



Ministry of Economic Affairs

RENEWABLE HEATING & COOLING

*The view of the presidency
of the council of the EU*

Tjalling de Vries
Ministry of Economic Affairs
the Netherlands

Brussels June 15, 2016



View of the Netherlands on renewable H&C

- Goals of Paris Climate summit are ambitious; CO₂-emissions near zero in 2050 for EU
- Heat is 59% of final energy use in the Netherlands
- To decarbonize, renewable H&C plays a major role
- Renewables should be integrated with energy conservation and use of residual heat
- Renewable cooling should count towards targets
- To become number one, the EU should stimulate both innovation and market uptake
- The Netherlands supports the EU H&C strategy



Netherlands energy policy

- The Energy Agreement for Sustainable Growth 2013

 - 1,5% energy saving annually / 100 petajoule by 2020

 - 14% renewable energy in 2020, 16% in 2023

 - 15.000 full-time jobs

- Energy Report 2016

 - Goal: near climate neutral in 2050

 - Focus on CO₂-reduction

 - Cooperation in the EU, improve ETS system

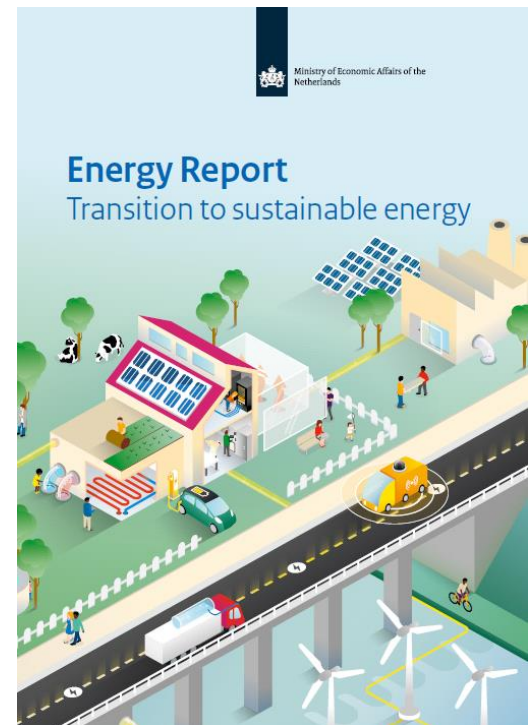
 - Reliable, affordable and clean energy supply

 - Reduction of (own) natural gas production

- Start of the Energy Dialogue

www.energieakkoordser.nl/doen/engels.aspx

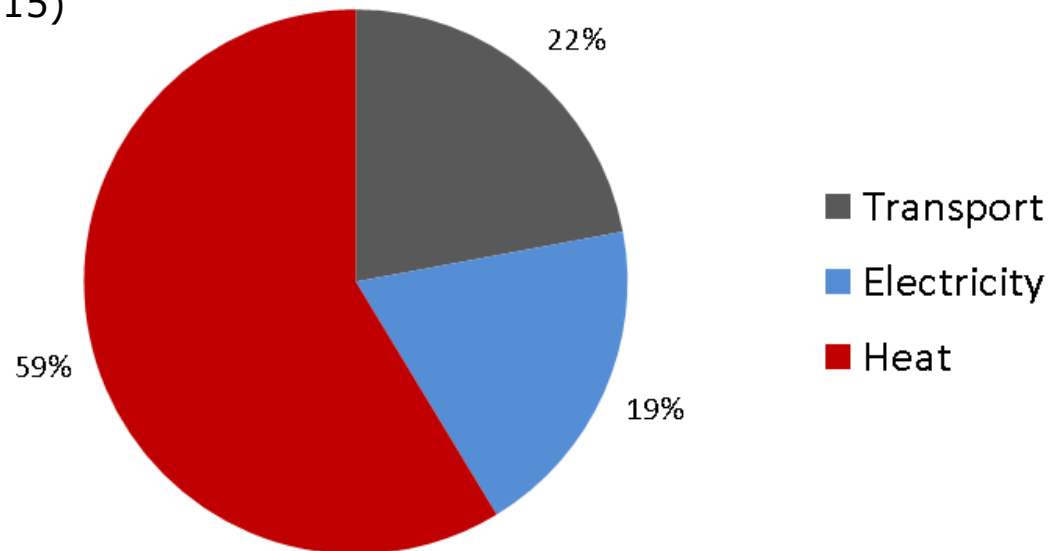
www.government.nl/documents/reports/2016/04/28/energy-report-transition-tot-sustainable-energy





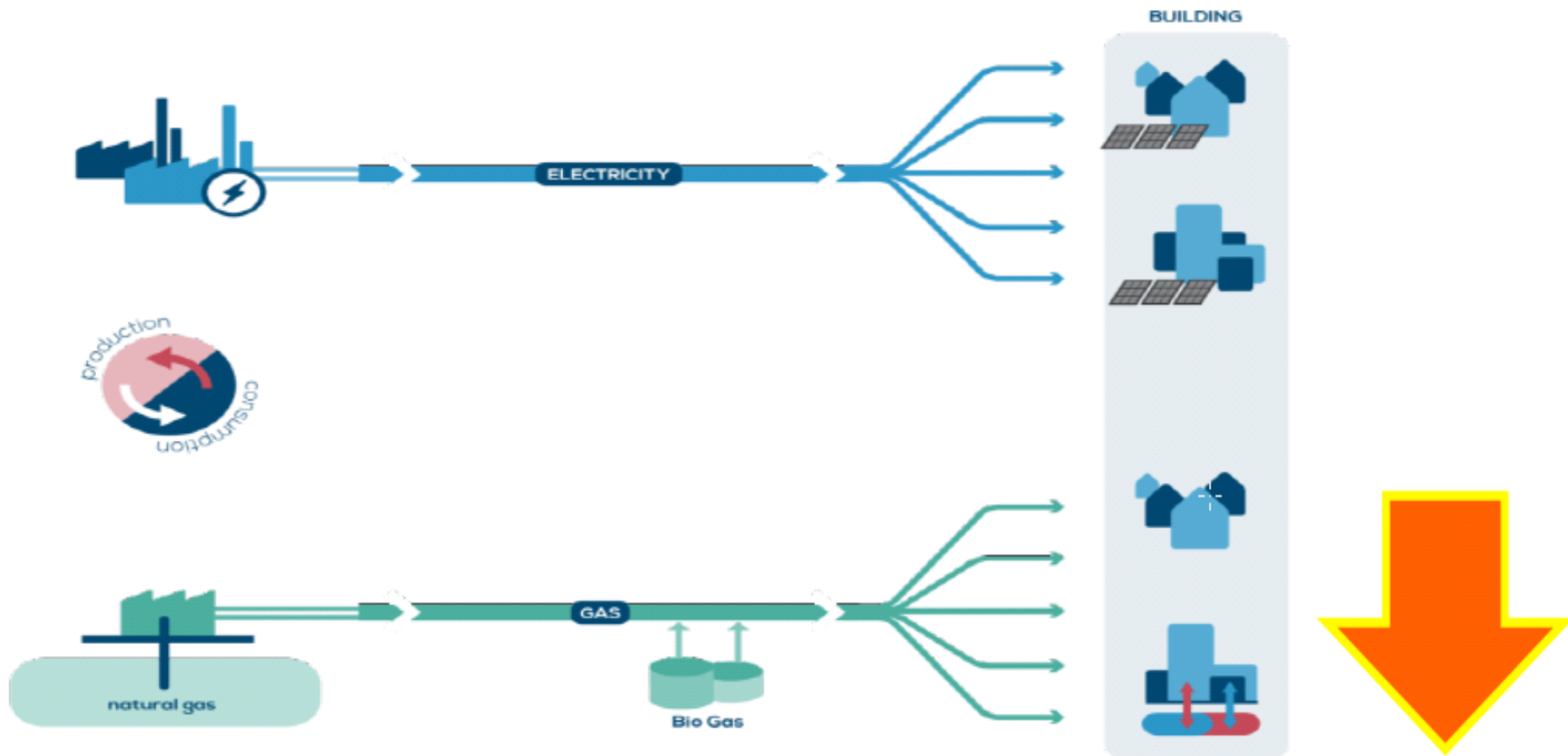
Heating in the Netherlands

- Heat: 59% final energy use (1200 PJ/year)
 - ⇒ LT heat for buildings
 - ⇒ HT heat for industry
- Production almost entirely natural gas
 - 5.3% renewable heat (2015)
 - 5% residual heat



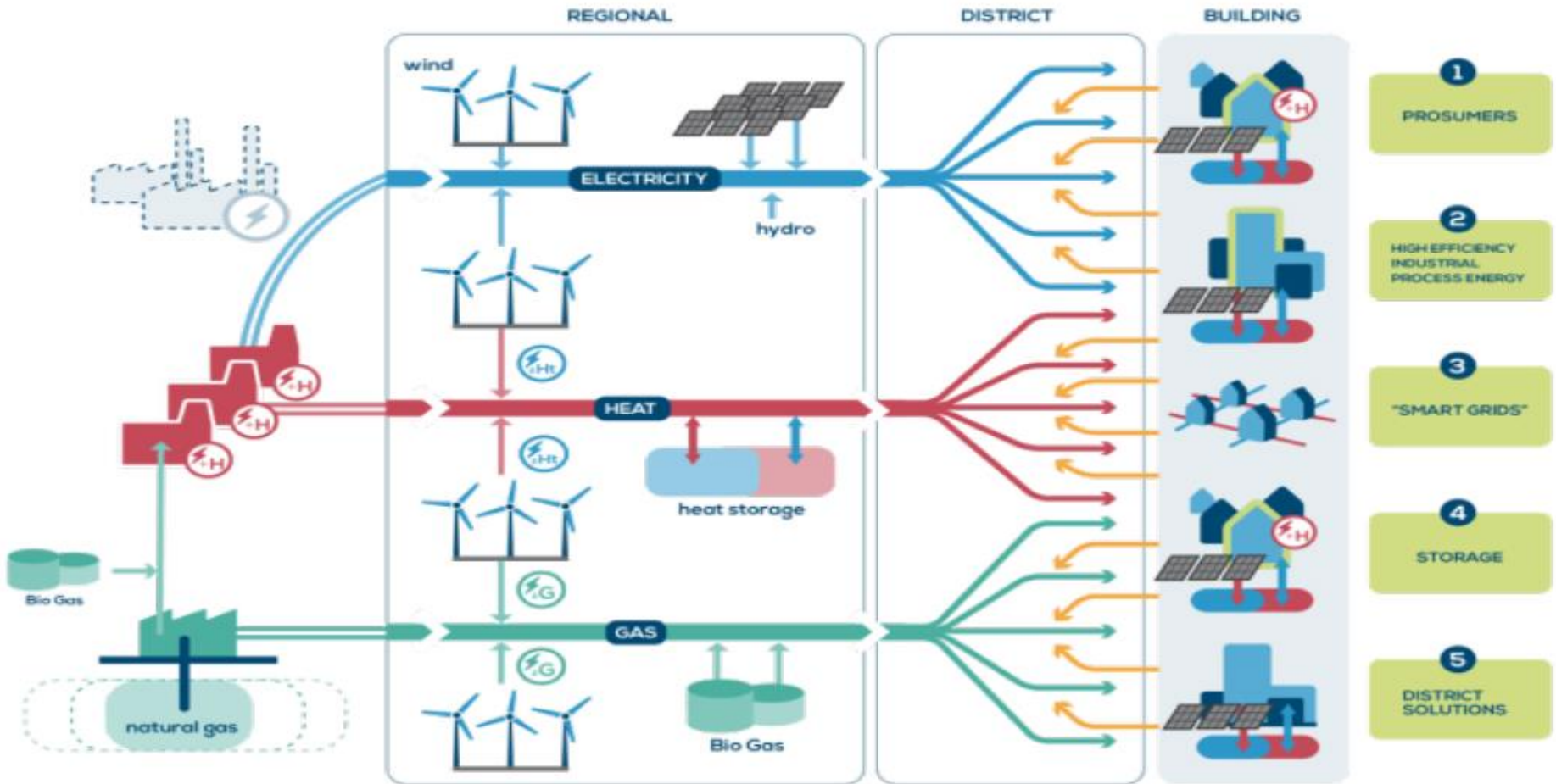


H&C integrated part of our energy system (1)



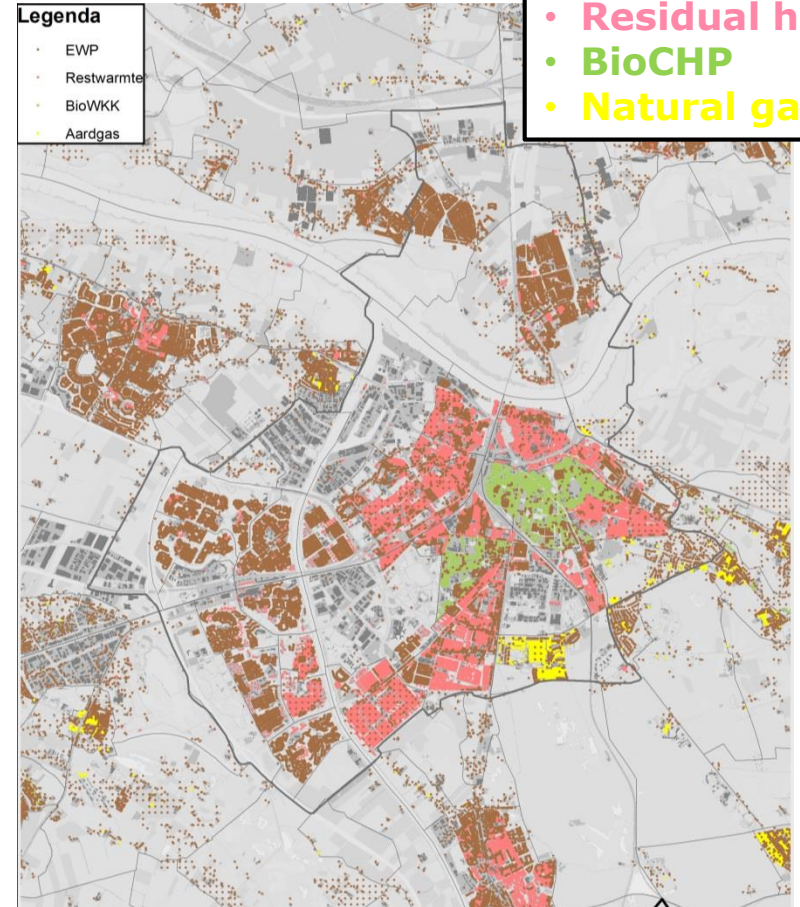
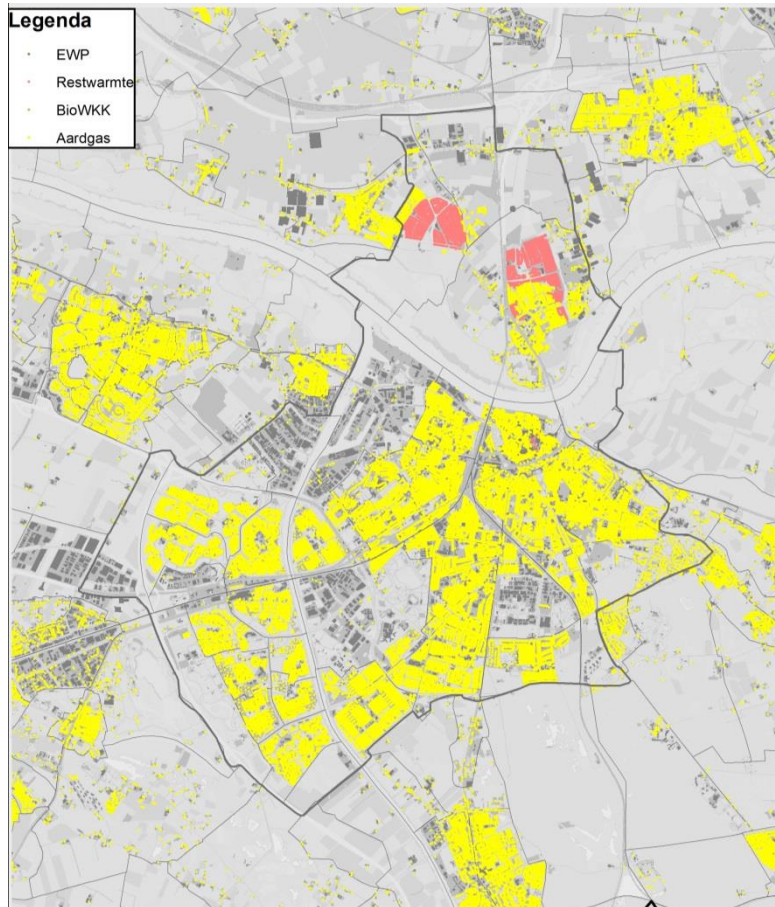


H&C integrated part of our energy system (2)





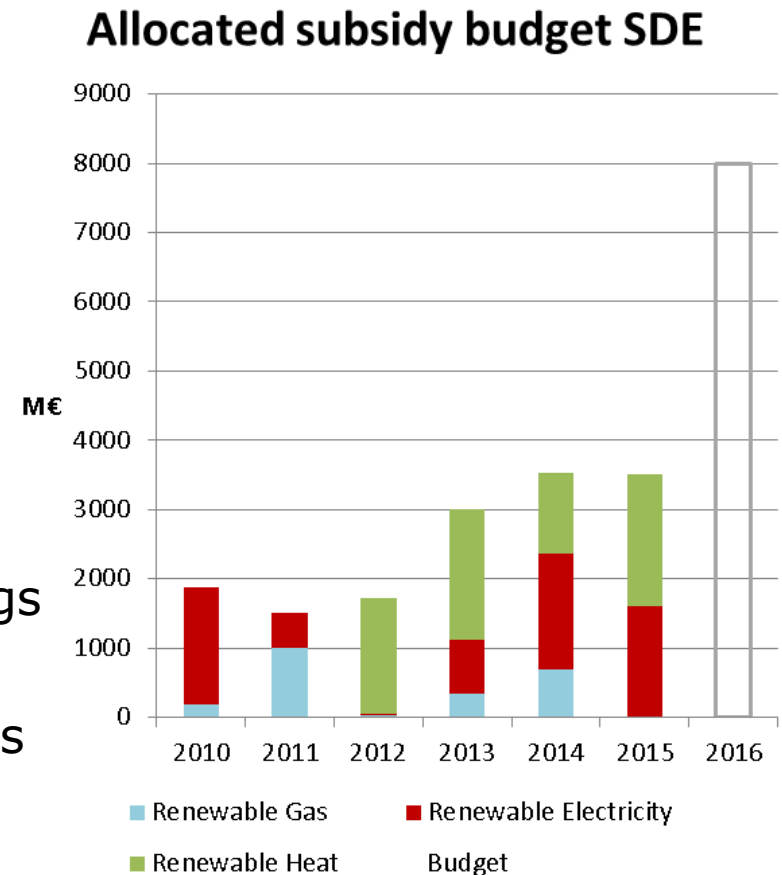
Scenario's for 2050





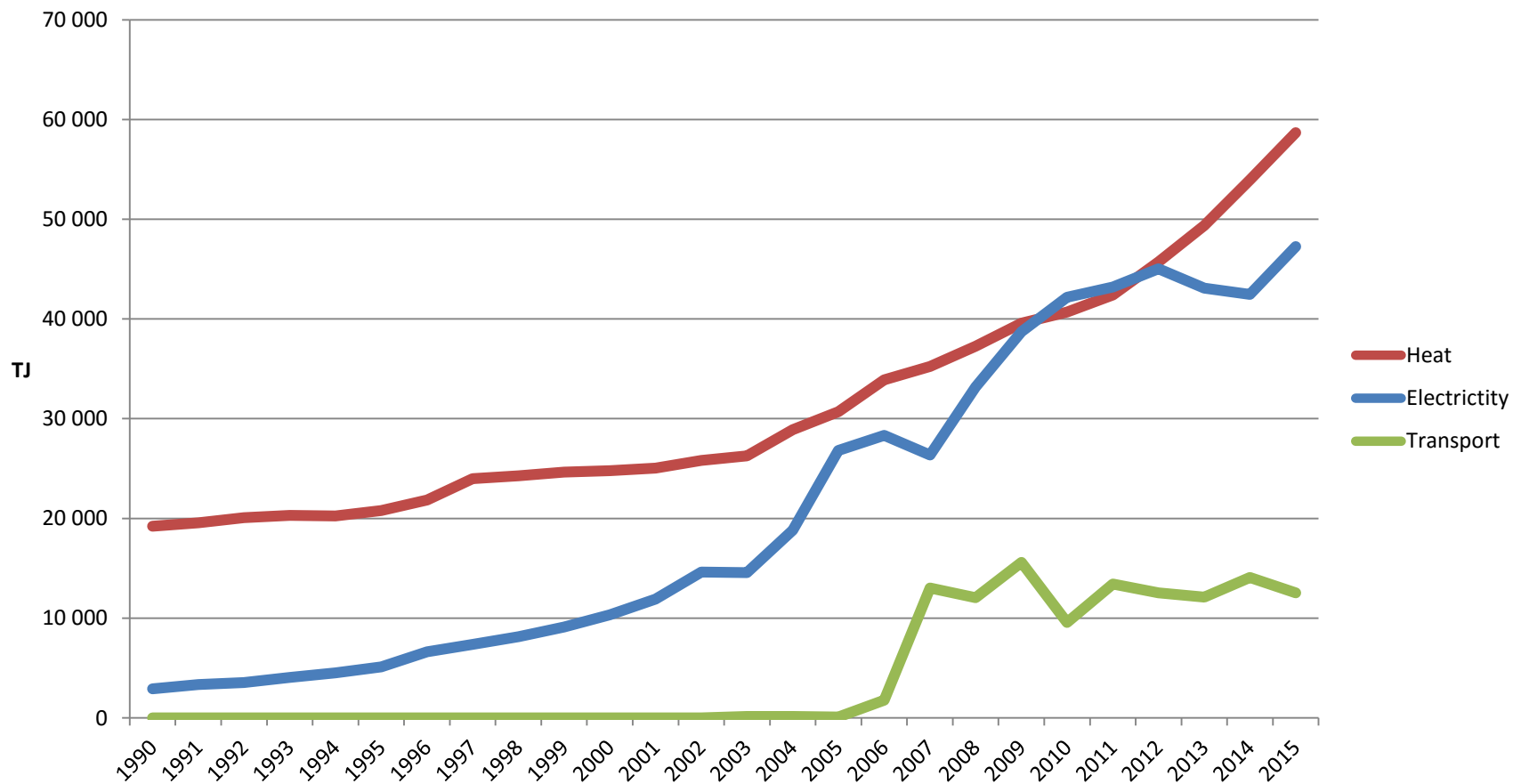
Government instruments for renewables

- Feed in tariff SDE+
 - Electricity
 - Heat
 - Renewable gas www.rvo.nl/sde
- ISDE subsidy for small systems
 - Solar water heaters
 - Heat pumps
 - Clean biomass boilers www.rvo.nl/isde
- Guarantee fund geothermal projects
- Industry agreements on energy savings
- Financial incentives for house owners
- Use of Juncker funds for heat networks



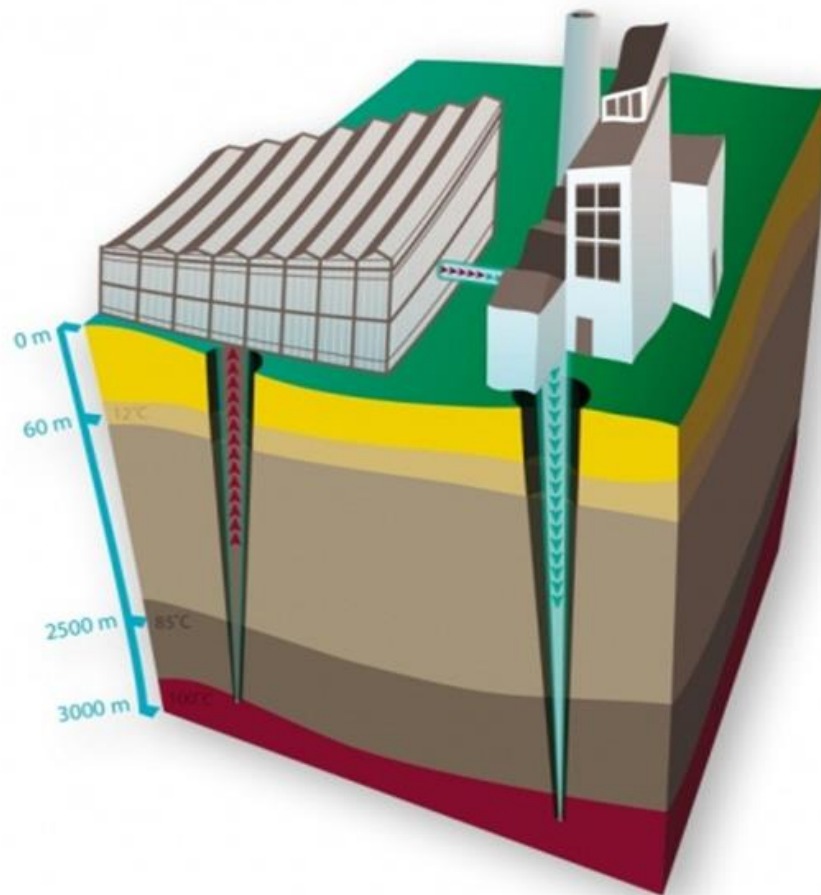


Renewable energy production in NL





Smart energy system



Agriport A7

- 300 ha greenhouses
- Geothermal energy
- CHP
- Waste heat datacenter
- Data network
- Smart energy grid

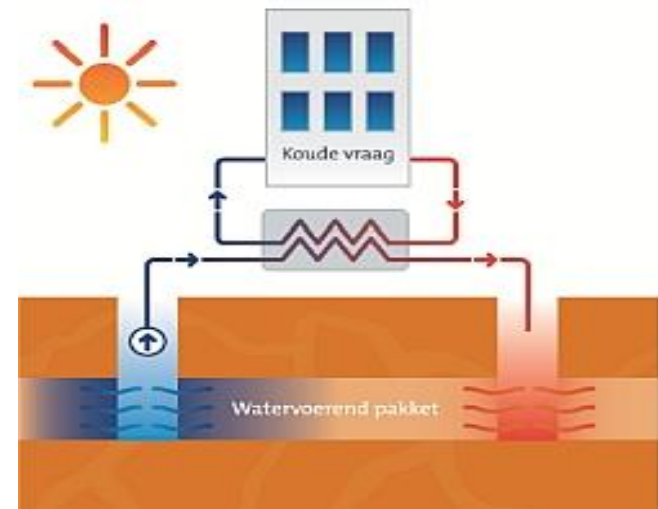
www.bezoekagriport.nl/en/home-2



Renewable cooling

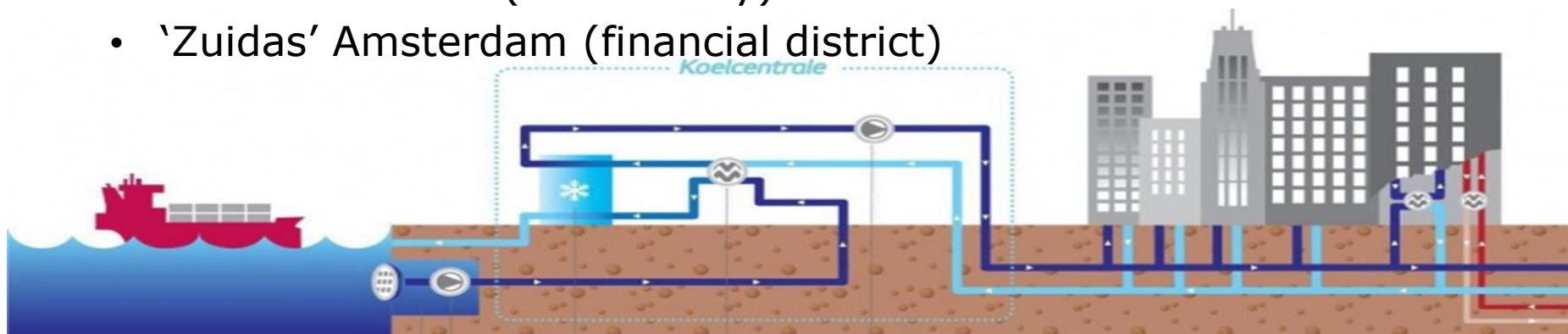
Heat and cold storage in aquifers

- Around 10.000 systems
- 3.4 PJ renewable heat
- 1.8 PJ renewable cooling (not accounted in EU)



District Cooling

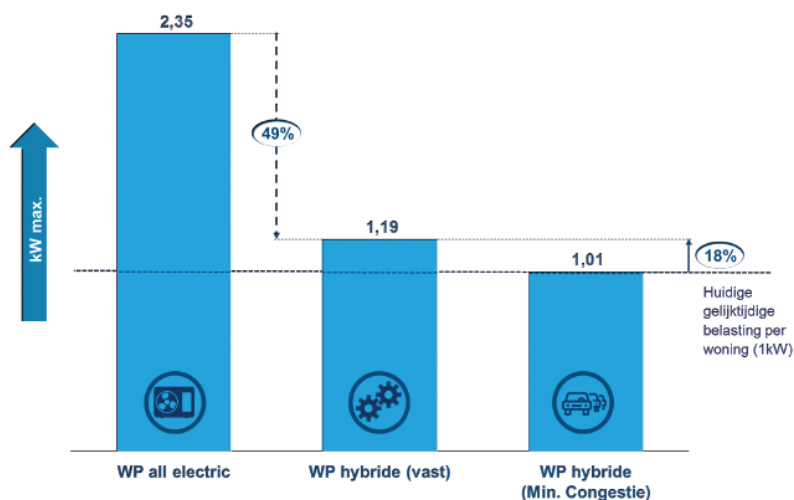
- The 'Rotterdam' (vertical city)
- 'Zuidas' Amsterdam (financial district)





Hybrid heat pump

- Air to water heat pump for base load
- Peak load from gas boiler
- Up to 80% contribution heat pump
- Fits in the current electricity grid
- Low cost (ca. €3000 to €5000,-)





Transition zero

- Refurbish existing buildings
- Net Zero Energy
- In one week
- Cost effective

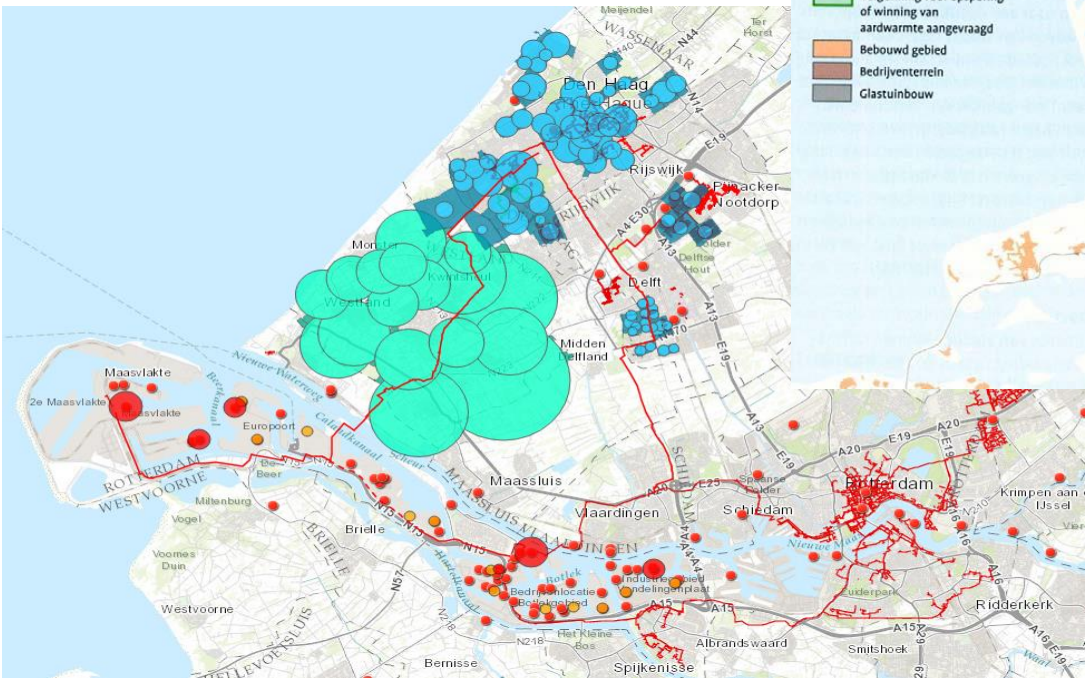
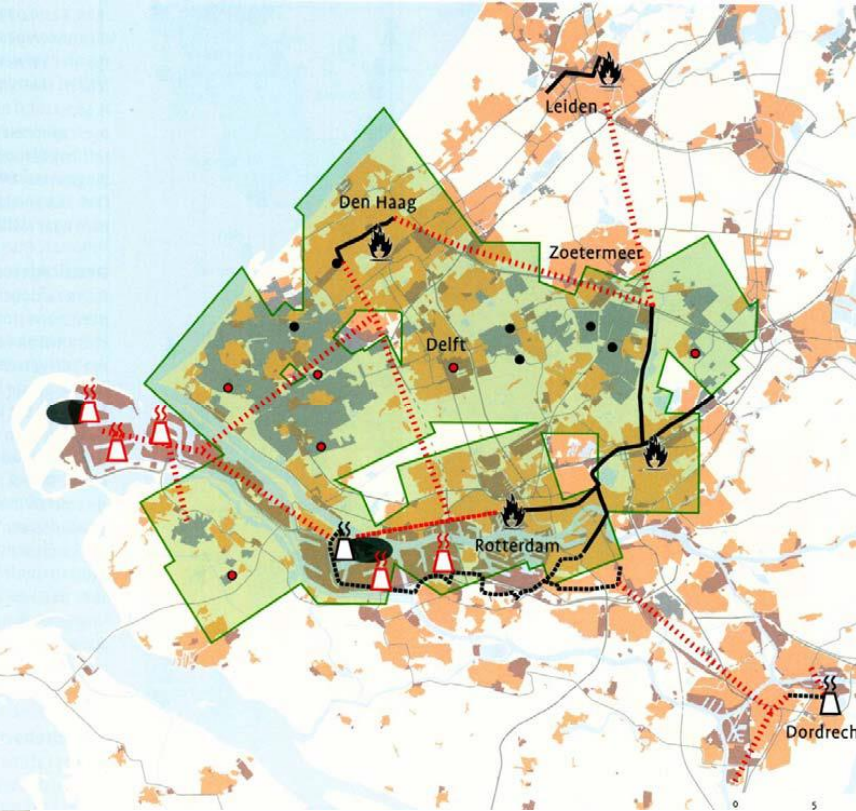


www.nulopdemeter.eu (in Dutch only)



Smart thermal grid

- Heat 'roundabout'
- Industrial waste heat (70%)
- Geothermal heat (30%)

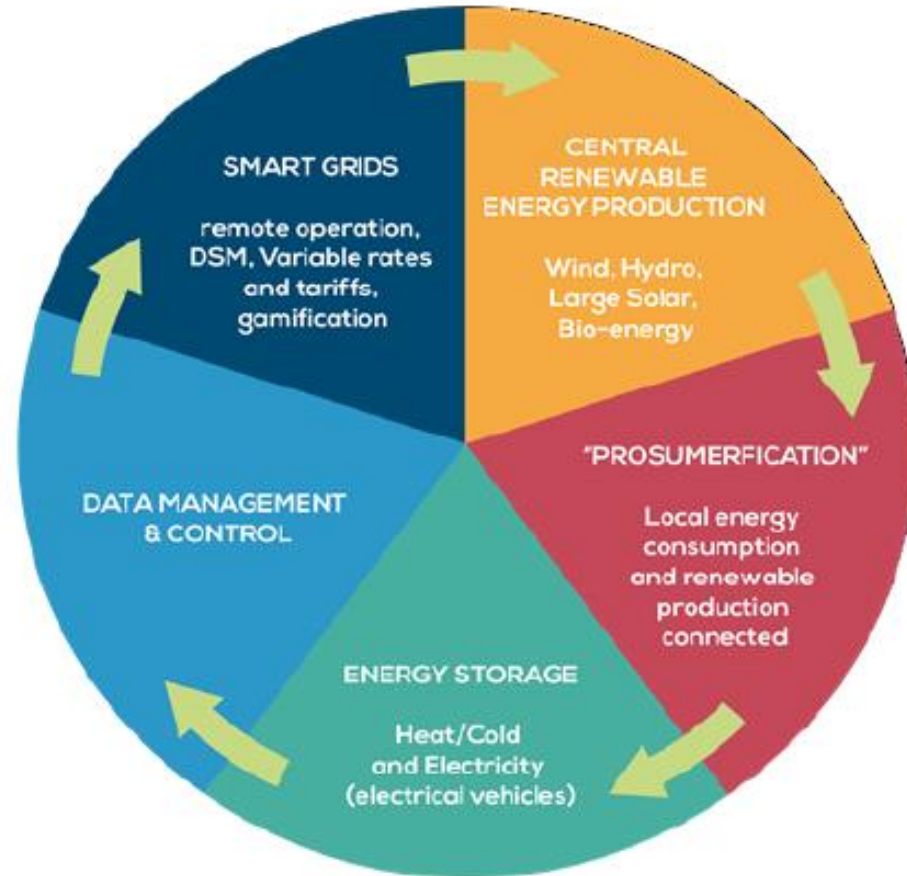


- Rotterdam – The Hague area
350.000 buildings in 2020
1.000 ha greenhouses

<https://youtu.be/6vslyxbjass>



Innovation is key for further development H&C





Recap: Dutch view on H&C

- Goals of Paris Climate summit are ambitious; CO₂-emissions near zero in 2050 for EU
- Heat is 59% of final energy use in the Netherlands
- To decarbonize, renewable H&C plays a major role
- Renewables should be integrated with energy conservation and use of residual heat
- Renewable cooling should count towards targets
- To become number one, the EU should stimulate both innovation and market uptake
- The Netherlands supports the EU H&C strategy



Questions?

- T.deVries1@minez.nl
- J.N.D.Karssemeijer@minez.nl
- Lex.Bosselaar@rvo.nl
- Johannes.vanSteenis@rvo.nl (participant FROnT-project)