



# Impacts of the EU climate and energy package on the use of renewable energy in the Nordic countries

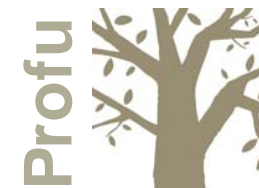
– A model analysis



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# The EU energy- and climate-policy targets ("20-20-20 until 2020")

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- ✓ Reduce **CO<sub>2</sub>-emissions** by 20% until 2020 compared to 1990
    - ⇒ ETS-sector 21% by 2020 rel. 2005,
    - ⇒ non-ETS-sector 10% by 2020 rel. 2005
  - ✓ Increase the share of **renewables** from 8,5% to 20% of total final energy use in 2020
  - ✓ Reduce **total energy use** by 20% until 2020 compared to a baseline projection for 2020
- ⇒ **Significant impact on the Nordic energy systems that will affect most of the energy markets and sectors ! Here we highlight the use of renewable energy.**



# The scenarios

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✓ **Reference scenario**

Existing policy instruments (incl 25 EUR/t, which we assume fulfills the CO<sub>2</sub> target for the EU in 2020)

⇒ How far do we reach towards our "Nordic goals" with existing policy measures?

✓ **"Green Package" scenario**

Existing policy instruments+Renewable target according to EU Directive (approx. +120 TWh renewable energy (final))

✓ **"Extended green package" scenario**

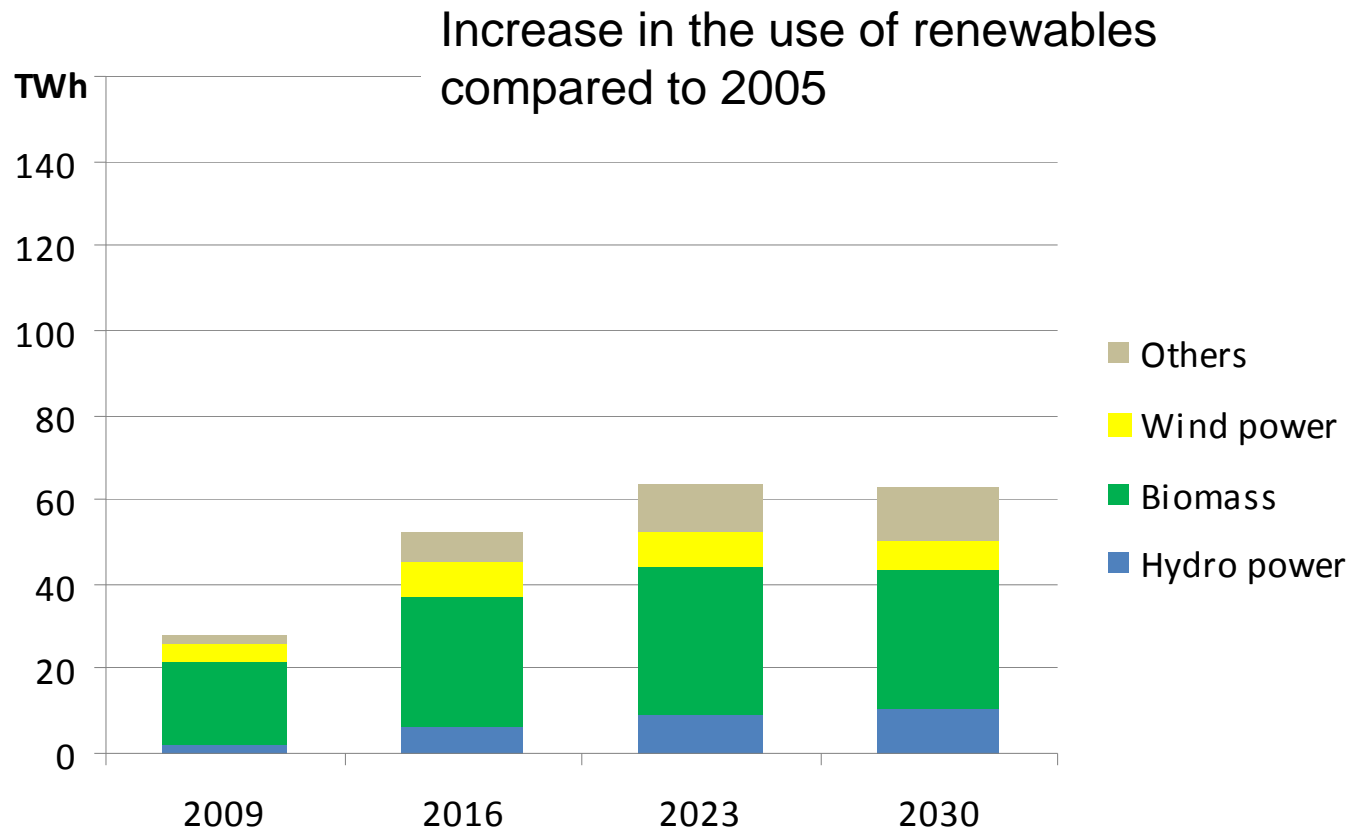
As "Green Package" but INCLUDING increased energy efficiency with 20 % in the Nordic countries as a whole

*The analysis deals with the stationary energy system, i.e. the transport sector is not included*



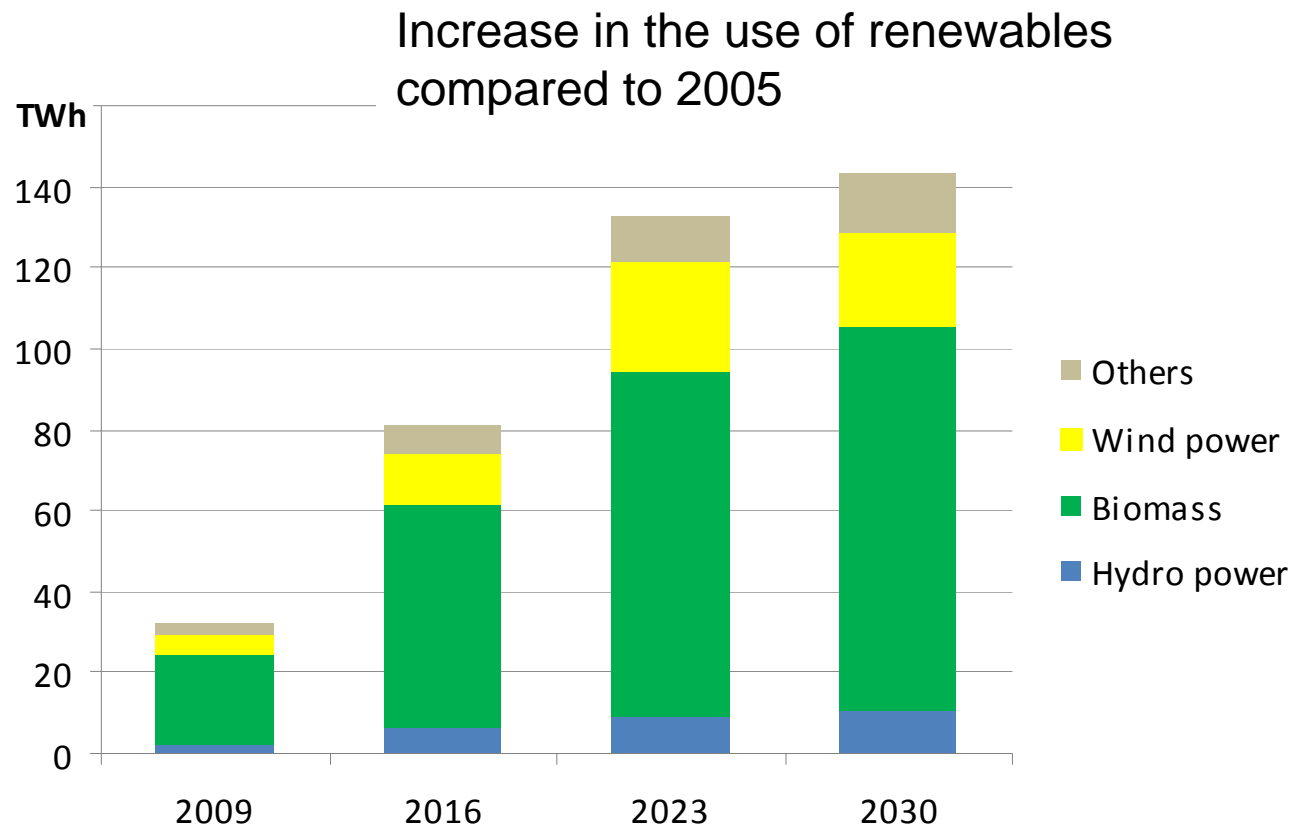
# The Nordic use of renewable energy

## - The Reference scenario



# The impact on renewables

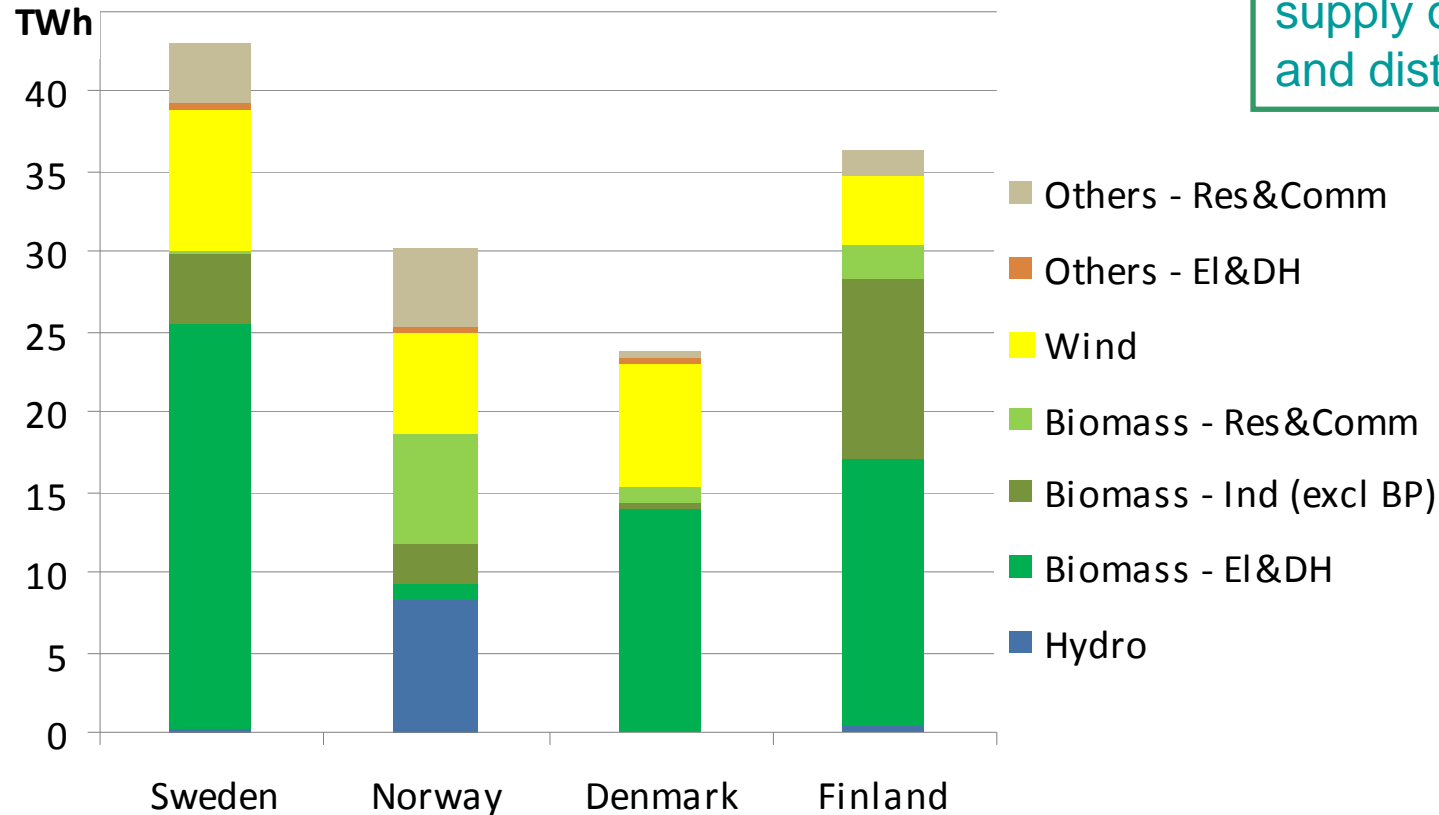
## - The "Green Package" scenario



# The increase of renewables by 2020

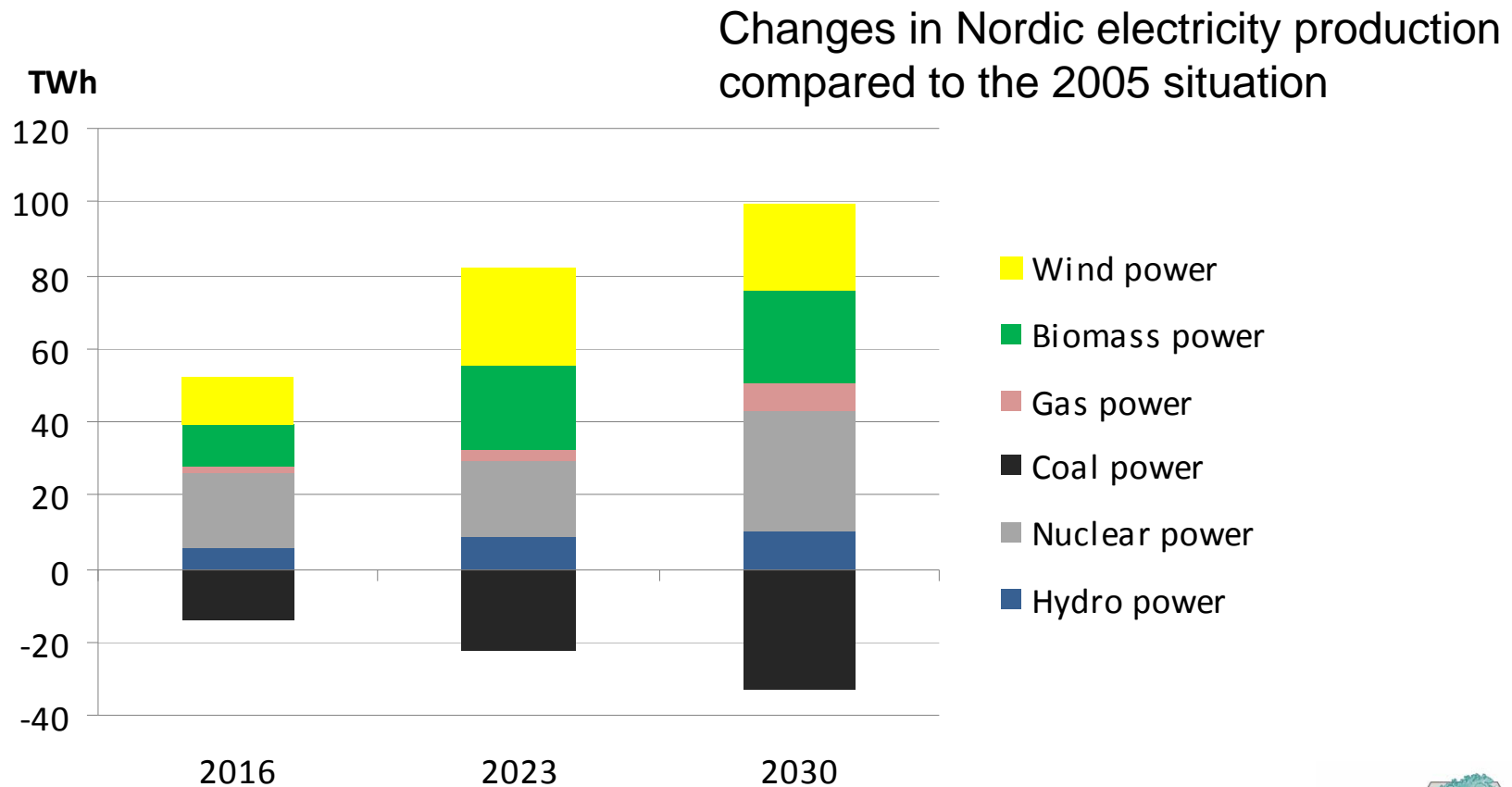
("Green package" scenario, country-by-country)

Roughly 70% of the increase occurs in supply of electricity and district heating

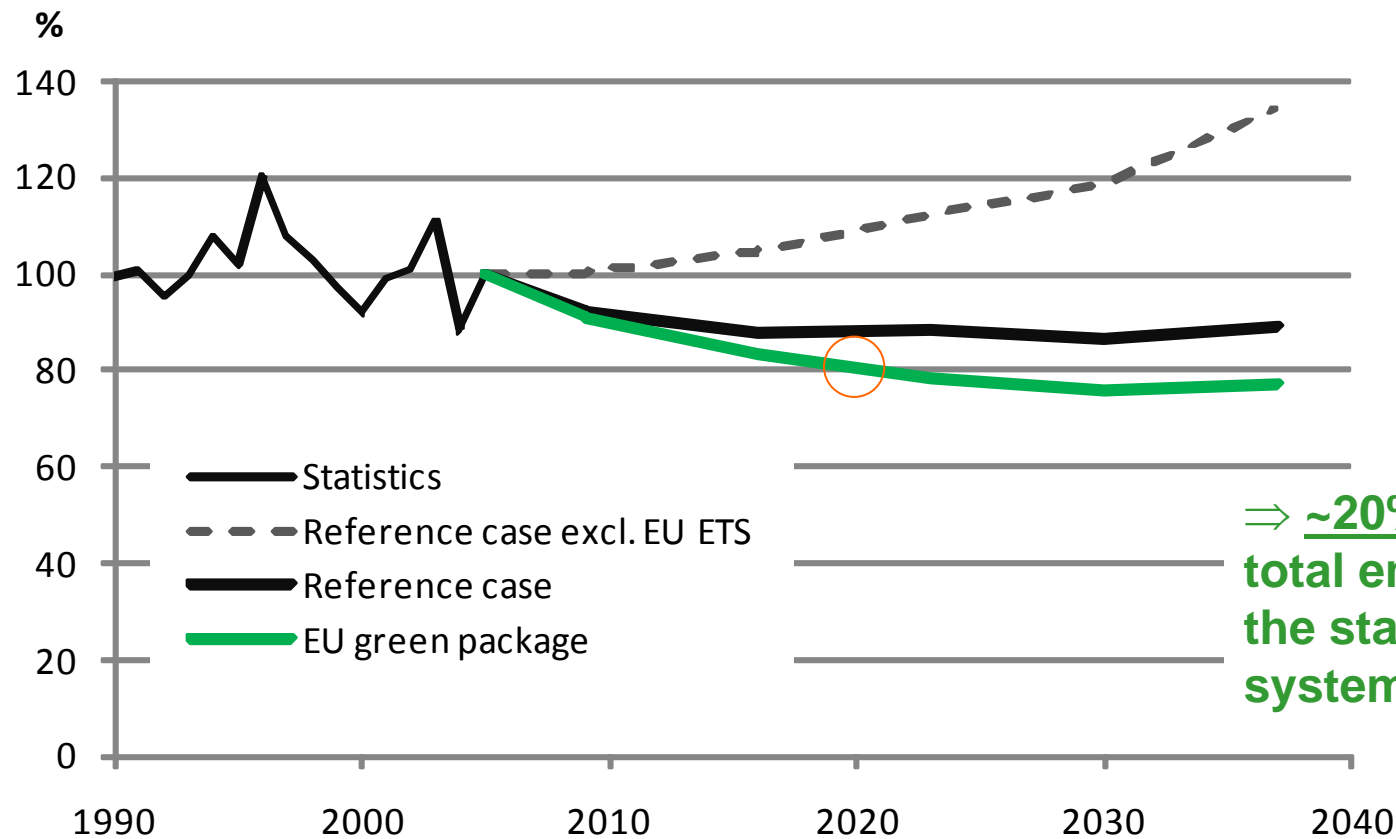


# Nordic electricity production, compared to 2005

## ("Green package" scenario)

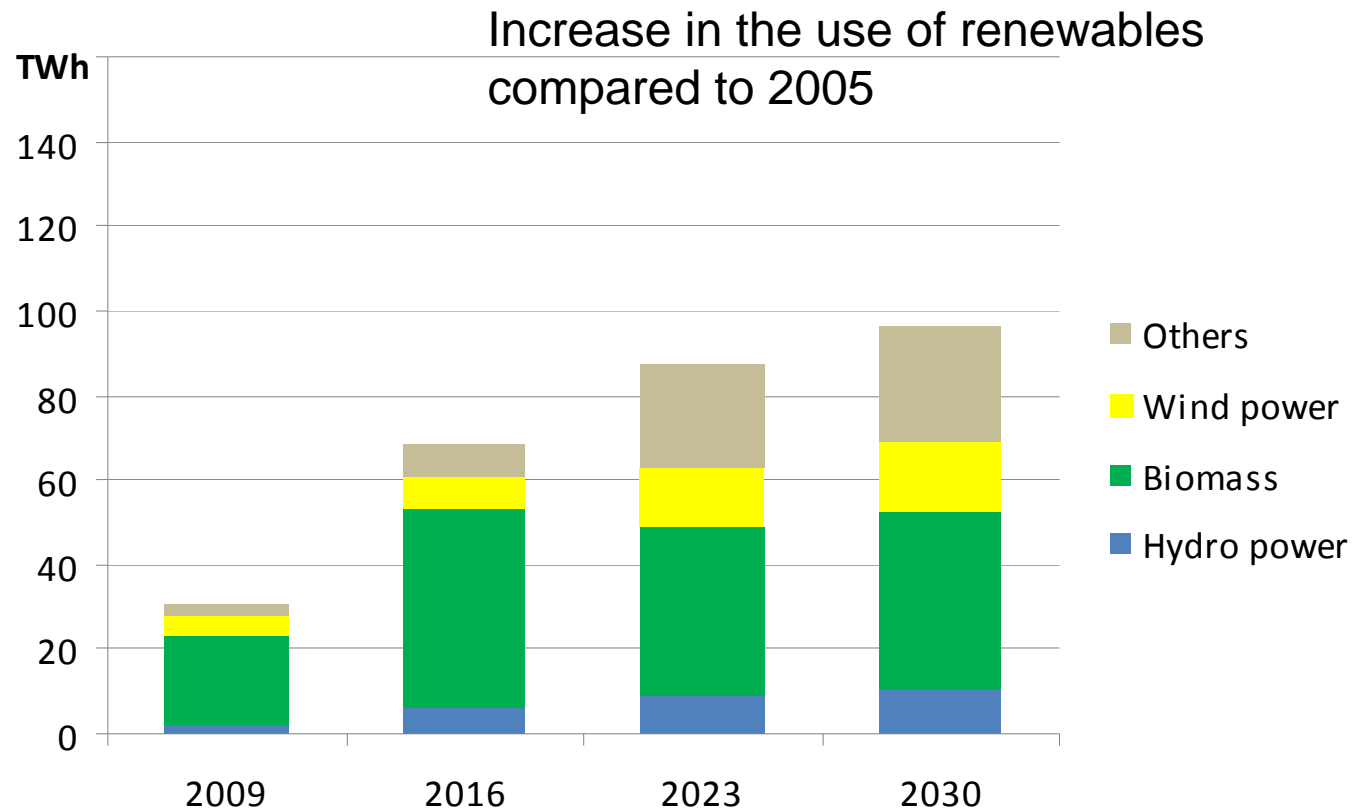


# Nordic CO<sub>2</sub> emission – different scenarios



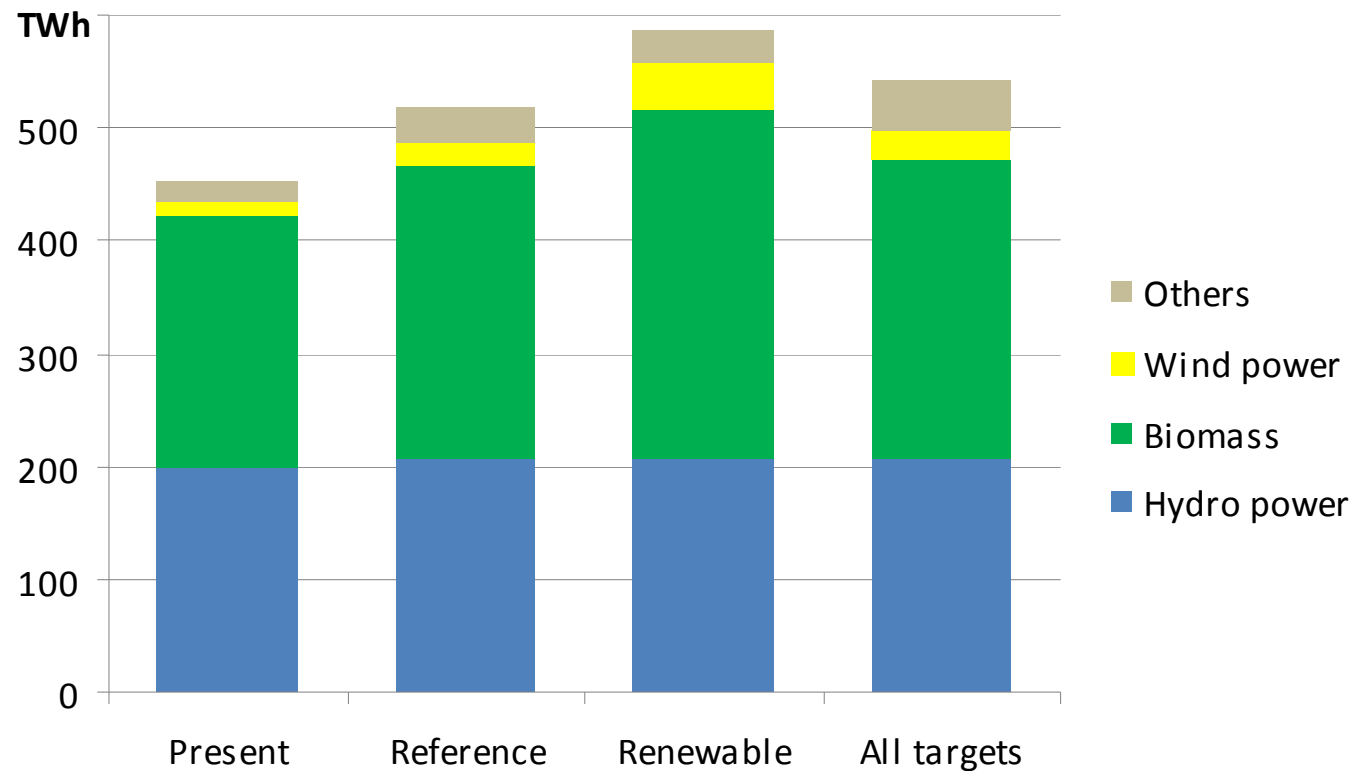
# The impact on renewables

## - The "Extended Green Package" scenario



# The total use of renewables

## - All scenarios (2023)



# Summing it all up ...

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- ✓ Already existing policy instruments increase the use of renewable energy by 60 TWh by the year 2020 (in the stationary energy sector of the Nordic countries)
- ✓ The renewable target increases the use of renewable energy even further, by 120 TWh to 2020
- ✓ Nordic electricity production increases by 60 TWh by the year 2020 (mainly from renewable energy)
- ✓ When the energy efficiency target is added the use of renewables increases less, but more than if only the existing policy instruments are used
- ✓ The policy scenarios give significant impact on most sectors and markets
- ✓ Biomass dominates the increase of renewables
- ✓ Different mix in the increase of renewables between the Nordic countries
- ✓ Nordic CO<sub>2</sub>-emissions from the stationary energy sector may decrease by 20 % in 2020 (rel. 2005) if the "green package" is implemented

