REKK Regional Centre for Energy Policy Research

Low carbon transition in Hungary

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Elements of low carbon transition

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- Energy efficiency:
  - Zero emissions of not consumed energy
- Fuel shift: changing the fuel mix towards fuels with lower CO_2 content
  - renewable energy
  - nuclear energy
  - natural gas

- What is the state of affairs in these areas in Hungary and what are the prospects?

Energy efficiency

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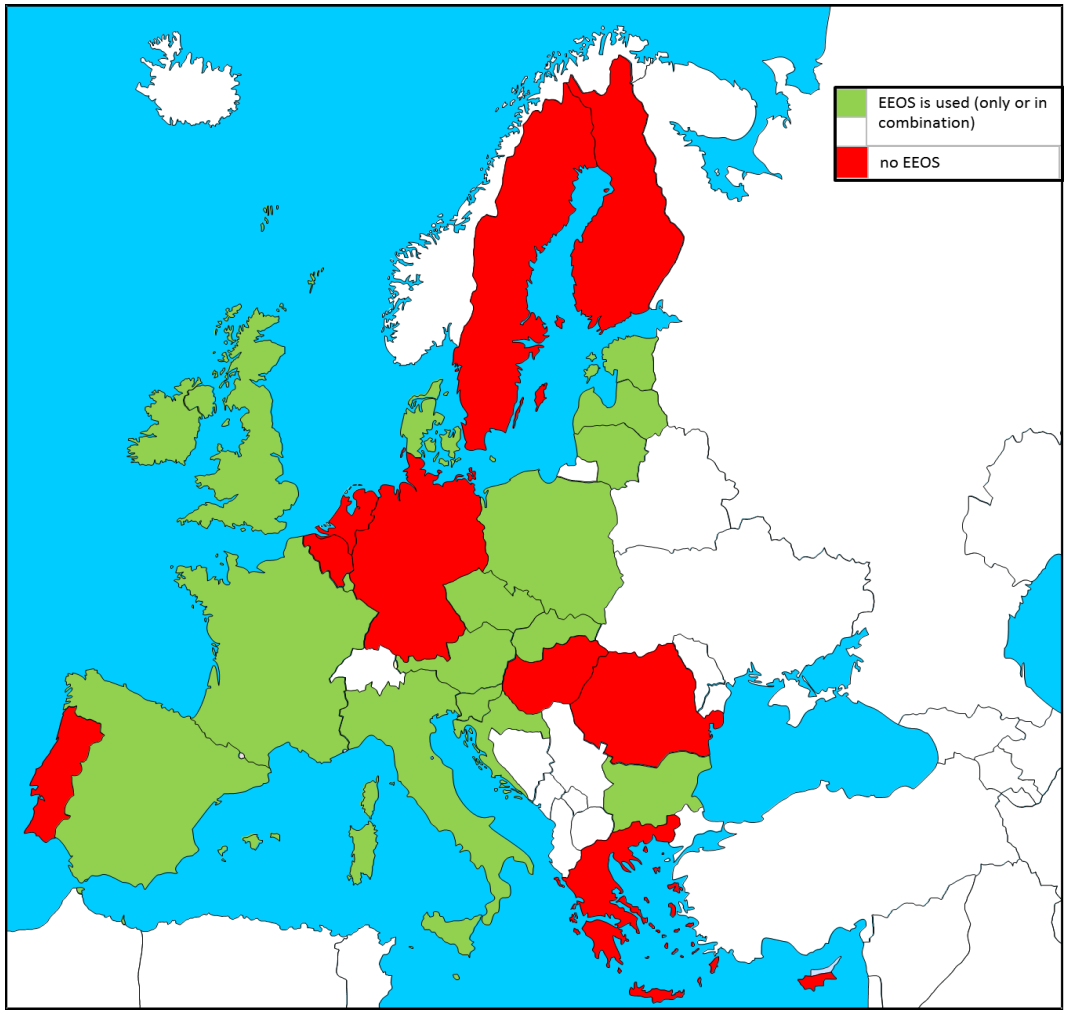
- Big potential especially in saving heat energy in the building sector
- EED provides some leverage but implementation is still weak in Hungary:
  - Residential buildings:
    - Building strategy is biased to panel buildings compared to the cost efficient portfolio among panels, traditional multiflat buildings and single houses
  - Public buildings:
    - Cadaster in under development
    - Preparation of a priority list for public funding
  - Co-generation: national heat map is not prepared yet (defining heat demand that can be met by new/refurbished PP above 20 MW)

Energy efficiency obligation schemes

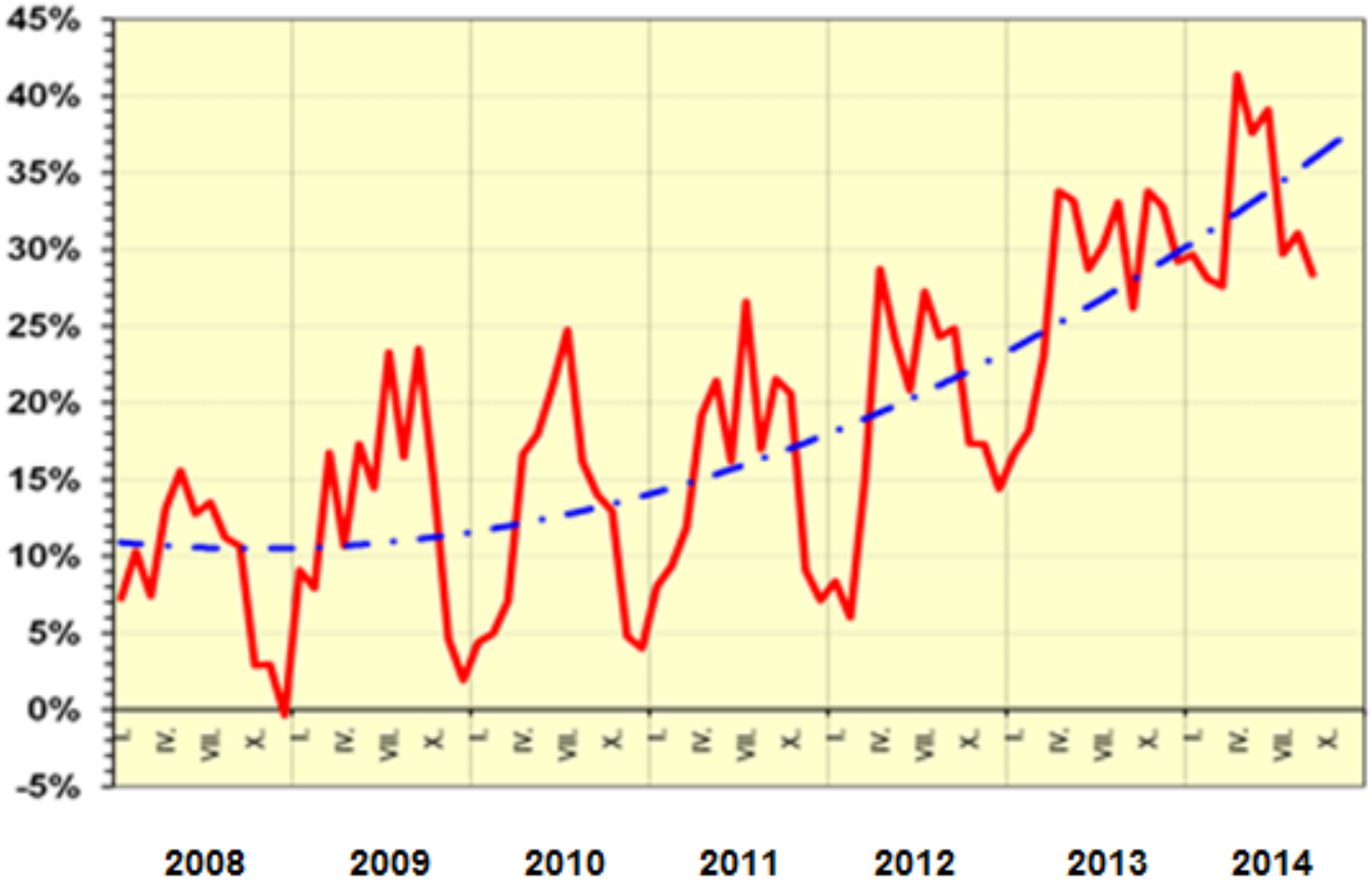


- Hungary will not introduce energy efficiency obligations scheme as mandated by Art 7 of the EED
- EU funds will be distributed to building owners via financial intermediaries
- Companies with an energy savings target under the EEOS could track cheap energy savings opportunities more efficiently (as opposed to the state) if coupled with effective monitoring and verification by public agents

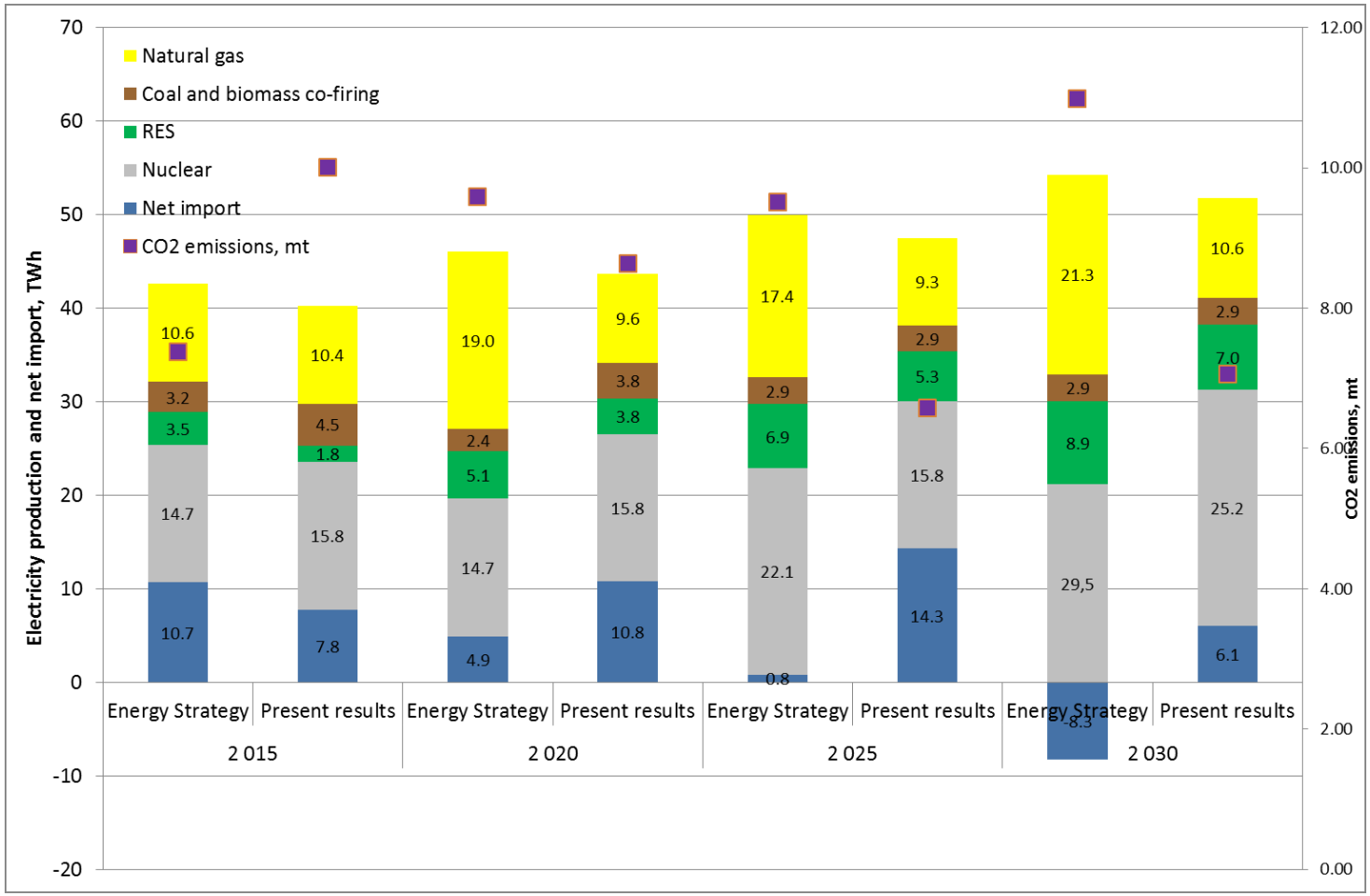
Natural gas

- Natural gas is a potential useful substitute for coal
- Unfavourable market conditions result in closure and low utilisation of gas power plants and high import:
  - High gas and low electricity price (diminishing spark spread)
  - Low CO2 price (no strong impact on fuel competitiveness)
  - Low coal price
- But gas is a security of supply issue in Hungary:
  - Gas is 36% of total primary energy consumption
  - Share of Russian import in gas consumption: 80%
  - Enhanced RES and energy efficiency policy can reduce the dependence on Russian gas by 2030 at moderate cost

Electricity import = carbon emissions export



Electricity production forecast: decreasing GHG emissions

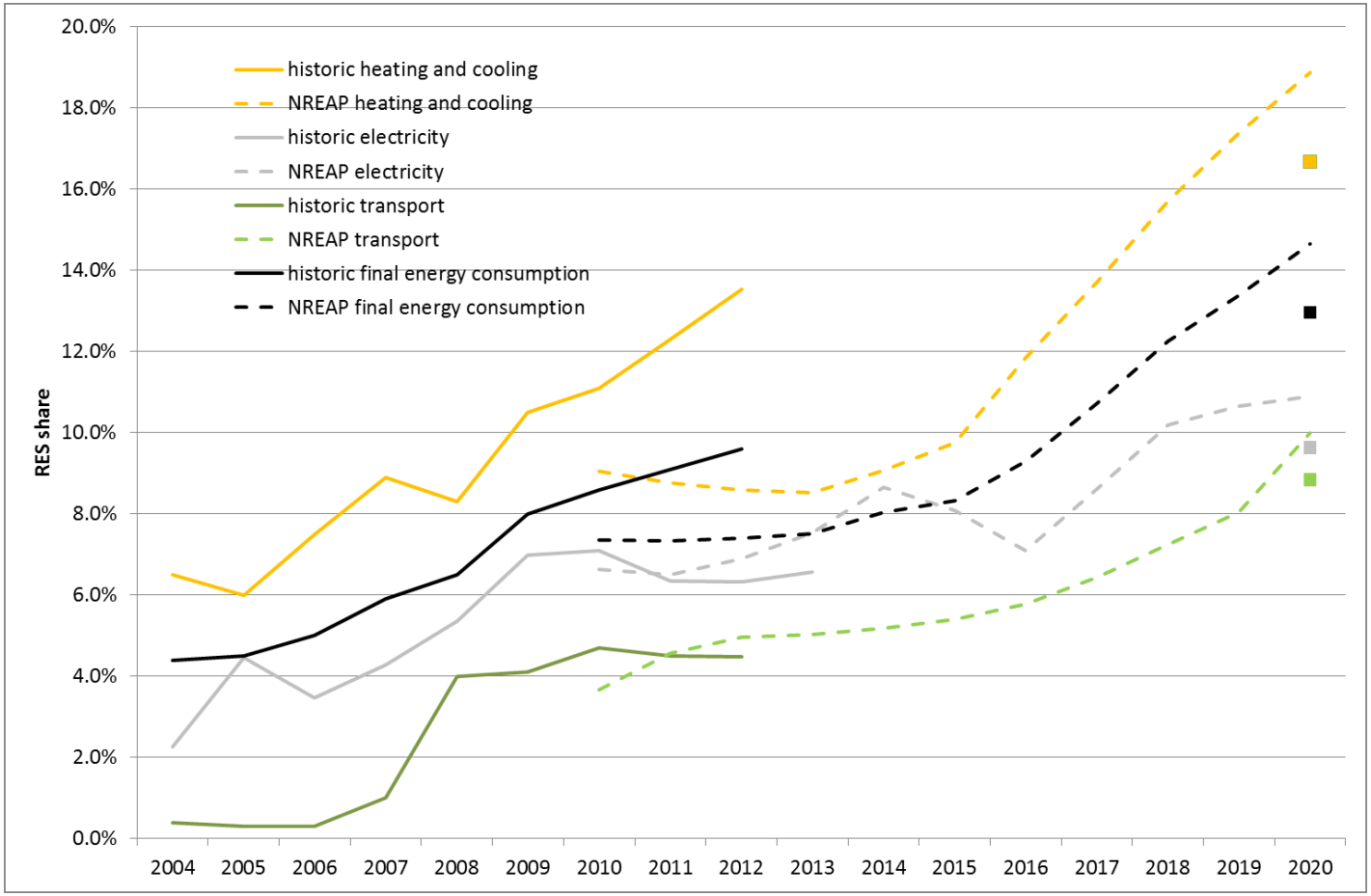


2010: increasing CO2 emissions due to high gas and export (Paks and RES cannot counterbalance)

2014: decreasing CO2 emissions due to lower electricity price forecast: import instead of export and lower gas share due to cheap coal (low CO2 price)

Energy strategy (2010) and Recasted Energy Strategy (2014)

Renewable energy forecast



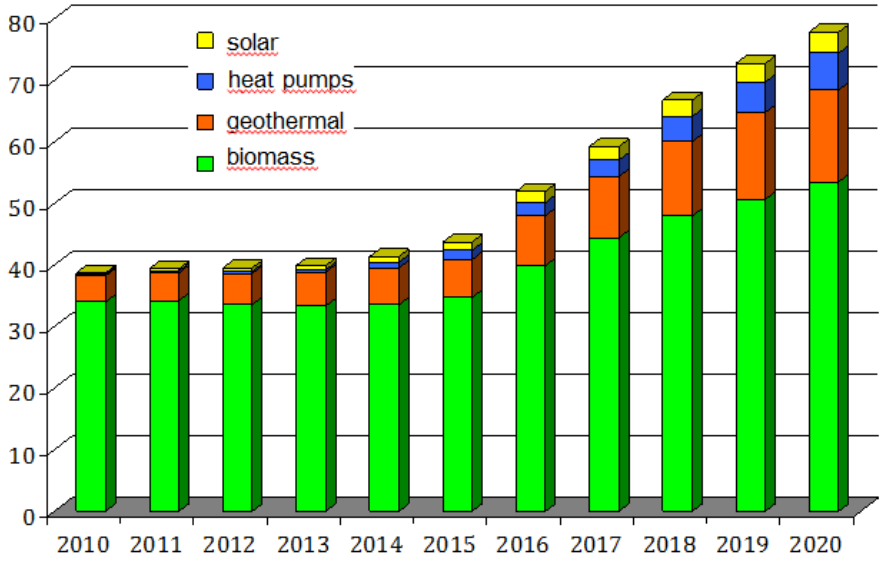
On track so far due to heating but NREAP gets steep after 2015 and RES electricity capacities needs to be auctioned from now on!

RES: electricity versus heat

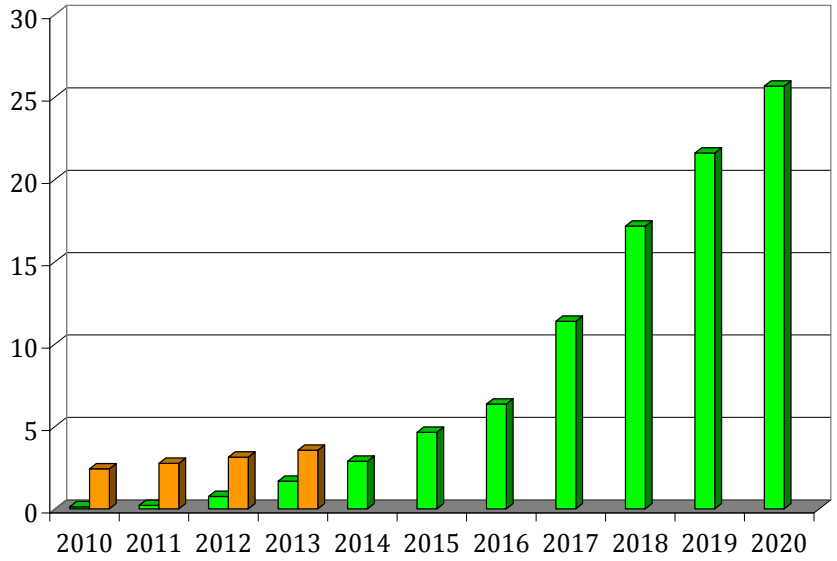
- Better potential in heating (biomass and geothermal)
- High heat demand
- Considerable existing district heating infrastructure
- Lower unit cost of substitution of fossil fuels with RES
- Employment effect of biomass but
  - Scale is important (what is the km range of fuel supply)
  - Problems of reliable fuel supply provision

RES heat forecast

RES heat (PJ)



RES district heating (PJ)



- biomass and geothermal are the dominant production technologies in RES heat
- two-third of RES heat is planned to be utilised in the district heating sector: the policy intention is there (42 bn HUF for RES DH investment in the 2013-2020 EU funding period) but the realisability of the planned boom is questionable
  - Once fuel shift options are exhausted (substituting gas with RES in existing DH networks) then new DH network development is expensive
  - Mismatch of heat demand concentration and geothermal resources

Benefits of low carbon transition for Hungary

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	Securit y of supply	Ind. development	Employment
Energy efficiency	+	-	+
Renewables	+	-	-
Nuclear	-	-	-
Natural gas	-	-	-

Hungary is not likely to be a leader in energy generation technologies…

What needs to be done to harness the benefits of low carbon transition?

- Focus on energy efficiency:
  - Cheaper than RES
  - Additional social benefits (lower bills)
  - SOS benefits are substantial
  - Can employ considerable amount of workforce in the construction sector and countrywide (unlike Paks NPP) and can stimulate the supply chain (insulation materials)
  - Disburse EU funds efficiently:
    - Avoid free riding
    - Low funding intensity for grants but mainly more preferential loans (avoid moral hazard and gold plating)
    - Funding criteria defined to encourage deep retrofit
- RES heat should be a priority
- Employ cost reflective energy prices (utility end user price reduction kills EE and RES investments)