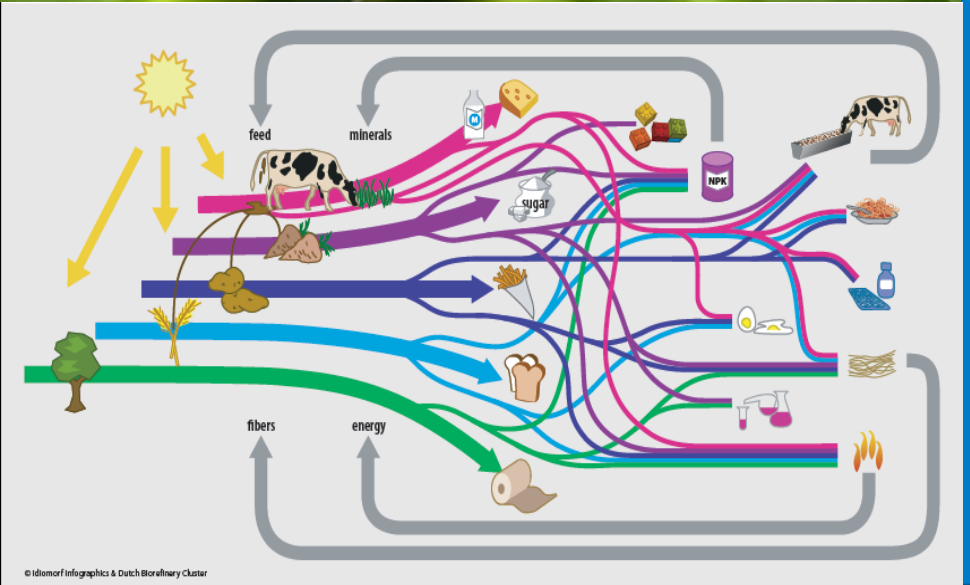
Netherlands Enterprise Agency

Biobased and Renewable Energy policy in the Netherlands and International cooperation,

opportunities for collaboration

Ir. Kees W. Kwant



Contents

- Sustainable biomass for a Low Carbon Economy in 2030
- Biomass and Waste in the energy system
- Governmental support for Renewable Energy and Energy from Waste
- Results and Conclusion

The Netherlands, a geography lesson

17 million inhabitants

on 40.000 sq. km

46.073 US$ GDP/Cap

390 municipalities

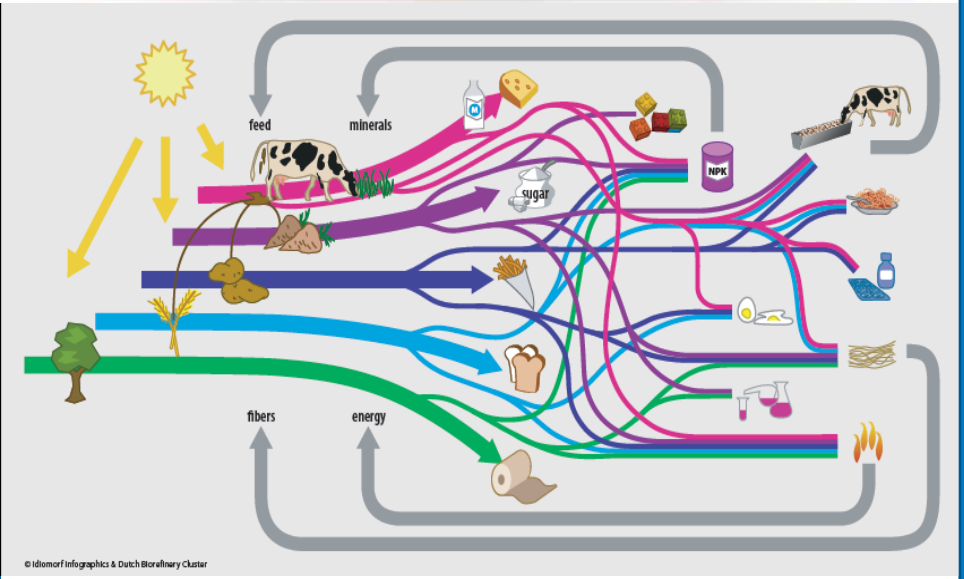
60 million tons waste

9,2 million tons household waste

- Delta downstream large European rivers, 2/3 of the country below sea level
- Surrounded by industrialized area's of Belgium, Germany

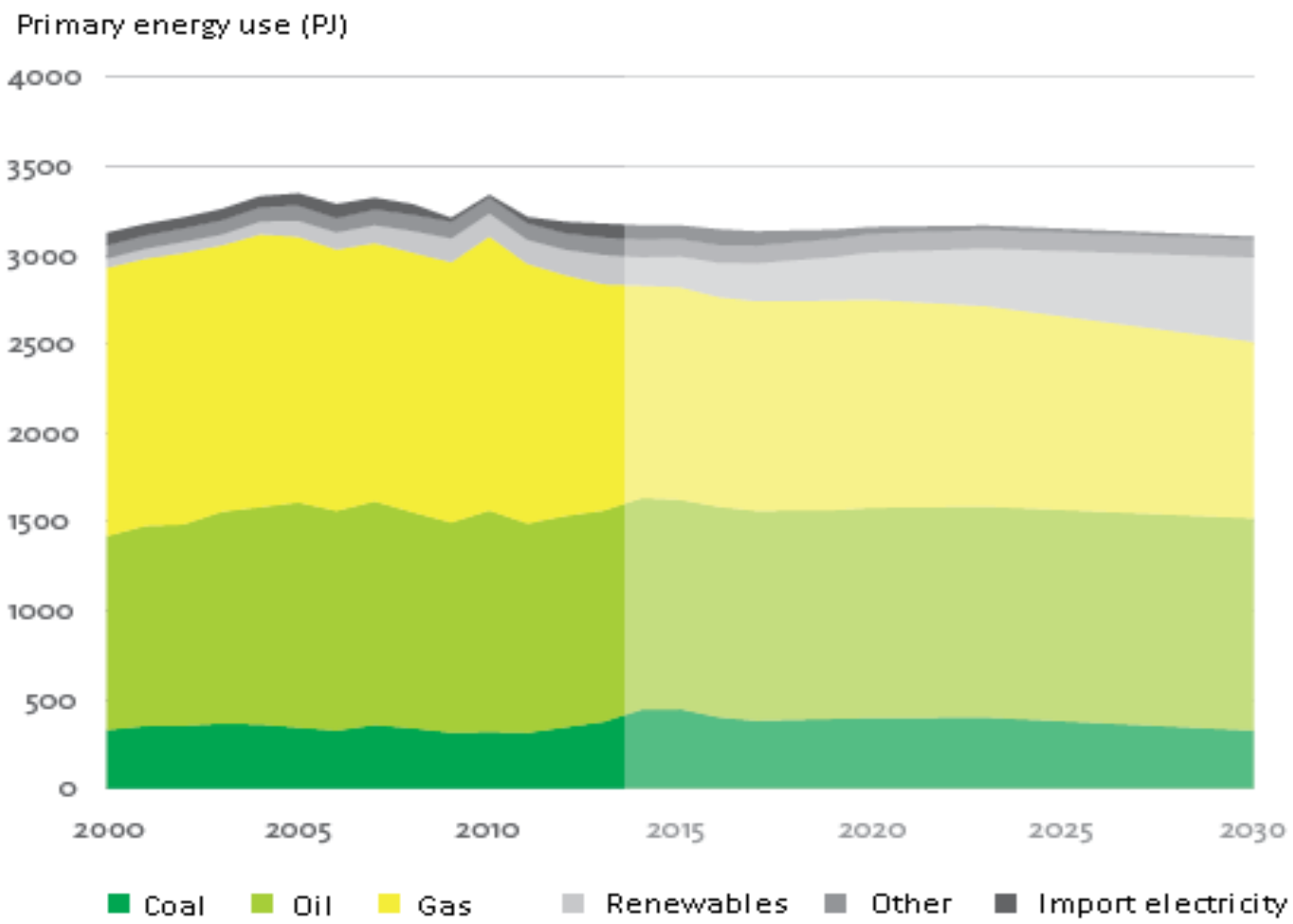
>> Focus on environment

Rijksdienst voor Ondernemend Nederland



Biomass for Renewable Energy

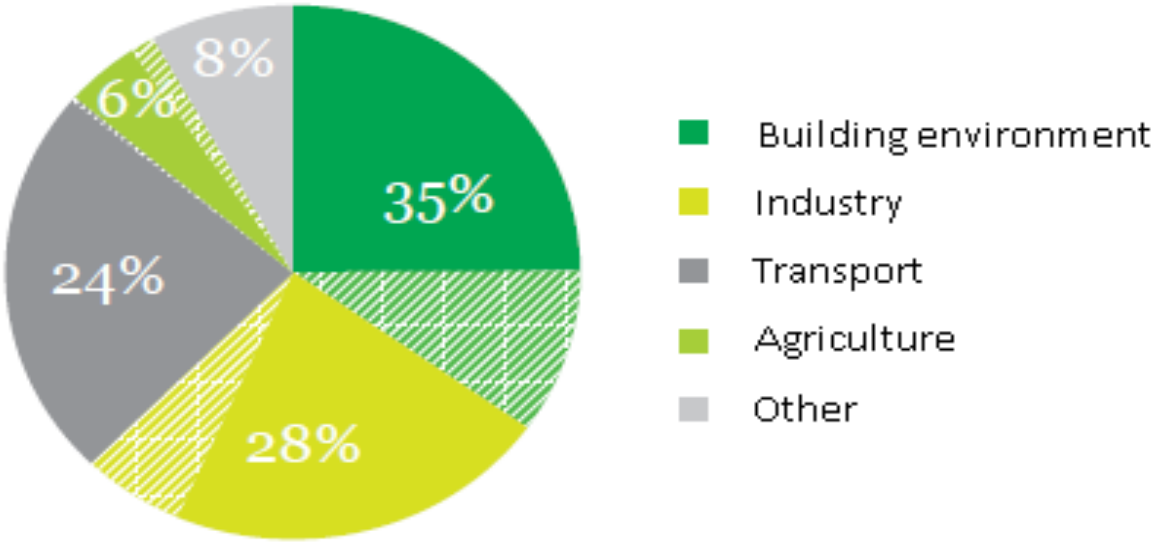
Primary energy use



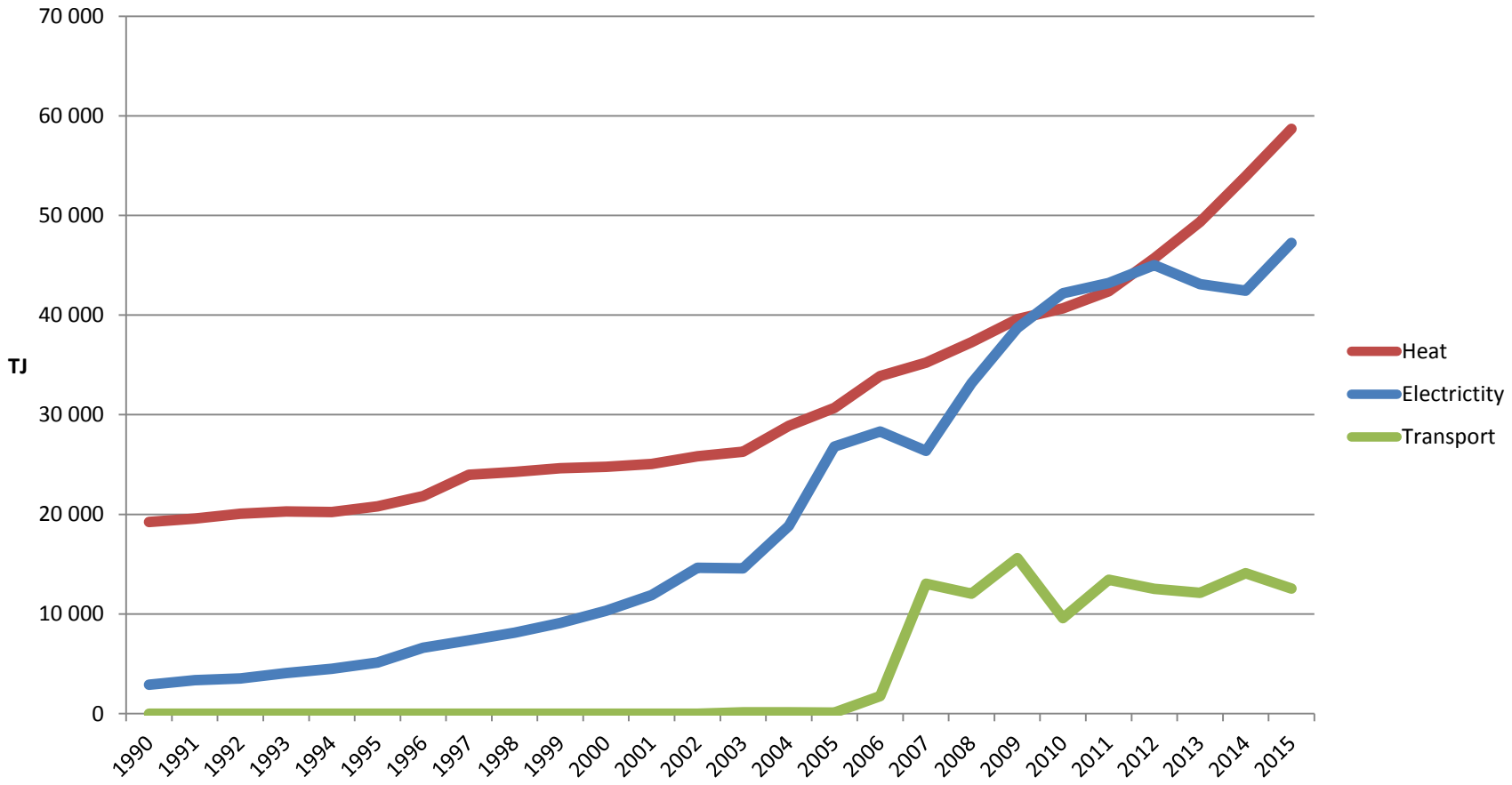
Gross final energy use (2012).

Total is 2.185 PJ.

Shaded areas is electricity use within the sector



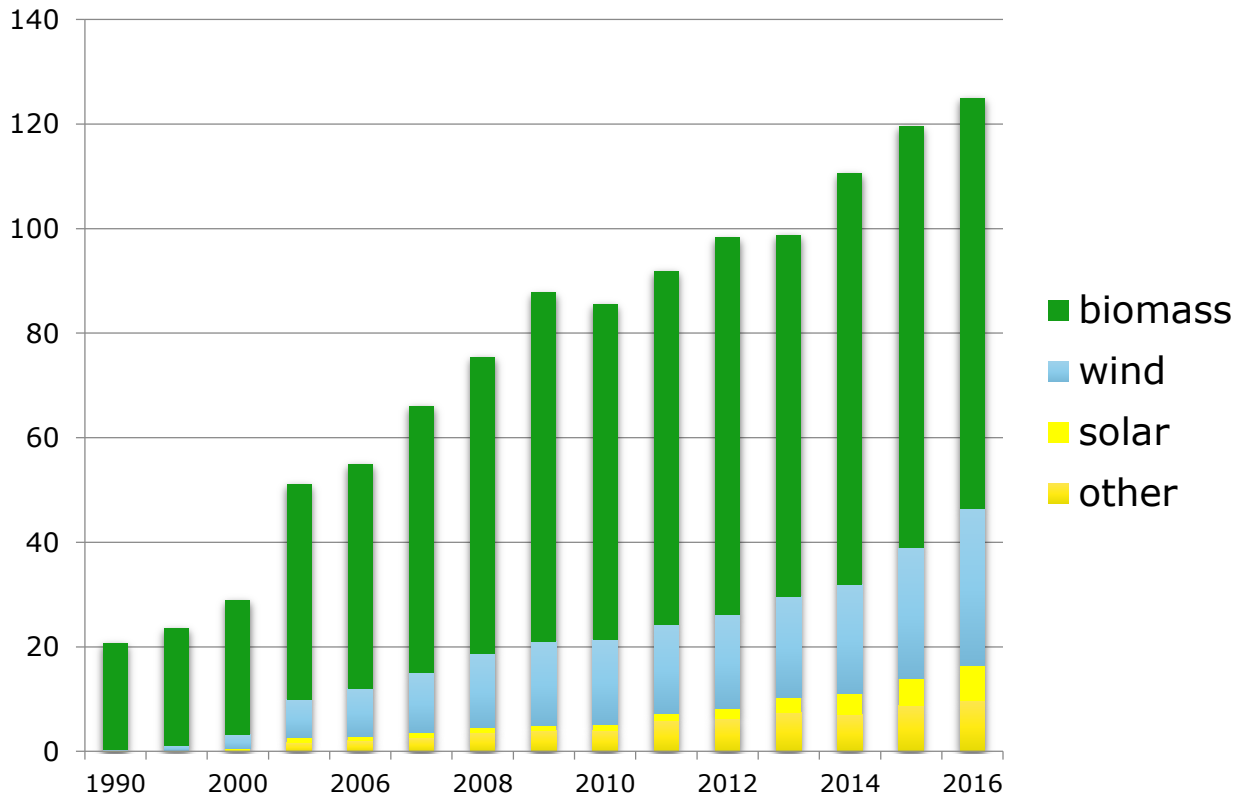
Renewable energy production in NL



1.RE targets: RED: 2020: 14% in NL

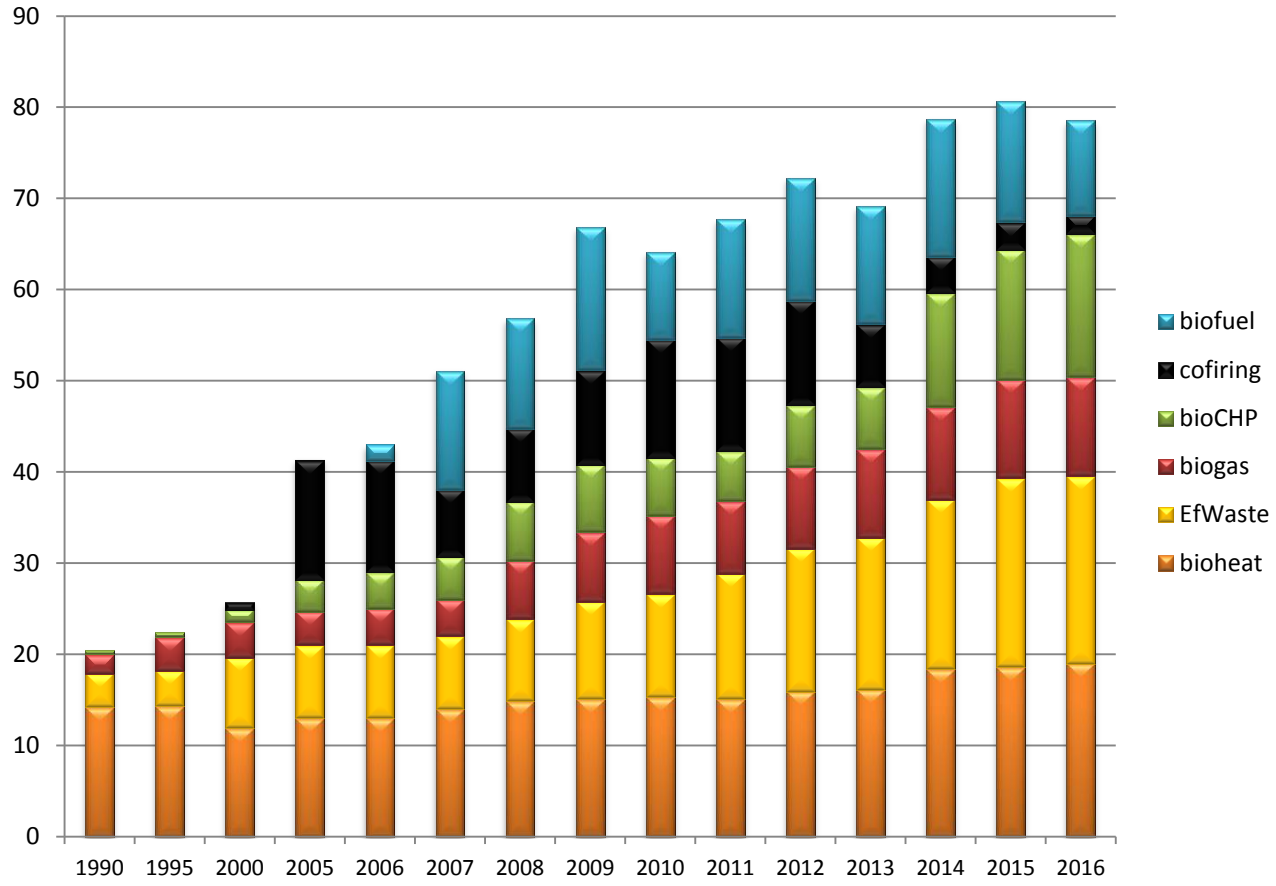
Results: About 70% realised with Bioenergy

- PJ

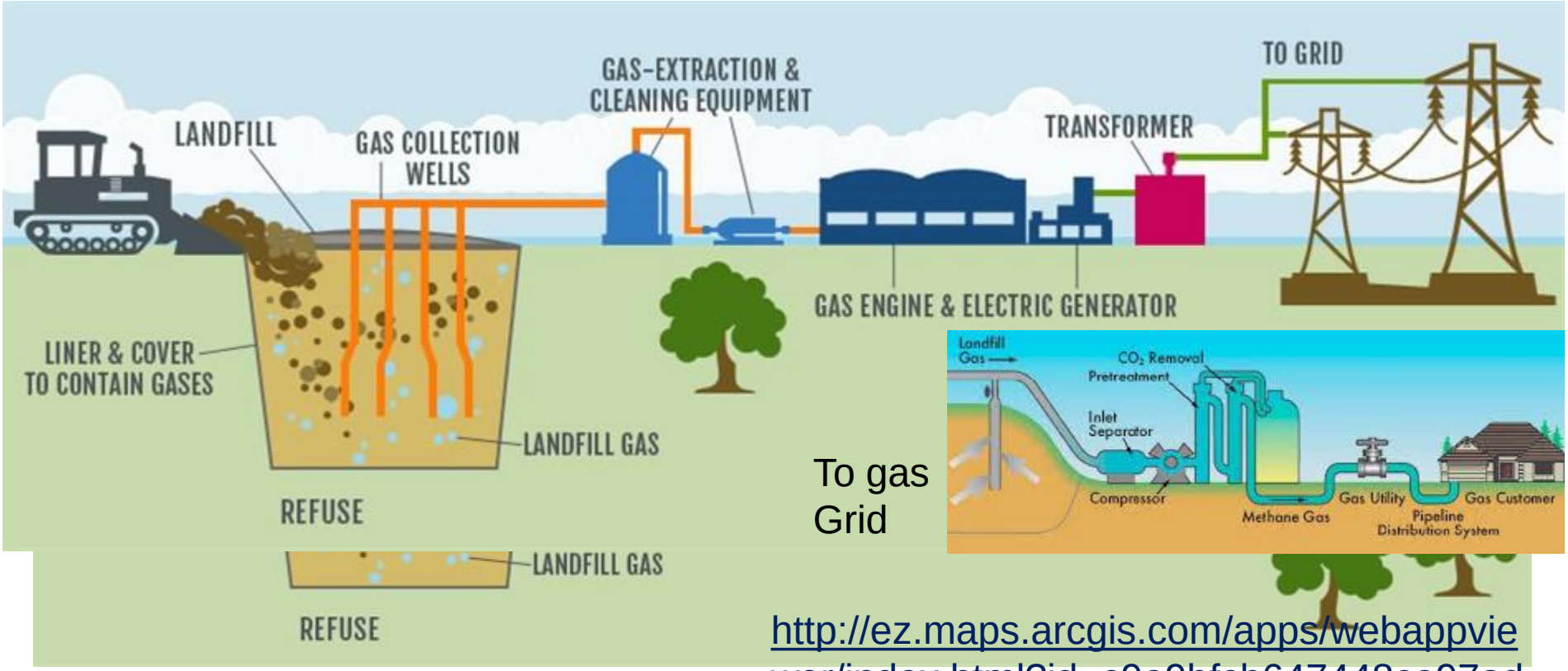


Biomass for Bioenergy use in Netherlands

- PJ



Landfill gas 1990 - 2000



To gas Grid

In 2017: 42 installations

http://ez.maps.arcgis.com/apps/webappviewer/index.html?id=c9e9bfcb647448ce97ad0fbb8f05f7c7

Power and Heat from Municipal Solid Waste

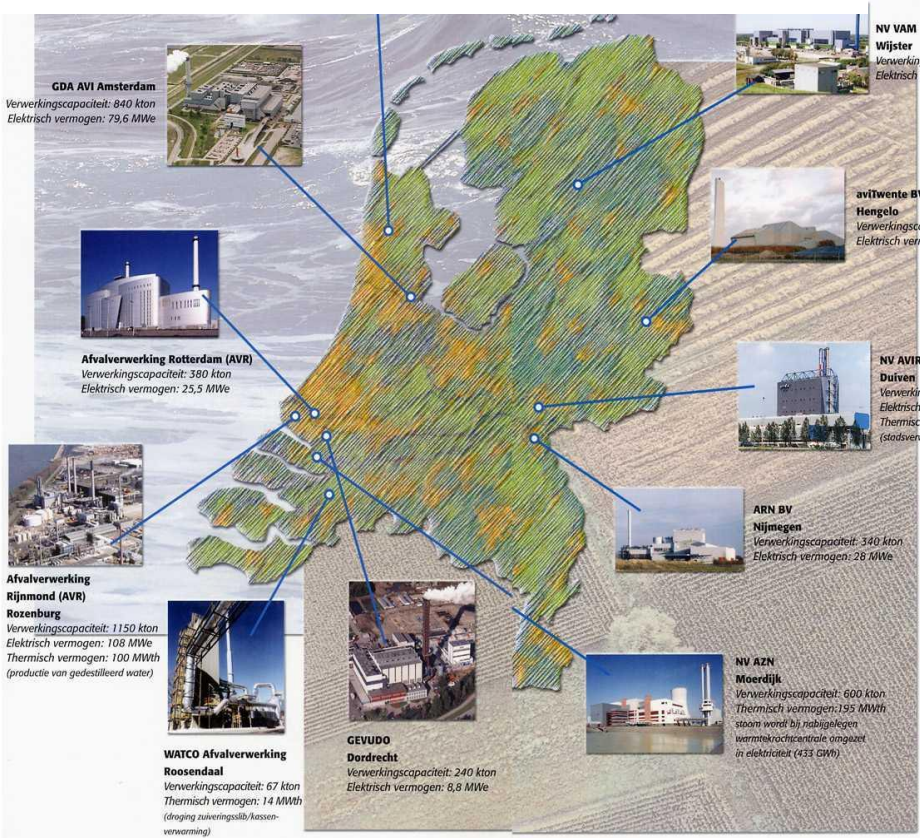
- 5.5 Mton waste
- After recycling
- No more landfilling
- For power and
- Heat (Rotterdam

Waste to Energy Plants in the Netherlands

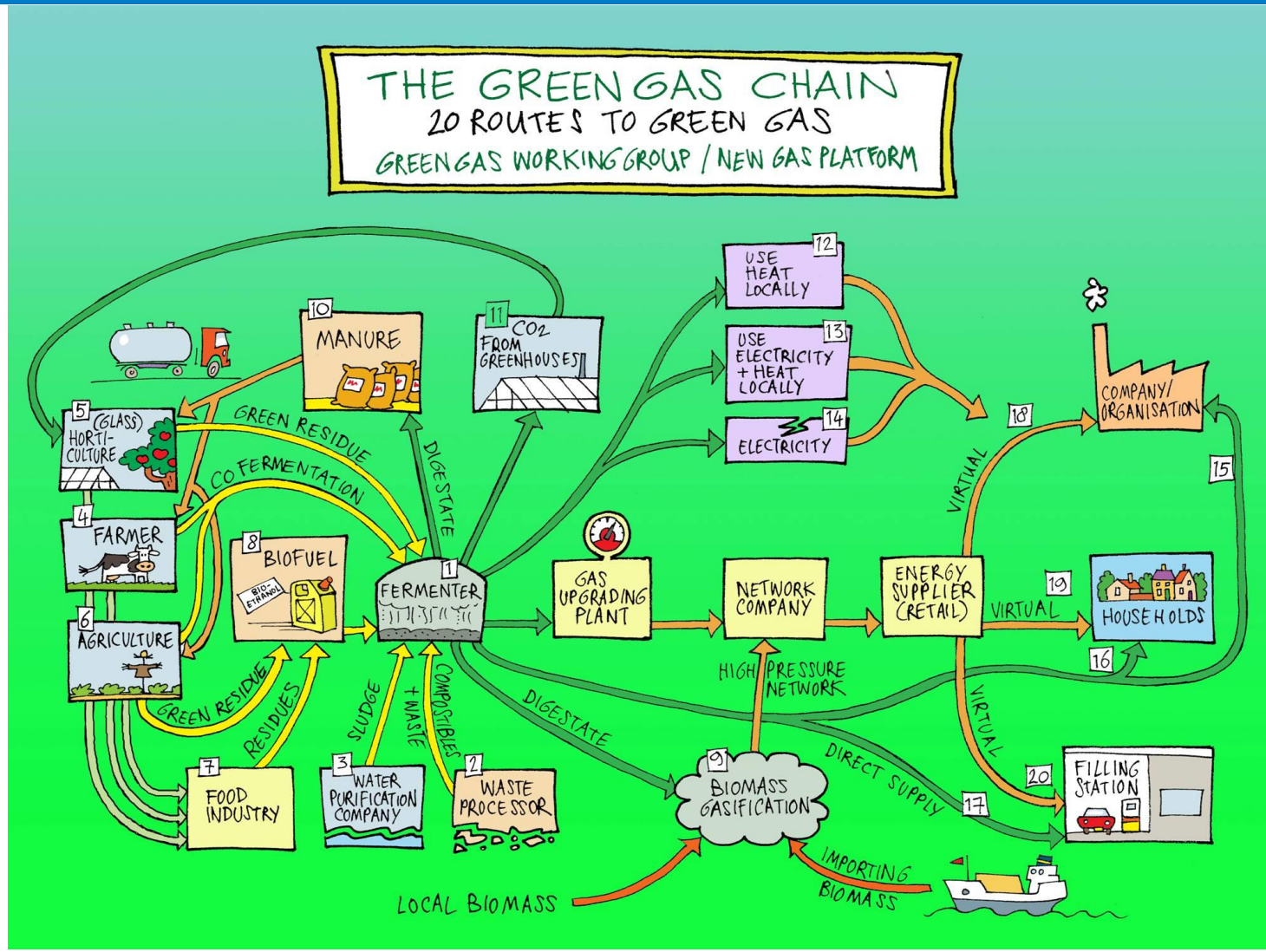
Elektrisch vermogen = Electric Power in MWe

Verwerkingscapaciteit = Waste capacity in kTon/a

- Import of waste in EU market



Anaerobic Digestion of Organic Wastes and upgrading to natural gas quality



Orgaworld

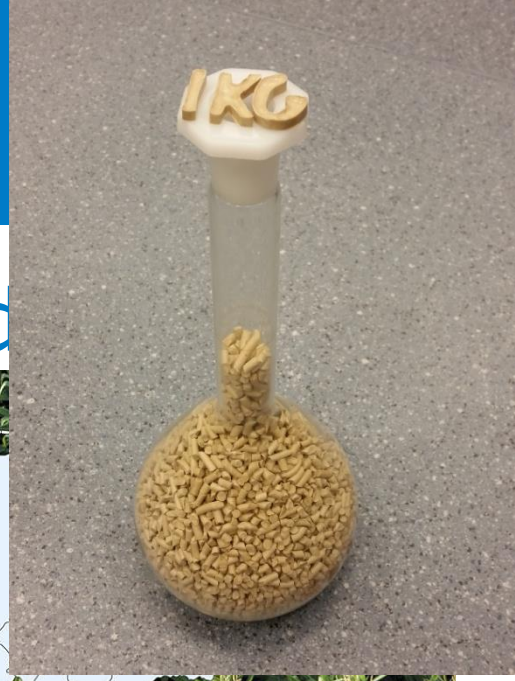
http://www.orgaworld.com/more-about-our-business/our-locations/amsterdam-greenmills

- **Food & kitchen waste, supermarket waste** and **polutted industrial waste water** processed into **heat and power**, **fertilisers** and **purified water**.
- Production.

➢ **The food/kichen, supermarket, polutted industrial waste are used to add value.**

Products from waste water sluc

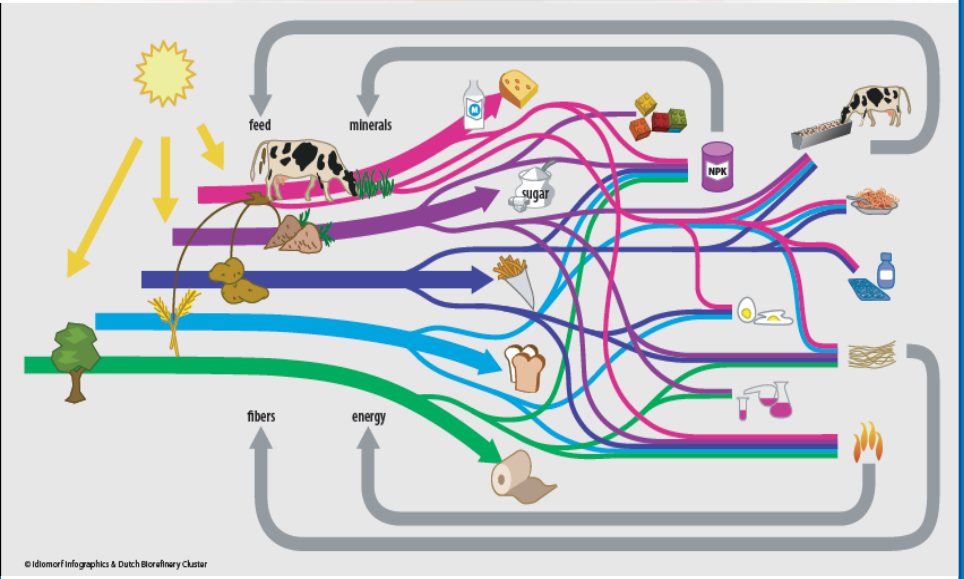
- Energy
- Fosphate
- Cellulose
- Bioplastics & Acids
- Alginate
- CO2



- Movie: Click on movie
- {https://www.youtube.com/watch?v=CT9lVE6wfIc }

Rijksdienst voor Ondernemend Nederland

Netherlands Energy Agreement 2013 and beyond



Agreement between parties:

- NGO
- Energy sector
- Industry
- Government

To realise 2020 targets

Key policy measures cf. Energy Accord 2013

The short version

Information and advice

Business networks

Financing

Executing legislation

Renewable Energy

- SDE feed in subsidy (€ 12 bn/y)
- Guarantee Geothermal (€ 50 mln/y)
- Subsidy small renewable (100 mln/y)
- Project prep/auctions offshore (€€€)
- Sustainability biomass
- Spatial planning wind

Energy Innovation

sidies Energy innovation (€ 120 mln/y)

- Brokering innovation finance
- Export support energy technology
- Innovation system support

system transfor-mation

- Permits strategic energy projects
- Preparing gas system for 'non Groninge
- 'regelulation holiday' for local grids
- Spatial design energy regions

Energy Efficiency

ebates efficiency investments (€ 160 mln/y)

ubsidies energy savings private / rented properties

term agreements with companies and sectors

- Public-private action plans for zero energy area's
- Energy labels built environment

Indicative Contribution of R.E. opti

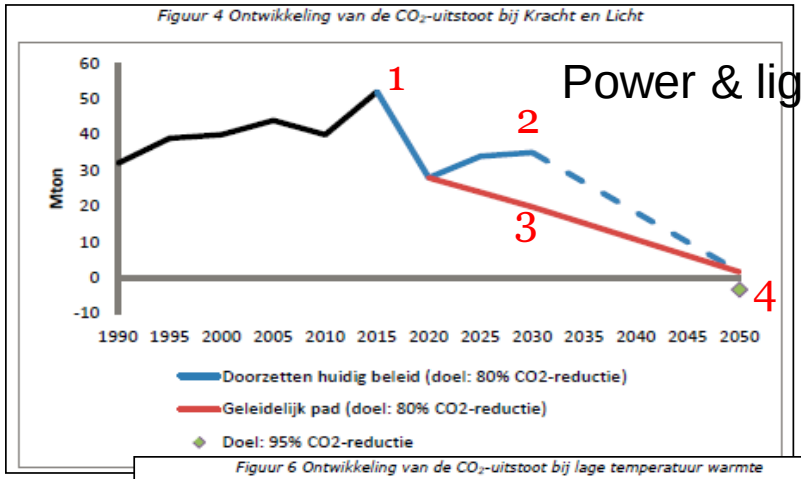
Source	2013	2020	2023
Wind on sea	3,1	27,0	60,0
Wind on land	20,6	54,0	63,0
Solar PV	0,9	11,6	12,4
Cofiring	6,1	25,0	25,0
Waste Incineration	13,3	11,7	12,0
Biomass CHP	3,5	13,6	18,0
Biomass Heat	19,0	31,6	34,1
Biofuels	18,0	35,6	34,6
Renewable Heat	6,1	36,3	46,3
TOTAL	105,5	261,6	335,4
Percentage R.E.	4,4%	14%	16%

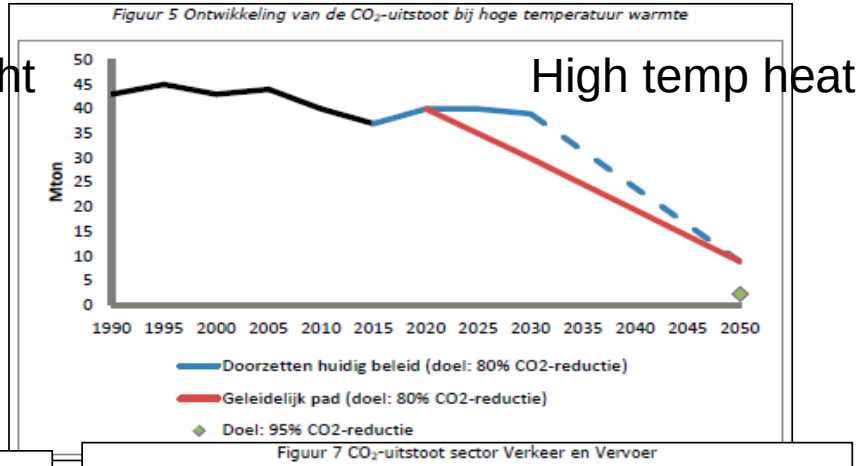
For Biomass:
2013: 59,9
2020: 117,5
2023: 123,7

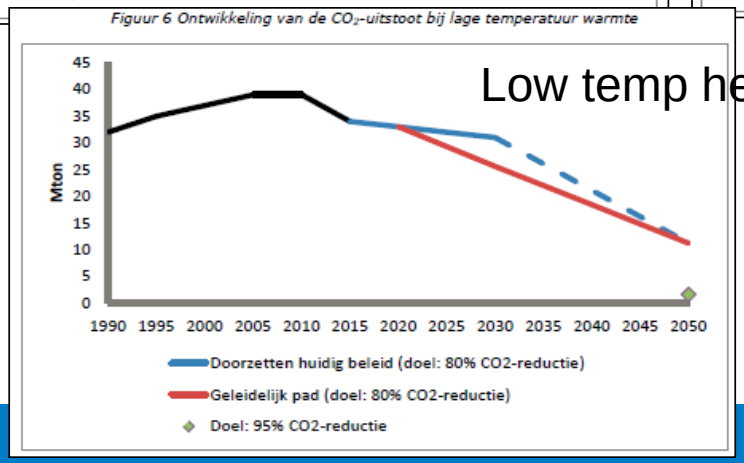
Doubling the amount of biomass in 4 years

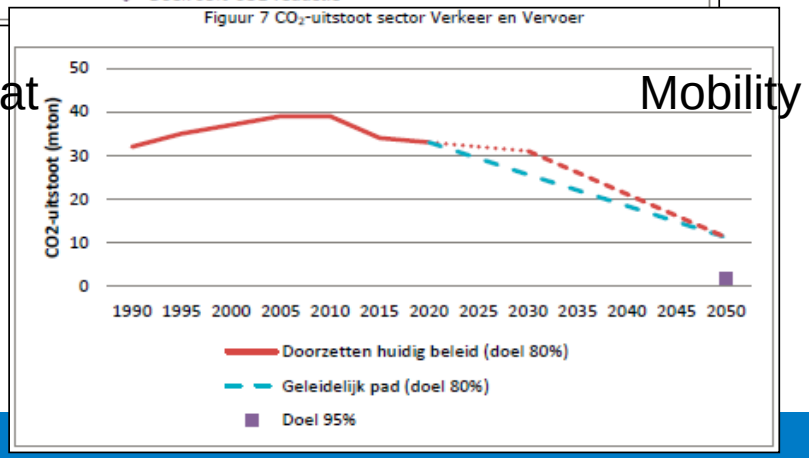
The Energy Agenda of 2017 – towards Climate neutrality in 2050

- Reduction pathways per 'energy function'
- From (1) current emissions , to (2) marginal reduction by 'current policy', to (3) realistic aims for 2030 and (4) 2050 targets.







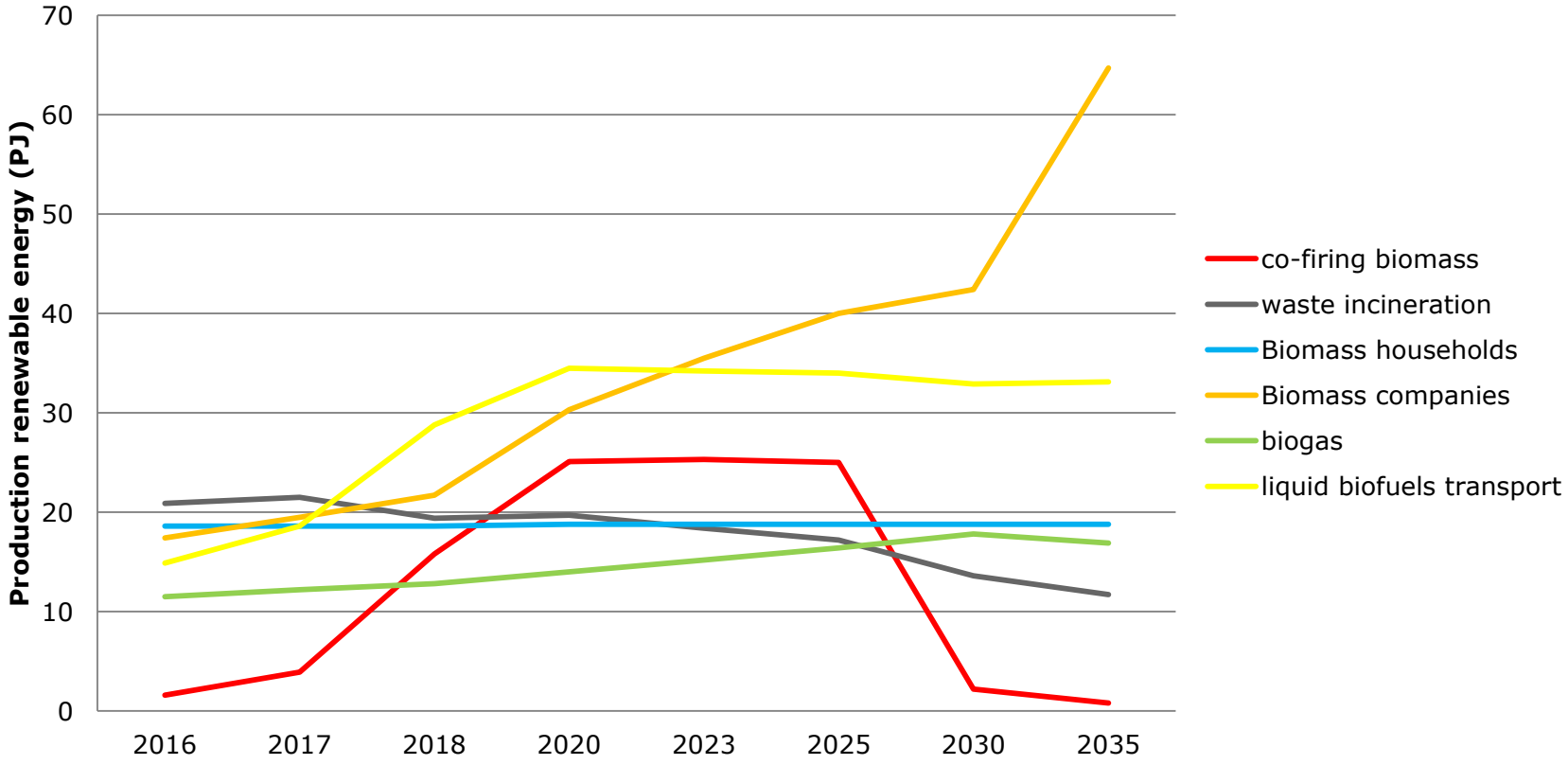


The coalition accord of 2017

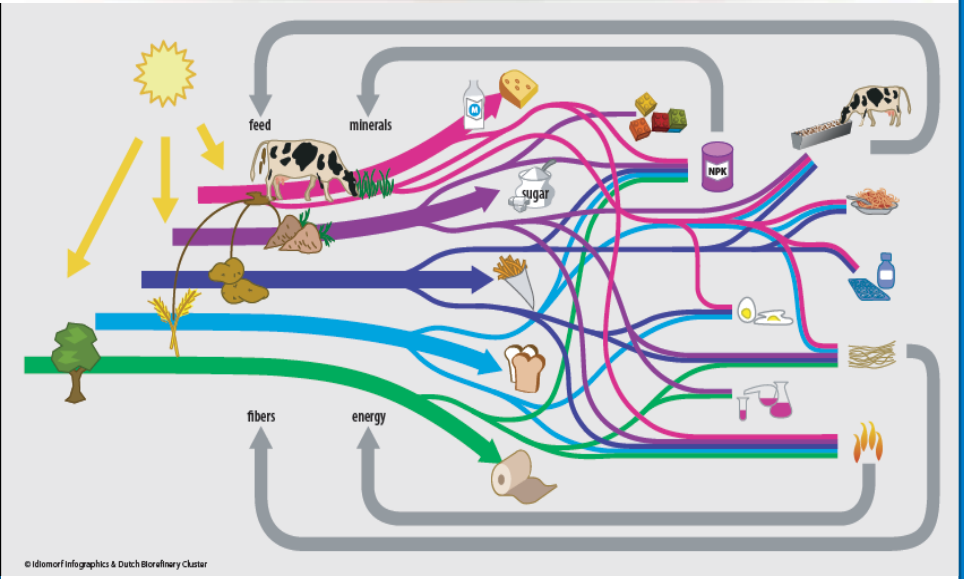
- Cost effective CO2 reduction is 'single aim', no specifics for efficiency, renewables.
- High 'bottom line' ambition – 49% from 1990, 52,5 Mton down from 2017
- Indicative distribution suggests modest transition; 2/3 of reduction achieved by CCS and coal plant closure
- Much depends on a 'climate accord', to be hammered out in 2018.
- Some attention for circularity, regionalization, industrial hot-spots.
- Finance for thet transition can prove tight, but the notion that CO2 may be taxed and using these funds CO2 reduction policies.

Arena	Reduction in 2030 from today (Mton)	Measures
Industry	1 3 18	Recycling Process efficiency Carbon Capture and Storage
Transport	1,5 2	Tires, European norms, electric cars Biofuels and city measures
Buildings	3 2 2	Optimization energy consumption offices Insulation, heating networks and heat pumps Efficient new-build
Electricity	1 12 2 4 1	Efficient lighting Closing coal plants CCS in waste incineration plants Extra offshore wind parks Extra solar PV
Total	***52,5***	

Policy development bioenergy 2015 - 2035



Rijksdienst voor Ondernemend Nederland



Renewable Energy SUPPORT BY SDE+

Target

- *The Dutch EU target is 14% renewable energy in 2020 and 16% in 2023.*
- SDE, Subsidieregeling Duurzame Energie
  Incentive Scheme for Sustainable Energy Production;
- *Stimulation of the production of renewable heat, electricity and gas.*
- *The SDE offers long-term financial security by covering the unprofitable component of projects*
- *In 2017 a budget of EUR 12 billion was published, granted*
- *In 2018 a budget of EUR 12 billion is published, spring and autumn round, in progres.*

Incentive SDE+

- *Producing affordable energy with reliable techniques by using renewable energy sources to comply with the European objective of 14% renewable energy in 2020.*
- *Secure continuity of budget*
  - *Financing the new scheme with energy taxes (industry and the population)*
- *Cost effectivity*
  - *By opening the scheme in three phases, where the first phase will open with the lowest tariff (costs) per kWh*

Examples of categories

Renewable heat:

- *Fermentation of: animal manure, industrial residuals or KGW*
- *Biomass boilers*
- *Geothermal*
- *Solar, Thermal*

Renewable electricity:

- *Hydropower*
- *Onshore wind*
- *Offshore wind*
- *Solar, Photovoltaic*
- *Fermentation of: animal manure, industrial residuals or KGW*

Renewable gas:

- *Fermentation of: animal manure, industrial residuals or KGW*
- *Gassification of biomass*

Renewable heat

- Produced and fed-in to a heat network or the own installation
- Produced and good used heat, called “Nuttig aangewende warmte”
  - Heating and cooling of buildings, processes or greenhouses
- Certified by **CertiQ**
  - CertiQ, subsidiary compagny of Tennet (National Grid Operator/TSO)
  - Provides “Guaranties of Origin”
  - Certifying body for renewable electricity and heat
  - Information on renewable heat is send to RVO

Renewable electricity

- Produced and fed-in to the grid or the own installation

- Certified by **CertiQ**

  - CertiQ, subsidiary compagny of Tennet (National Grid Operator/TSO)
  - Provides “Guaranties of Origin”
  - Certifying body for renewable electricity and heat
  - Information on renewable electricity is send to RVO

Renewable gas

- Produced and fed-in to the grid
- Certified by **Vertogas**
  - Vertogas, subsidiary compagny of GasUnie (National Grid Operator/TSO)
  - Provides “Guaranties of Origin”
  - Certifying body for renewable gas
  - Information on renewable gas is send to RVO

Definitions

- **Base tariff (price)**

  Calculated price to cover the unprofitable component of the project;
  - Includes profits on companies money and mortgage, inflation, expected energy price for the coming years:
  - Fixed during the subsidy period of 12 or 15 years
  - This is the maximum tariff producers can apply for

- **Base electricity/gas tariff**

  2/3 * long term expected electricity price (base load) or gas price

- **Correction tariff, advance**

  Expected electricity price (APX) or gas price (TTF) for the coming year, based on actual price that year;
  - Published in November
  - 80% of the yearly subsidy is paid in monthly payments

Definitions 2

- **Correction tariff, settlement**

  - Real electricity price (APX) or gas price (TTF) for the past year
  - Published in April after the year of payment
  - Real energy price and real production are used to calculate the settlement

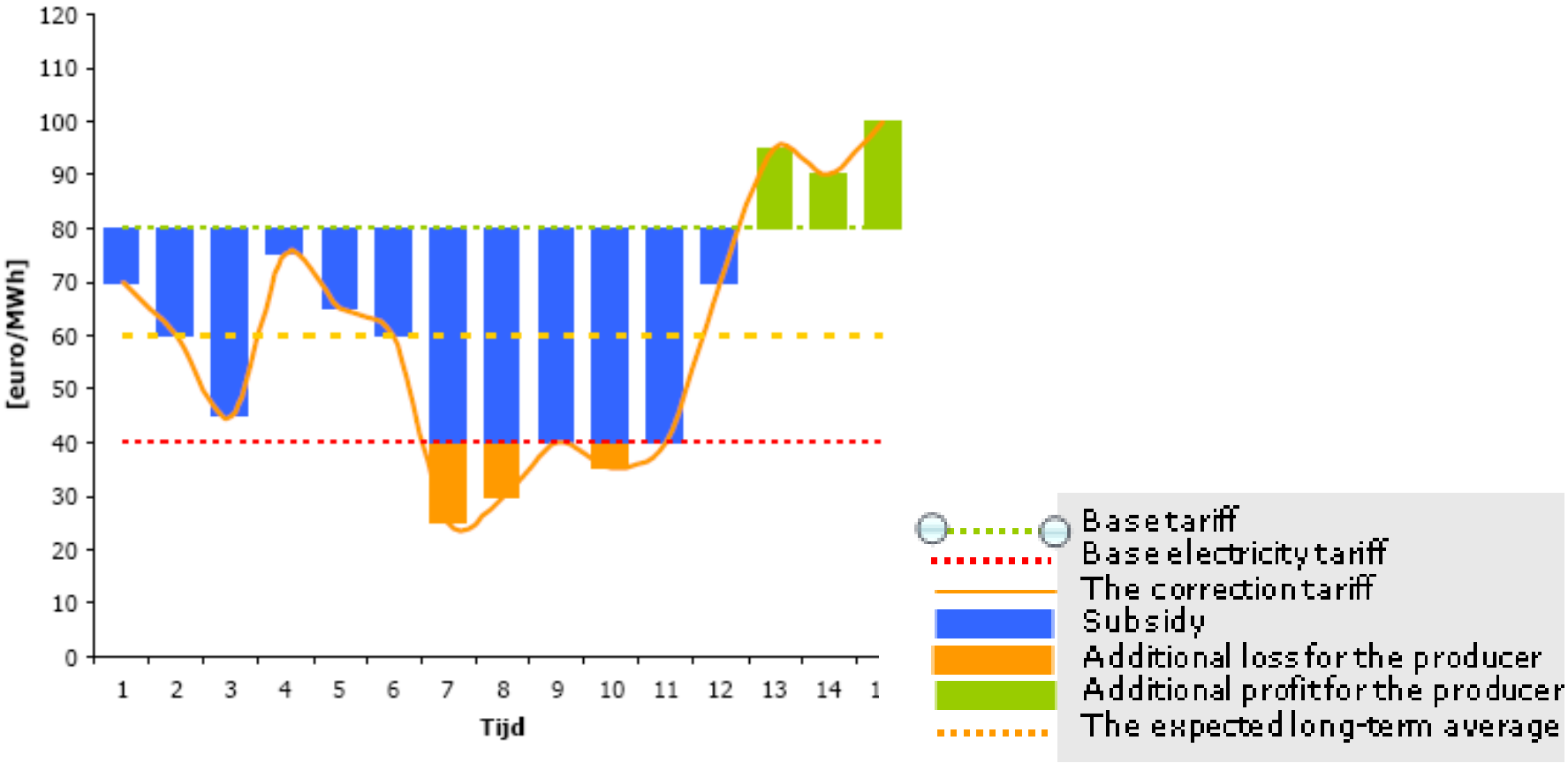
- **Correction tariff can be based on:**
  - Electricity/gas price;
  - Price of the certificates for sustainable electricity,
    not in use untill now, due to the low price of the certificates at this moment;

- **All tariffs are calculated by PBL**
  - PBL: Netherlands Environmental Assesssment Agency
  - In corporation with: TNO, DNV/GL

During the production year

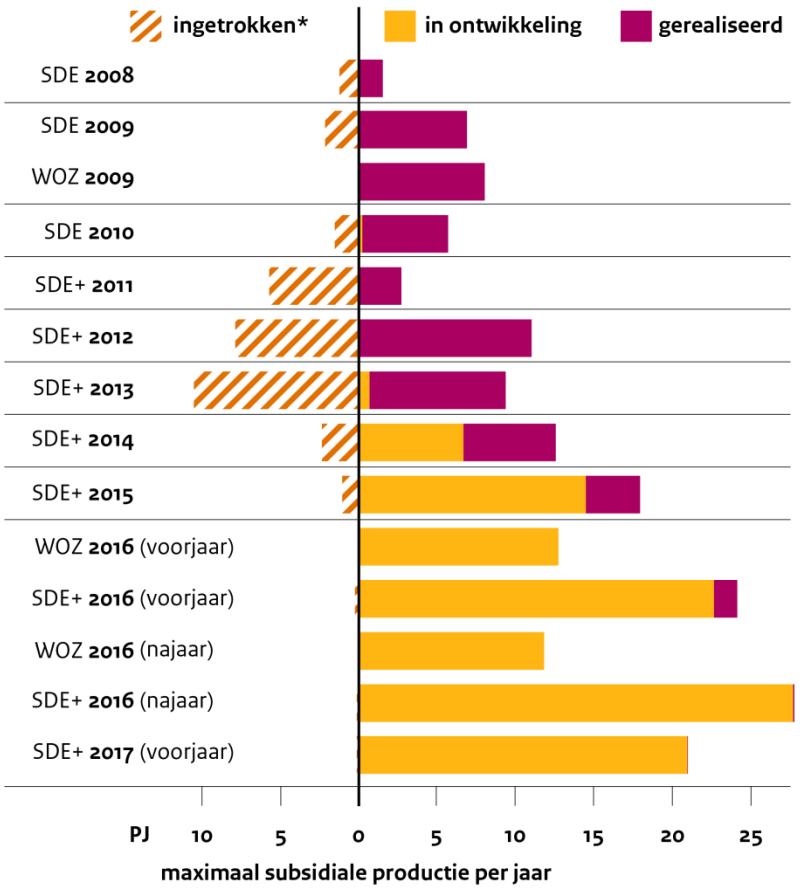
- RVO receives daily by automated data-connection productiondata of all installations from CertiQ and Vertogas:
  - Measured production
  - Guarantees of Origin (based on the measured production)
- RVO keeps an eye on productiondata and the paid advances to keep them level
- If necessery, RVO increases or decreases the montly advances

Subsidy (Base – Correction) over the production period



Realisation

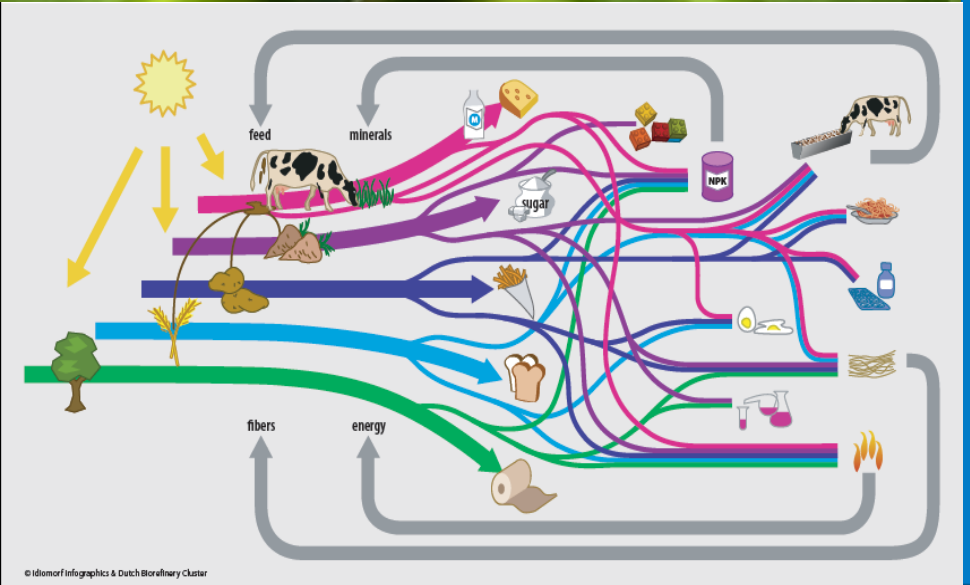
Voortgang van projecten
SDE en SDE+ (inclusief Wind op Zee) op 1 januari 2018



* project waarvan de subsidie is gehonoreerd, maar waarvan later de subsidietoekenning is ingetrokken

Netherlands Enterprise Agency

Thank you for your attention

Questions?

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