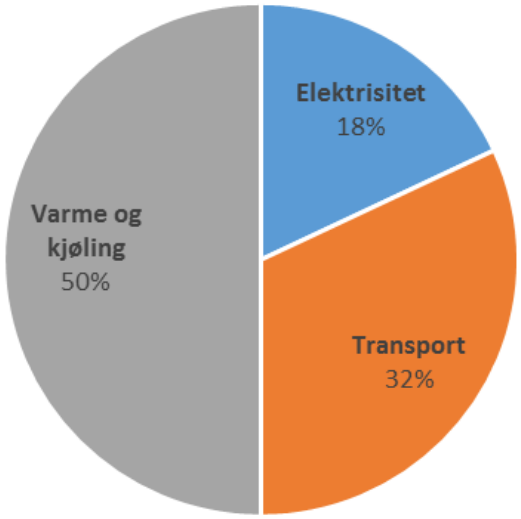
Vind og sol vokser raskt

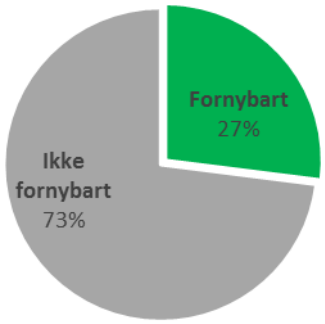


Data fra IEA electricity statistics

En fossilfri energisektor: Fortsatt store utfordringer…

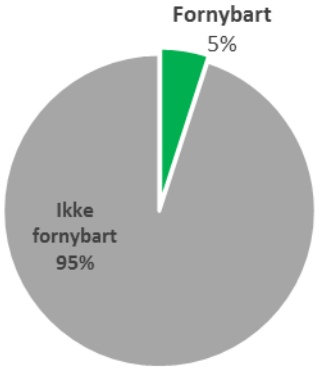
Fordeling av EU's energiforbruk





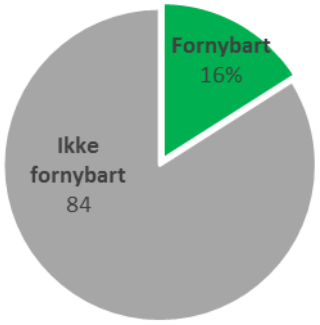
El-spesifikt

Fornybar løsning: Mix av bio, el (og hydrogen?)



Transport

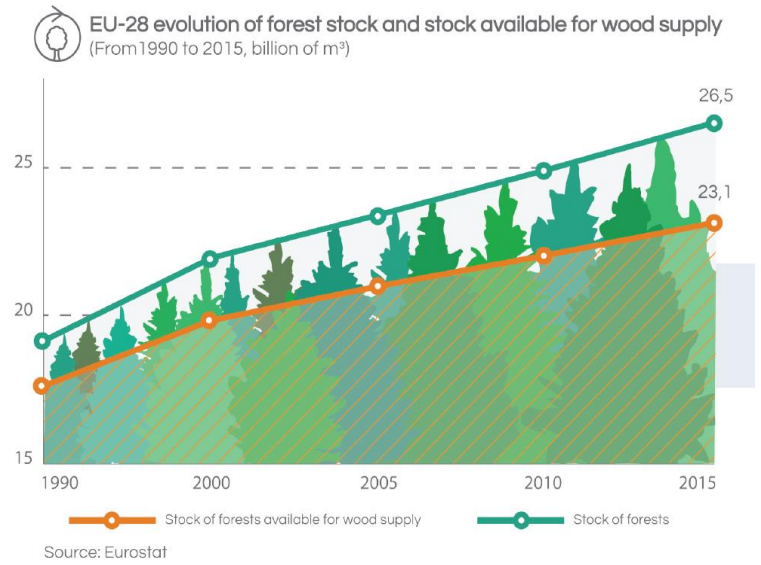
Fornybar løsning: Samspill mellom bio og el



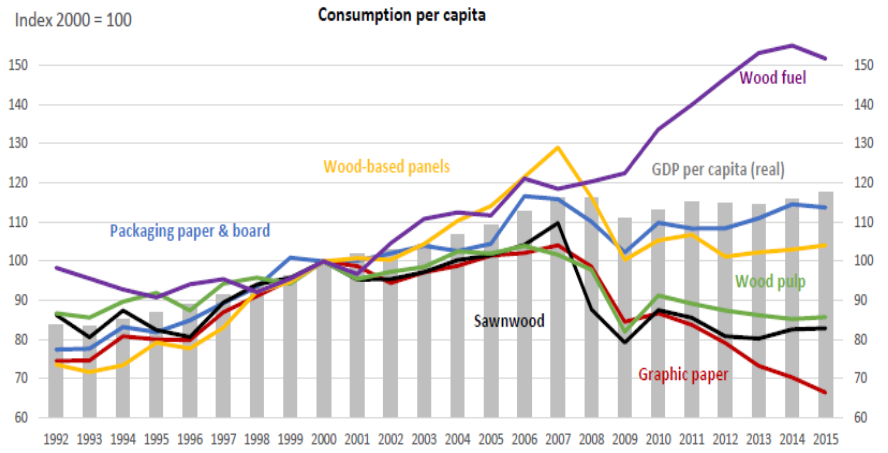
Varme og kjøling

Kilder: EU Heating and Cooling strategy & AEBIOM

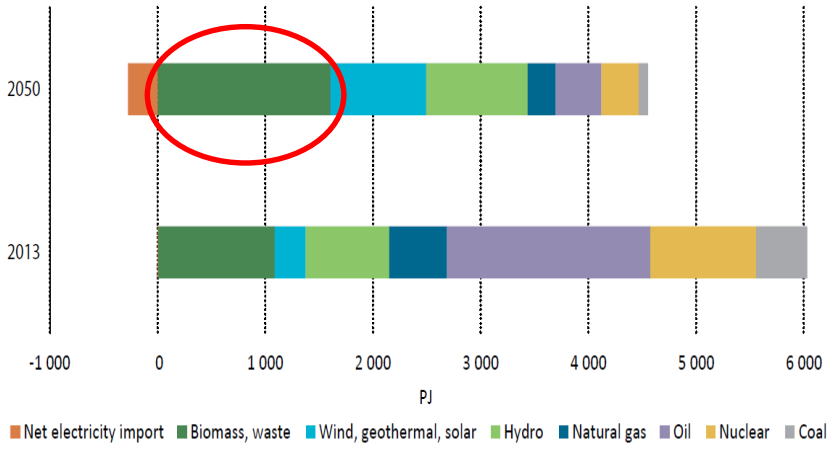
Hva med skogsektoren?

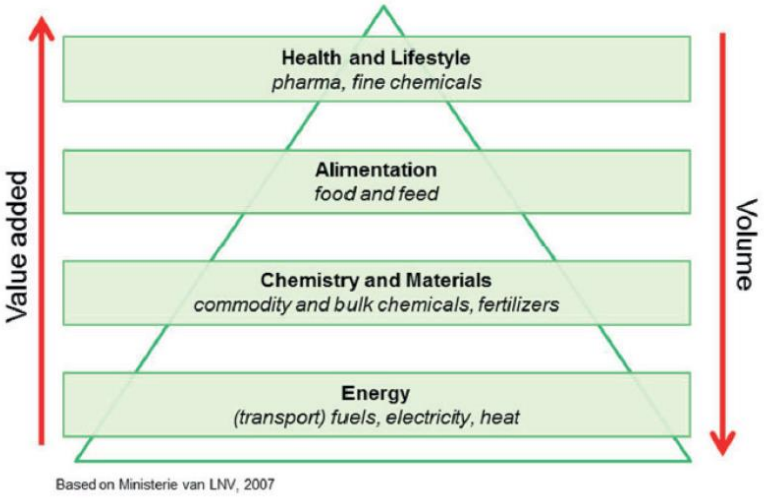


The scope of a forest-based bioeconomy (2)



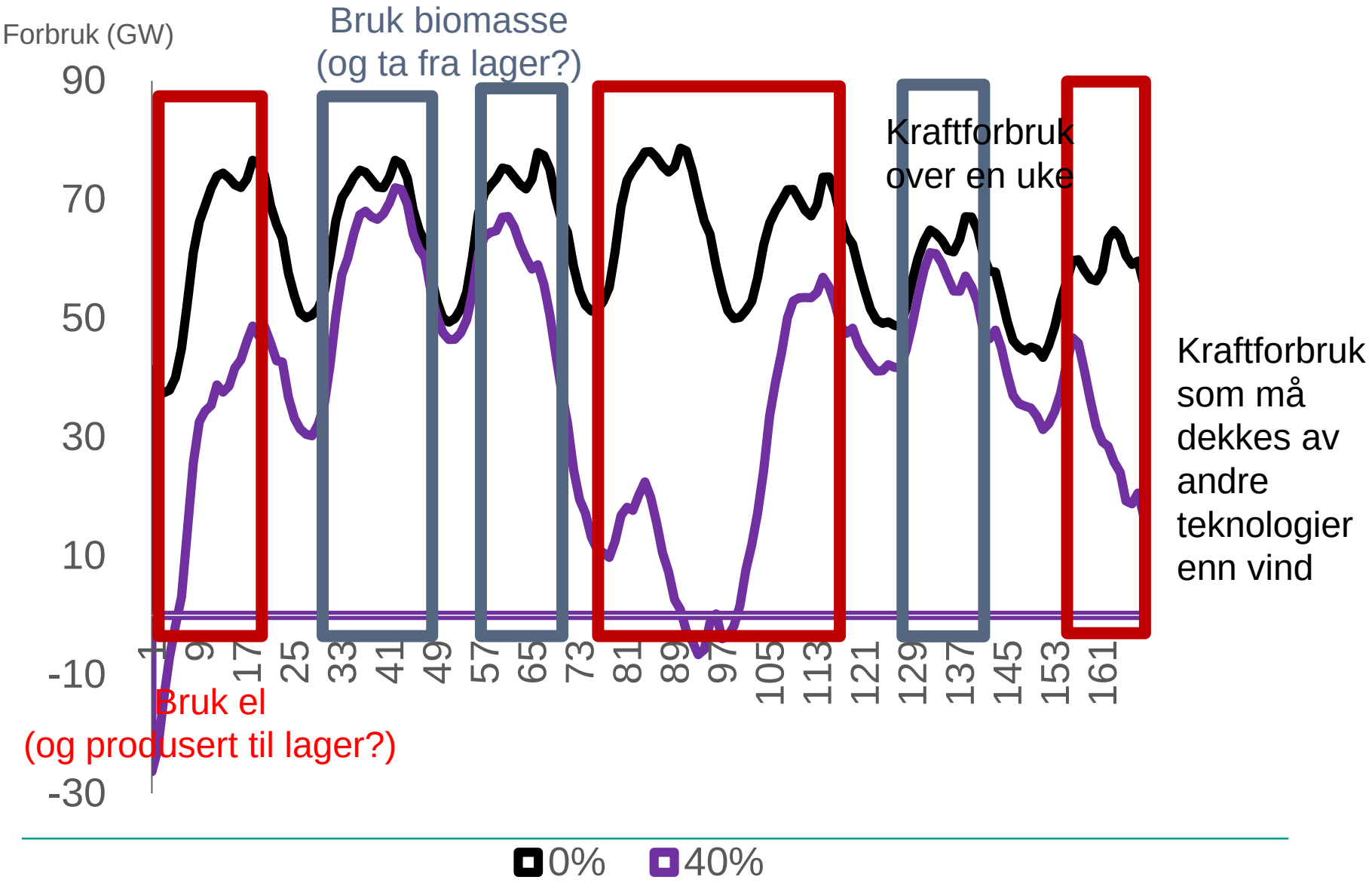
Consumption per capita of **forest-biomass-based products** and GDP growth in Europe
(Data: FAOSTAT, World Bank, here Sec. 3.9: Jonsson, Hurmekoski, Hetemäki, Prestemon)



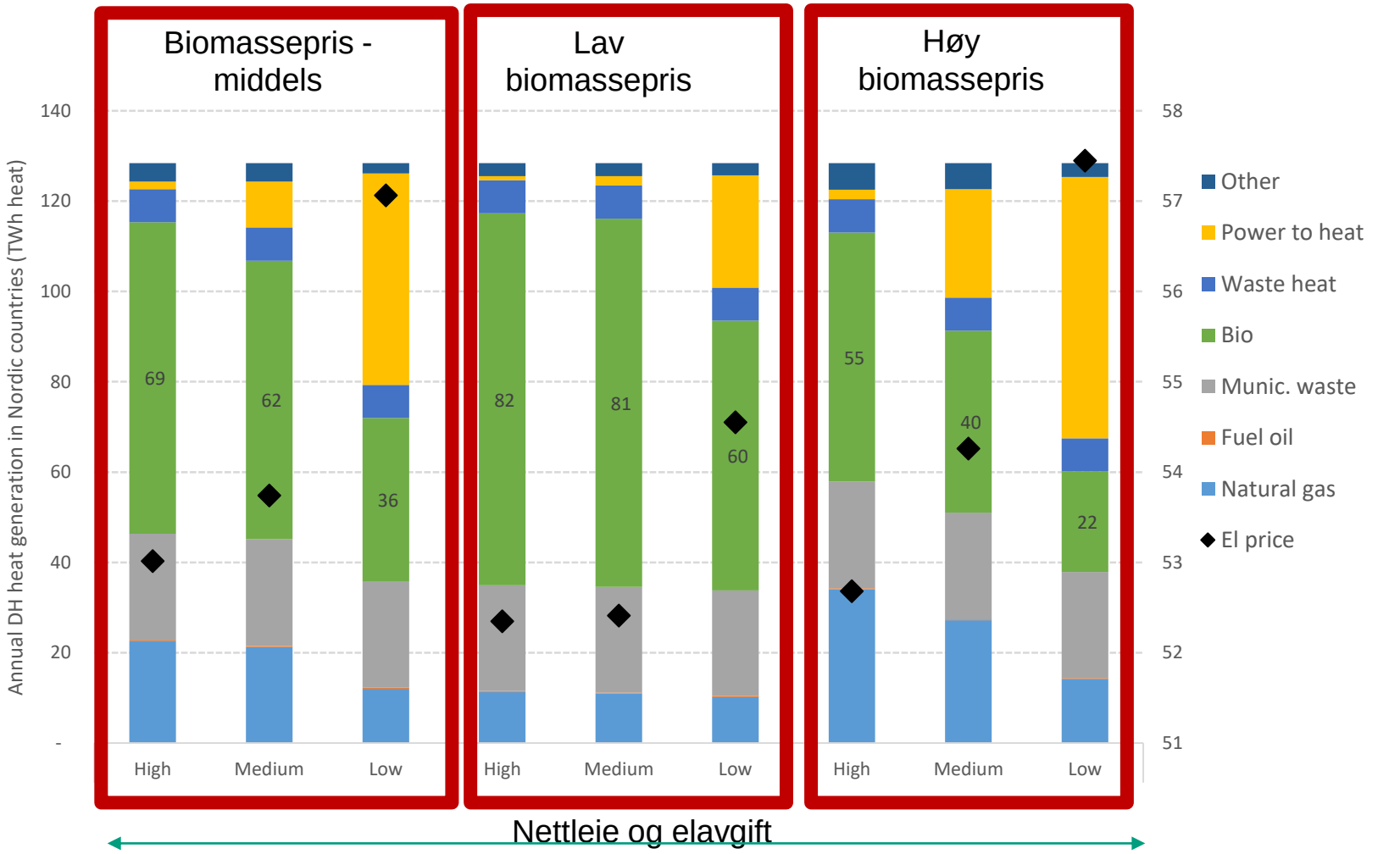


Based on Ministerie van LNV, 2007

Samspill mellom kraft og biovarme i fjernvarmesystemet



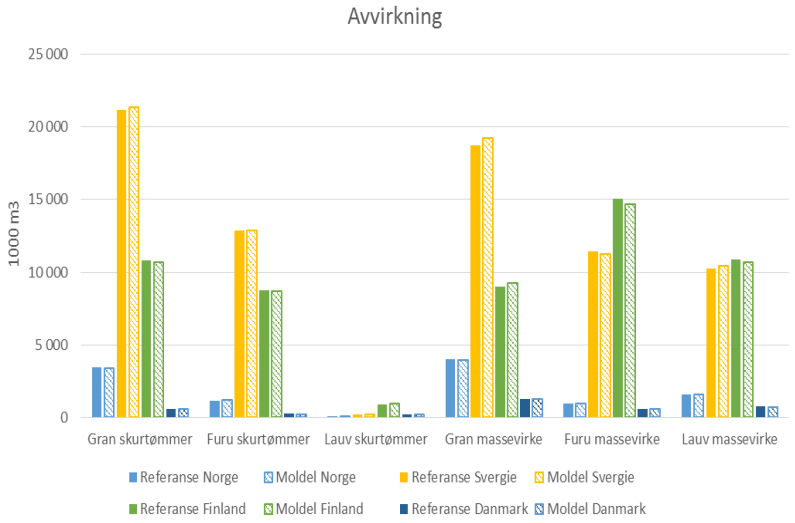
Biomasse versus el i Nordisk fjernvarme – avhenger av marked og reguleringer

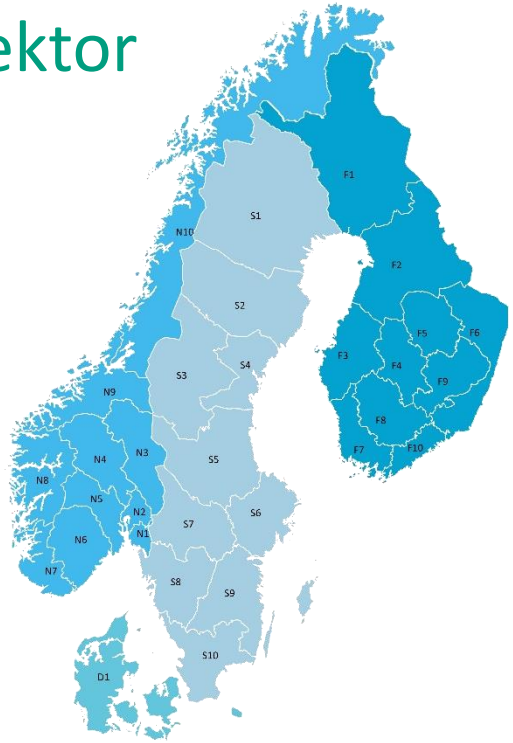


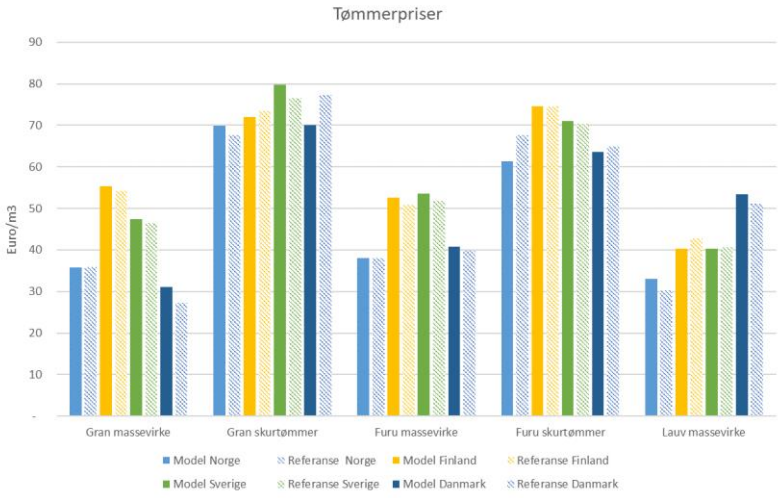
Kilde: Bolkesjø, Kirkerud & Trømborg (2016)

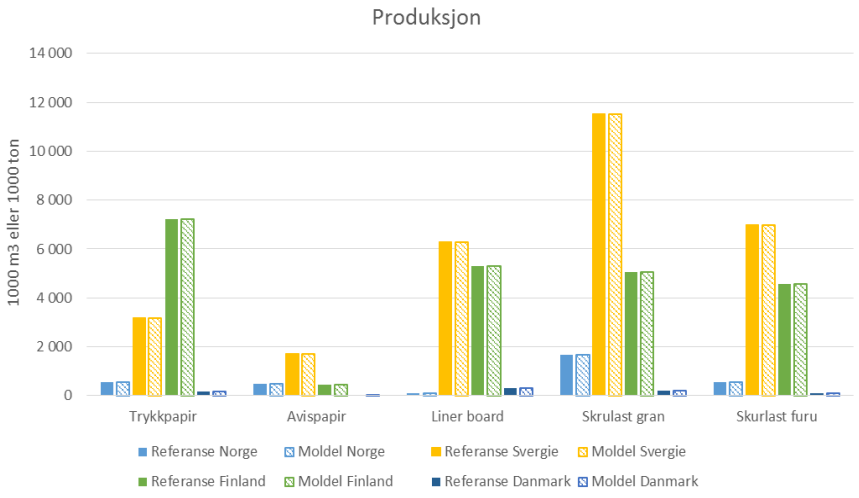
Modellanalyser av nordisk skogsektor

- The Nordic Forest Sector Model (NFSM)

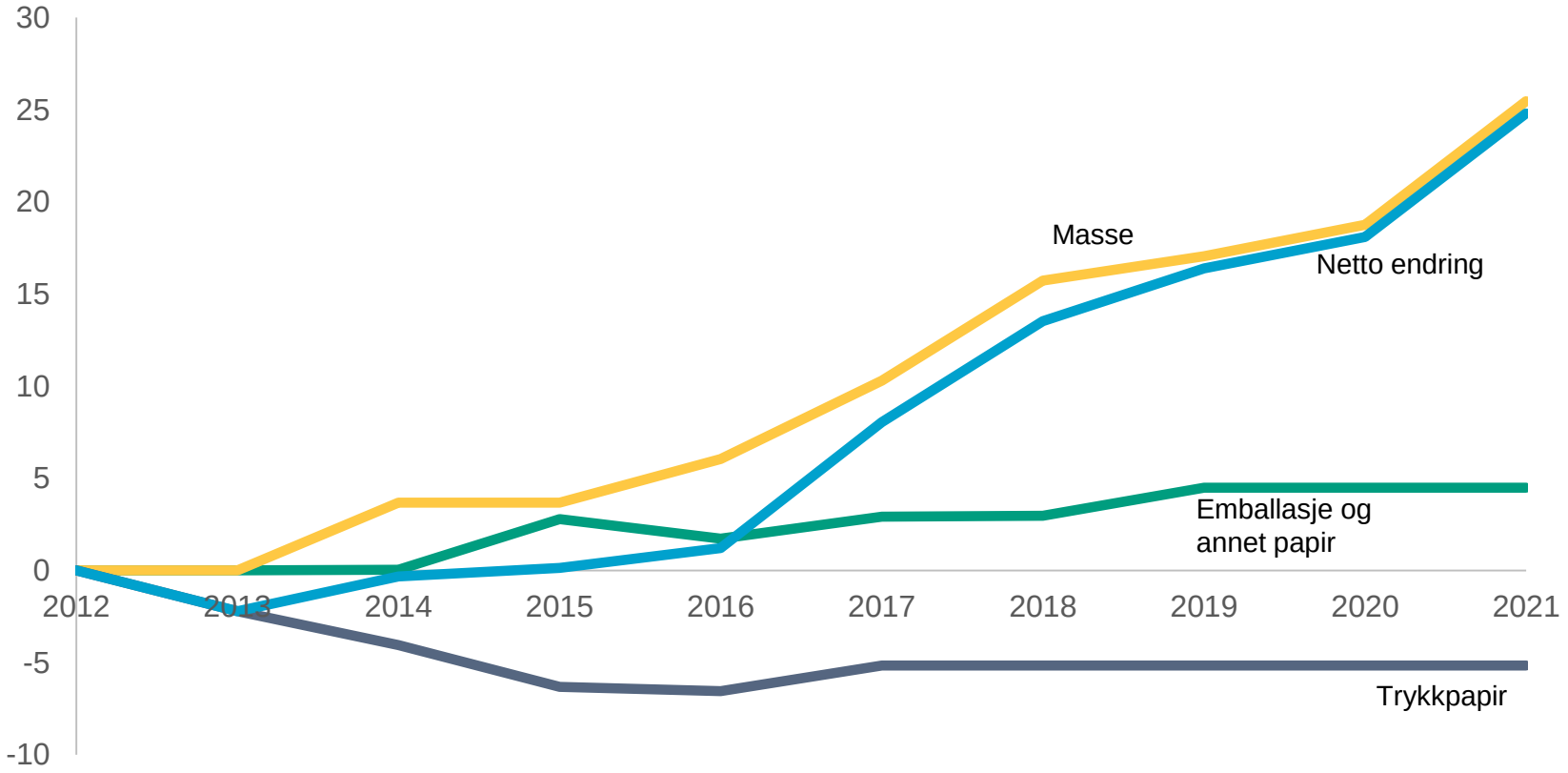




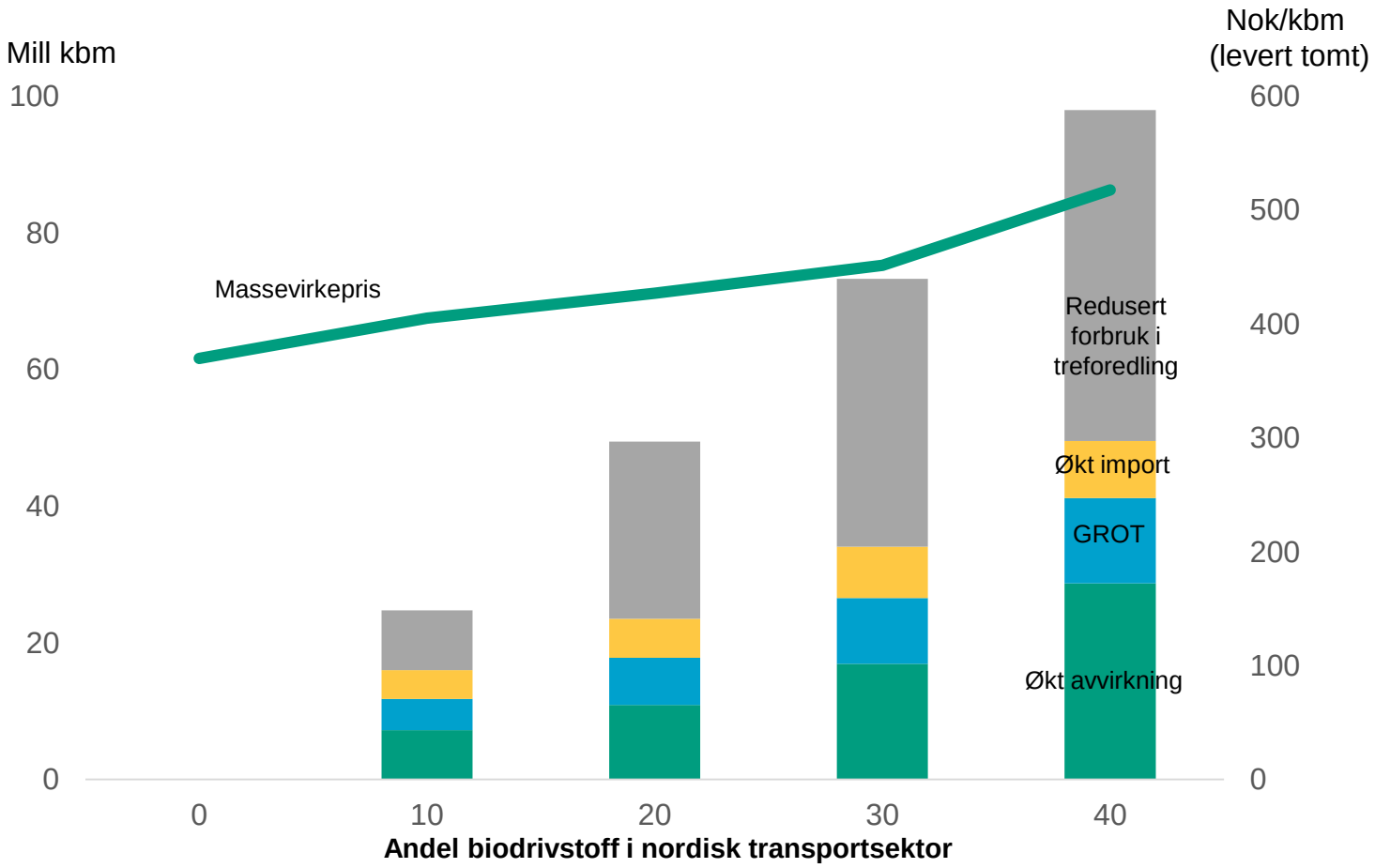




Forventede endringer i massevirkeforbruk i nordisk skogindustri (mill kbm)



Biodrivstoff basert på skogsvirke i Norden:
Eksempel på modellert tømmermarkedseffekt



Oppsummert

- Bioenergiens muligheter til å tilby fornybar fleksibilitet blir viktigere og mer verdifull
  - Fleksible løsninger som kan veksle mellom flere brensler vil etterspørres
  - Anlegg som kun har ett brenselsalternativ oppfattes som barriere for fornybare energisystem
  - Vi venter årlig varmetterspørsel i nordisk fjernvarme på 130 TWh mot 2030, en betydelig del vil være biovarme
- Utviklingen av biodrivstoffproduksjon vil avhenge av solide, forutsigbare og stabile rammebetingelser
  - Dersom skogbasert biodrivstoff bli en vesentlig del av nordisk transportsektor vil det påvirke tømmermarkedene betydelig
- Gjensidig konkurranse om biomasse mellom varme/kraft og drivstoff gjøre seg gjeldene på sikt
- Et godt bærekraftstempel er en avgjørende suksessfaktor