

# Nordic perspectives on (hydrogen and) storage technologies, Finland

Deputy Director General Timo Ritonummi

Energy Department  
Ministry of Economic Affairs and Employment

18 September 2019  
Copenhagen



Ministry of Economic Affairs  
and Employment of Finland

# Paris Agreement, carbon neutralites



- **The Paris Agreement (2015) finally gets "more wind into the sails" in Europe and globally**
- **Politicians are calling for Carbon Neutrality for 2050 (EU).... Even 2035 (Finland)**
- **Whether this goal is in 15-20 years or even 30 years, the slope down is deep**
- **Actions are needed in every sector: wind power, PV and EV is not enough – even with soya / oat milk in coffee and strict recycling**
- **All sectors must participate – and truly participate, not just E10 gasoline -scale**
- **Technologies that has been known – but not used or favored - are now undergoing 2<sup>nd</sup> (or 3<sup>rd</sup> etc.) emerge: Hydrogen & Fuel Cells, PV, EV, CCUS, Nuclear (SMR) etc.**

# The role of hydrogen and new storage technologies...



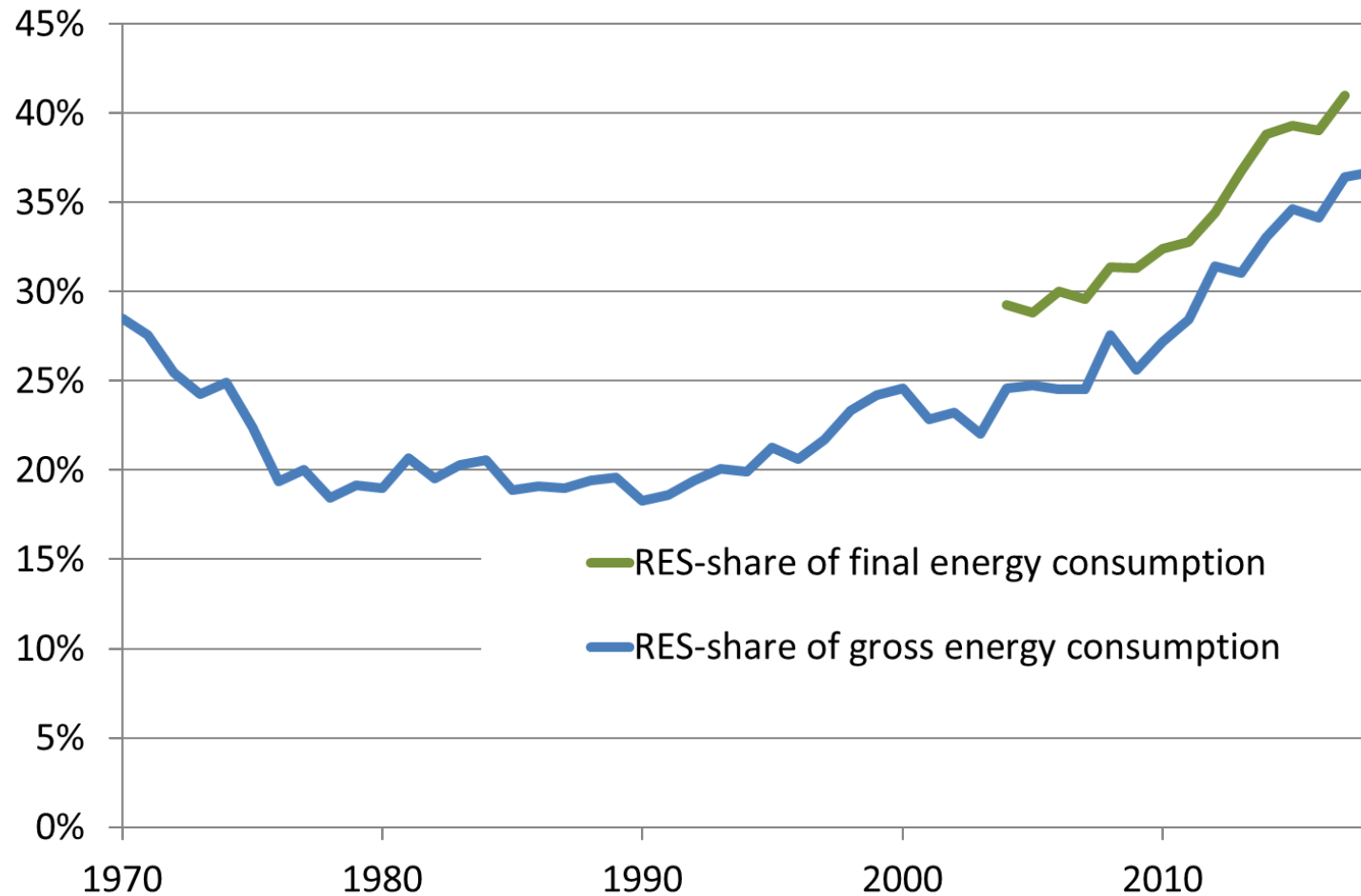
- **A lot of variable power production (PV, wind) is taken into use – even more coming**
- **All possible and economical ways of grid balance are needed: DR, storage etc.**
- **Sector coupling is a popular phrase, but also a must and reality in some cases**
  - District Heating and Cooling, power sector, transportation (hydrogen, electrofuels)
- **In transportation "only one option for ICE" = EV has been too dominating**
  - Renewable Fuels (liquid and gaseous) and Hydrogen and Electrofuels will be part of solution
- **Hydrogen and new storage technologies: promising alternatives, but must battle against other clean solutions – not automatically the next truth**

# Hydrogen and Finland



- **Political decisions: Carbon neutrality by 2035, transport 50 % renewables 2030 etc.**
- **They will develop into laws (like phase-out of coal by spring 2029) and RD&I fundings in accelerating phase – seems / hopes so**
- **Hydrogen, storage, CCU, electrofuels**
  - So far much more talk and theory than doing – now strong messages from industry
  - Some pilot-plans (LUT, St1 & Q-Power etc.)
- **Fuel Cell technology, long and strong RD&I (VTT)**
- **Wind power and PV not in that dominating role in RES in FI: now or in (near) future**

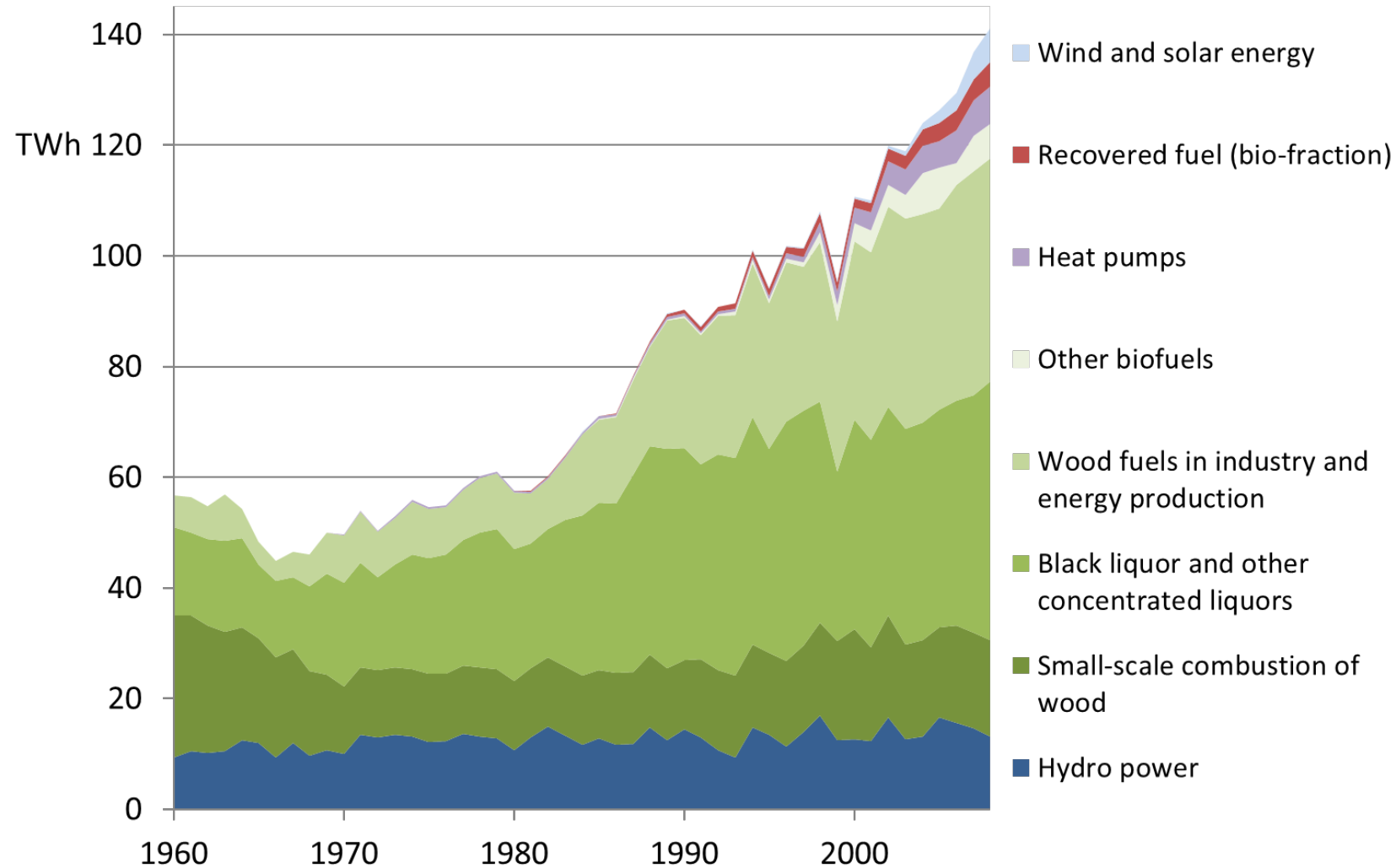
# Renewable energy share of final and of total energy consumption (1970-2017/2018)



Source: Statistics Finland, Eurostat



# Renewable energy in Finland, 1960 – 2018, TWh



Source: Statistics Finland



**Thank you!**

**Kiitos!**