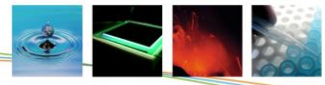


28/11/2010

Renewable heat, a hot topic

A policy and techno-economic assessment of EU2020 targets.

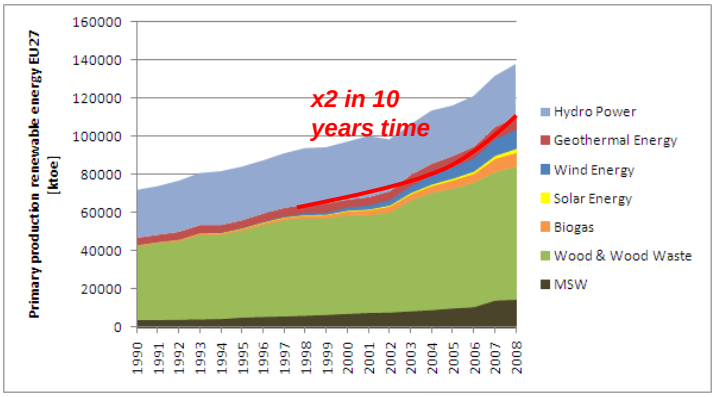
Lodewijks Pieter en Renders Nele

Outline presentation

- The role of biomass in Europe's NREAP's
- Flemish cost curves for renewable energy
- Possible supporting mechanisms ?

Effect EU climate policy

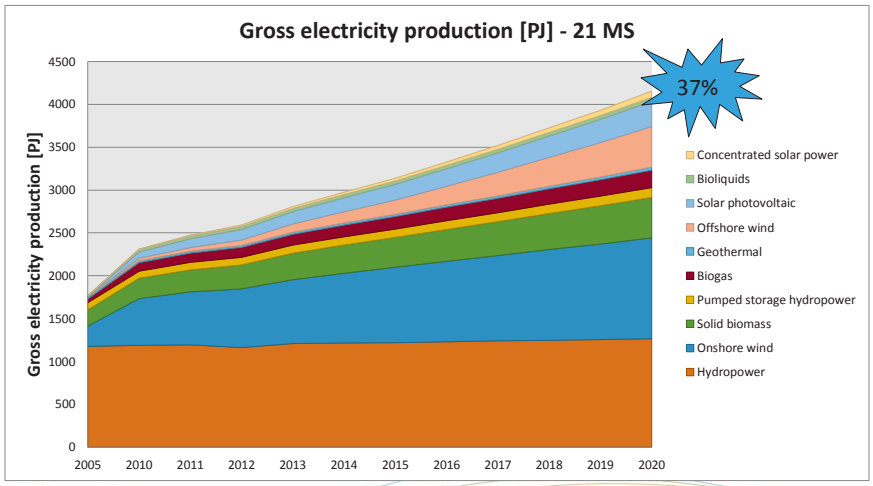
- Directive 2001/77/EG: promotion of renewable electricity



Effect EU climate policy

- Directive 2009/28/EG: promotion of renewable energy
  - By 2020:
    - 20% renewable energy in consumption
      - Electricity
      - Transport
      - Heat
    - 20% less CO_2-emissions
    - 20% improvement of energy efficiency
- NREAP: National Renewable Energy Action Plan
  - 21 MS uploaded today

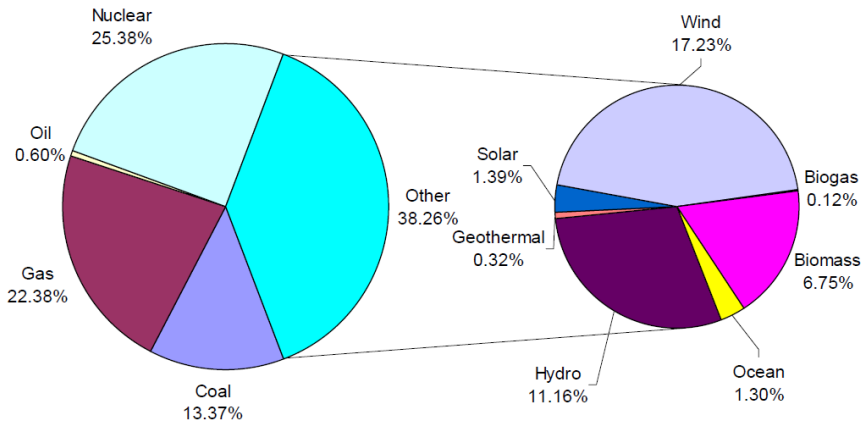
NREAP renewable electricity production



vito vision on technology

RES 2020

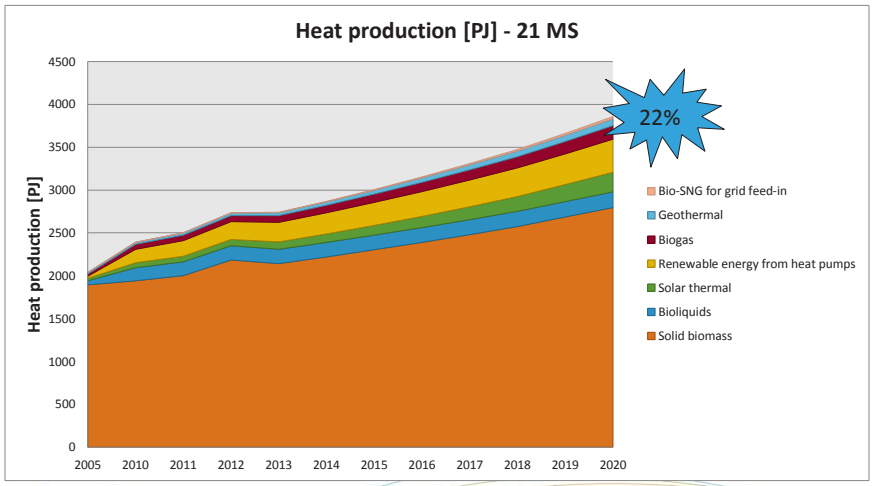
PanEuropean TIMES – EU27



Share RES Electricity Production
Scenario RES-30 in 2020

ΚΑΠΕ CRES

NREAP renewable heat production



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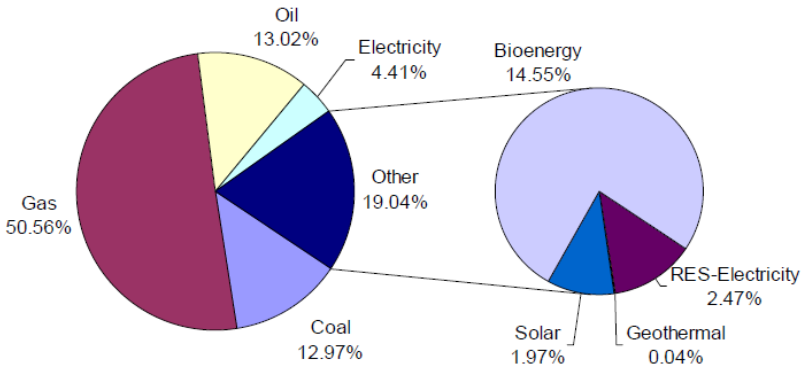
RES 2020

PanEuropean TIMES – EU27

RES Consumption for Heat Production in 2020



ΚΑΠΕ CRES

NREAP renewable heat production

- Some figures:
  - > 45% of total biomass in 2020 will be used by residential sector
  - This residential biomass produces 32% of total RES-H
  - 3,5% of final heat use by means of district heating
  - 0,1% of final heat use by means of bio-SNG through grid feed-in

Flemish cost curves

- Belgian RE target: 13%
  - Flemish RE target: 13% (?)
- 'Cost curve' as support for Flemish plan
  - Optimisation 2010 - 2030
  - Compatible with NREAP calculation methodology
  - Air pollution: not exeeding indicative National Emission Ceilings for 2020
  - Carbon value: Primes baseline 18,8 $€_{2005}$/ton in 2020
  - Exogenous technology learning
- Base scenario
  - No certificates
  - Nuclear phaseout from 2015 on

Flemish cost curves - technologies

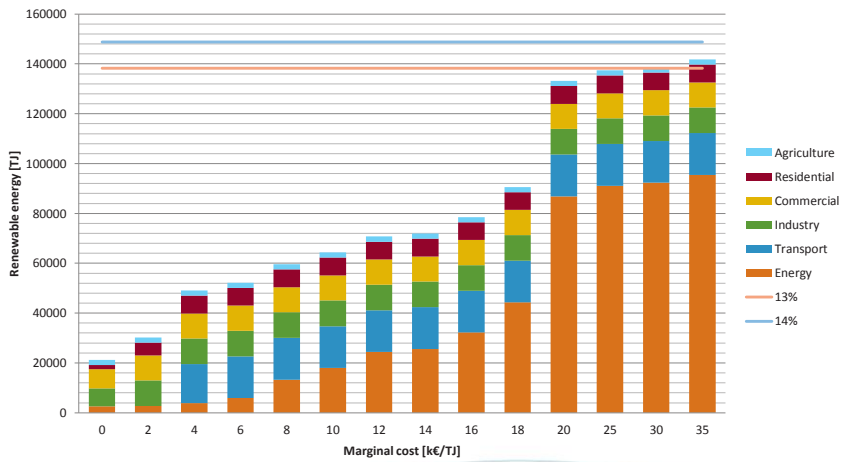
Power sector
- Wind on-/offshore
- Biomass co-combustion
- 100% biomass
- Green CHP
- PV
- Water
- Waste

Industry
- Green CHP
- Biogas
- Bioliquids
- Wood chips
- Wood pellets
- Wood pieces

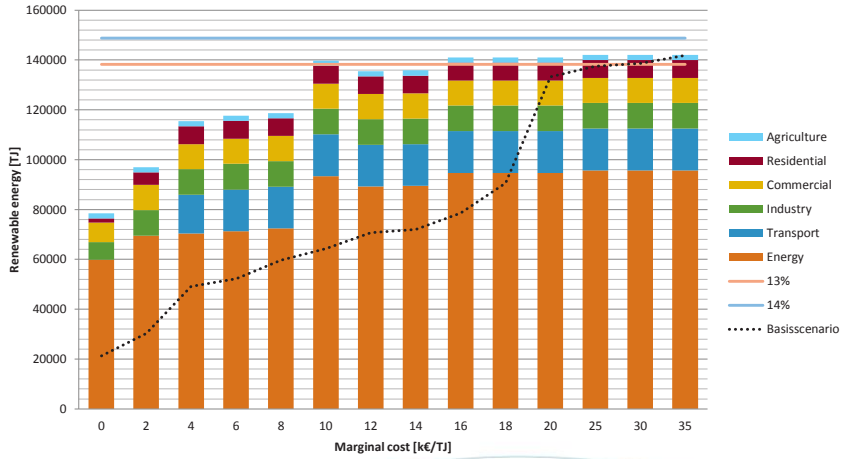
Residential/commercial sector
- Heat pumps
- Wood pellets
- Wood pieces
- Solar boiler

Agricultural sector
- Wood pieces
- Wood chips
- Geo heat pumps

Flemish cost curves – base scenario



Flemish cost curves – certificate scenario



Flemish cost curves – RES heat

- Certificate system for electricity production
  - CHP certificates
  - Green electricity: PV, wind, …
- Subsidies, tax deduction for some green heat technologies: solar boiler, heat pumps

- BUT no supporting system for biomass heat in Flanders
- Do we need it ? Probably
  - Biogas potential limited although >95% of houses connected to gas pipeline
  - Barrier effects, current implementation low for industry and residential sector

Possible supporting mechanism

- Existing supporting mechanisms are focused on high investment costs and returns based on MWh of production
- Biomass heat production → low investment costs and highly uncertain fuel cost
  - Supporting mechanism based on fuel use/heat production can have perverse effects → poorly insulated house uses more energy

Supporting mechanism in 

- Le Fonds Chaleur: tendering system for renewable heat
  - Period: 2009-2011
  - Total budget: 1 b€
- Investment support for private sector
  - VAT/tax deduction on individual basis
  - 25% during startup of project
  - 15% next 5 years (corrected to real production of RES-H)
- High administrative burden
  - 37 national applications → 31 awarded
  - 289 regional applications awarded

Supporting mechanism in 

- June 2008: Renewable Energy Strategy Consultation
  - Indicative: 11-14% by 2020
  - 2007: 0,6% and going down
- July 2009: Renewable Heat Incentive
  - Certificate system → feed-in tariffs
  - Start april 2011
- For private houses (>125 mm insulation), commercial sector, industry
  - Heat pumps
  - Solar boilers
  - Biomass central heating
  - Biogas and grid injection
  - Bio CHP
  - …

Supporting mechanism in 

- Subsidy for solar boiler, heat pumps and biomass = regional
  - Linked with energy efficiency of the building
- Tax mechanism:
  - Tax on biomass 10%, fossil 20%
  - Extra tax on fossil fuels for residential sector: 98€/1000 l oil, 6,6 c€/m³ gas
  - Tax deduction : limited success
- Result: oil price is most stimulating
- Low administrative burden

Supporting mechanism in 

- Renewable heat → 2 pillars
  - Mandatory in building code
  - Promotion
    - Subsidy (Marktanreizprogramm: MAP)
    - Bonusses
    - Green loans (KfW-programm)
- High administrative burden
  - MAP: 253 000 applications
  - KfW: 2100 applications

Conclusions

- NREAP's: 22% of renewable heat production by 2020
- Important role for biomass
- Role for supporting mechanisms
- How does the ideal supporting mechanism for renewable heat looks like ?
- Prices biomass vs fossil fuels !