

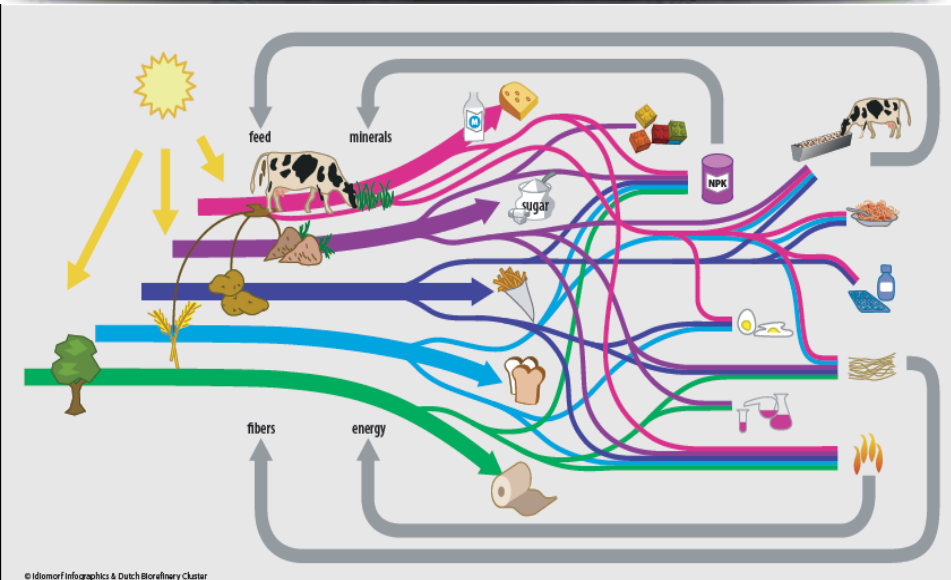


Netherlands Enterprise Agency



# The role of Bioenergy Africa

Ir. Kees W. Kwant





# Contents

- Development for Bioenergy in the Bioeconomy
- Present use of biomass in the Netherlands
- Sustainable Biomass Production
- Experiences in South Africa
- Conclusion



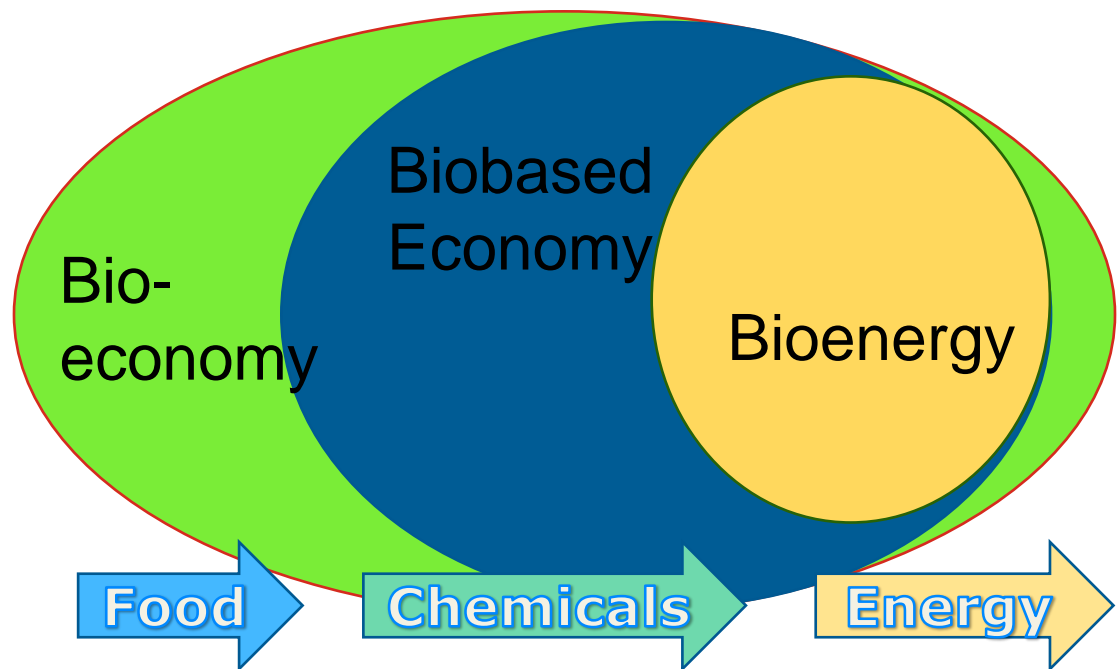
# Biobased Economy part of Bioeconomy

A Biobased Economy

is a sustainable  
Economy,

optimising  
Economic value and  
Natural value of biomass

by  
Replacing Fossil  
Resources





# Vision Biobased Economy

Sustainable Production and Use of Biomass:

- *People*: food security, land rights, prosperity
- *Planet*: soil, water, air, GHG, biodiversity
- *Profit*: businesscases

*Proven Sustainable Biomass does not come automatically*





# Sustainable Biobased Solutions



## Integrated Food & Materials production

- Smart agriculture
- Increased production



## Sustainable and Rural Development

- Local Resources and local use
- Tapping unused or abandoned land



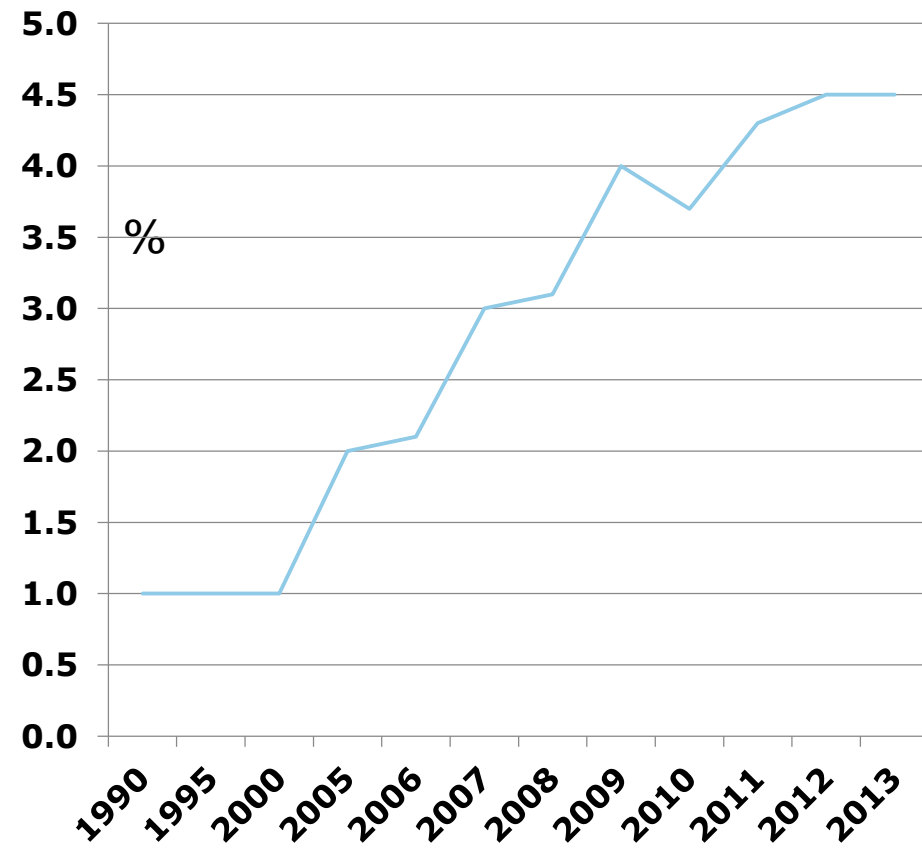
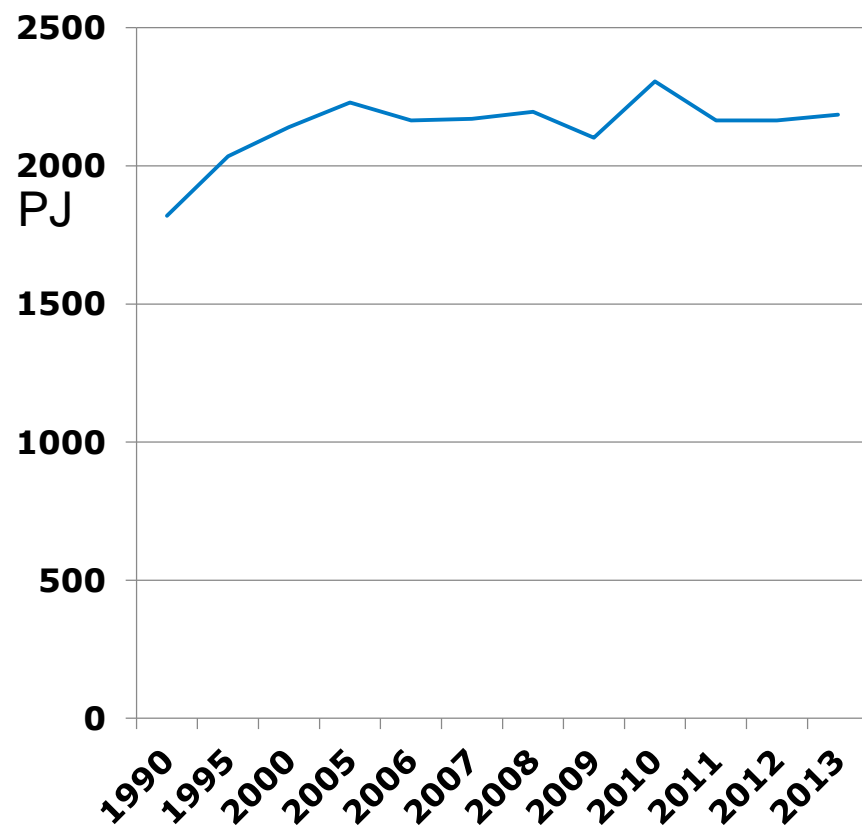
## Smart use of biomass

- Circular Economy, Cascading
- Biorefinery

Ref: [http://www.sahyog-europa-india.eu/images/D2\\_3\\_Strategic\\_Advice\\_on\\_Biobased\\_Research\\_based\\_on\\_Sahyog\\_inventory\\_V3.pdf](http://www.sahyog-europa-india.eu/images/D2_3_Strategic_Advice_on_Biobased_Research_based_on_Sahyog_inventory_V3.pdf)

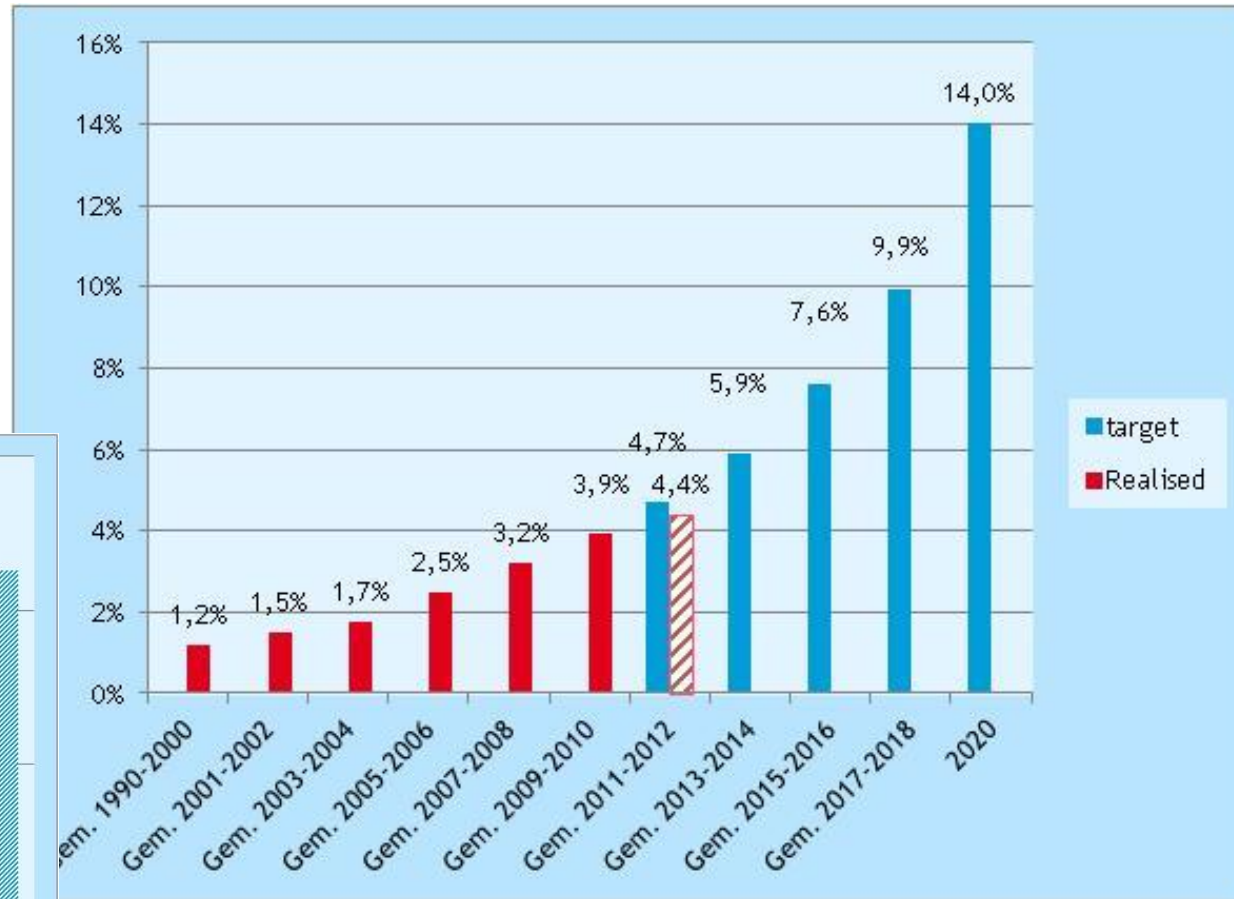
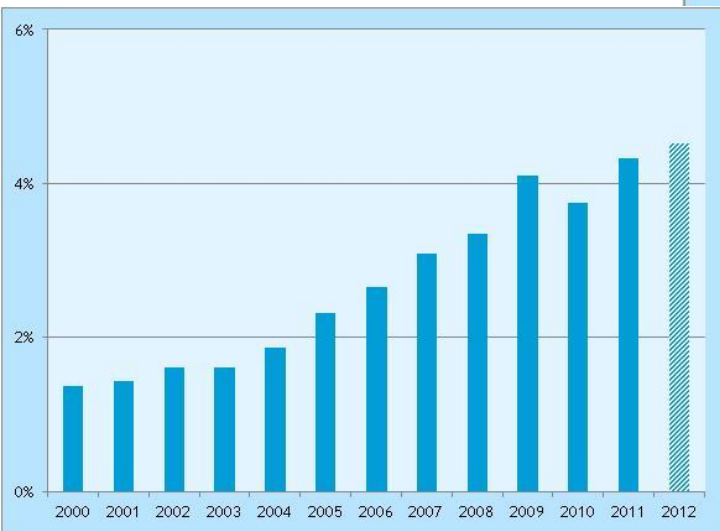


# Final energy end use and % Renewable Energy





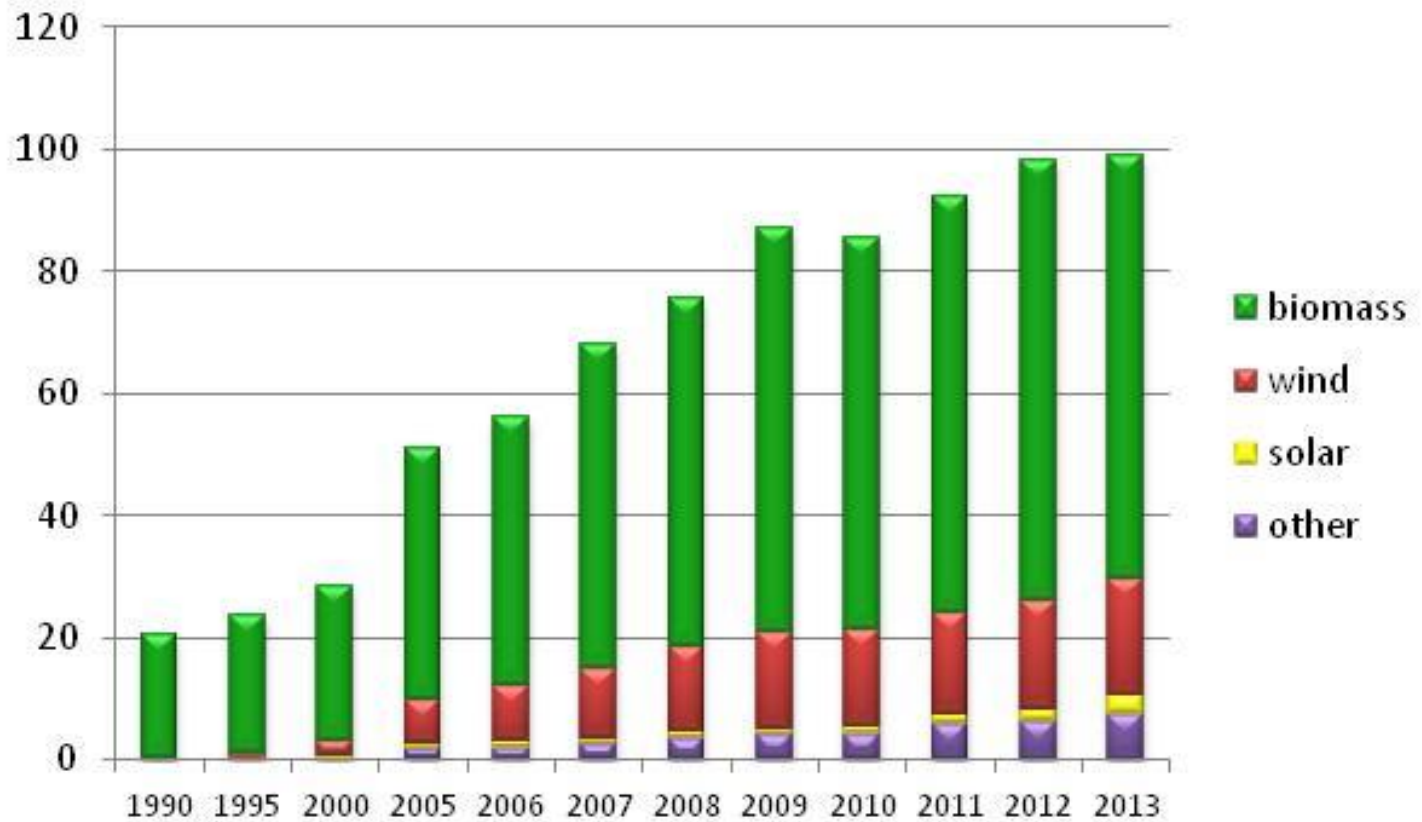
# 1.RE targets: RED: 2020: 14%





## Results: About 70% realised with Bioenergy

- PJ

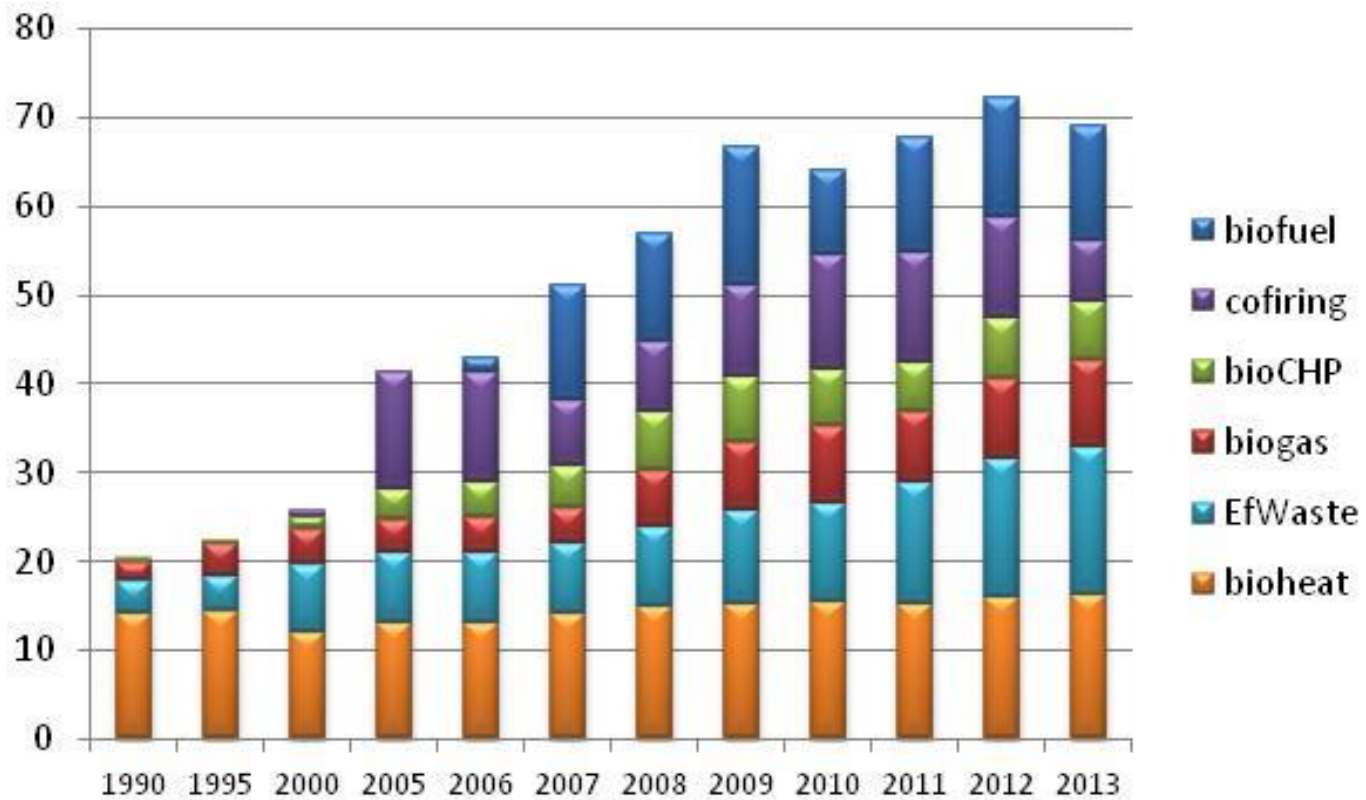






# Bioenergy implementation Netherlands

- PJ





# Power and Heat from Municipal Solid Waste

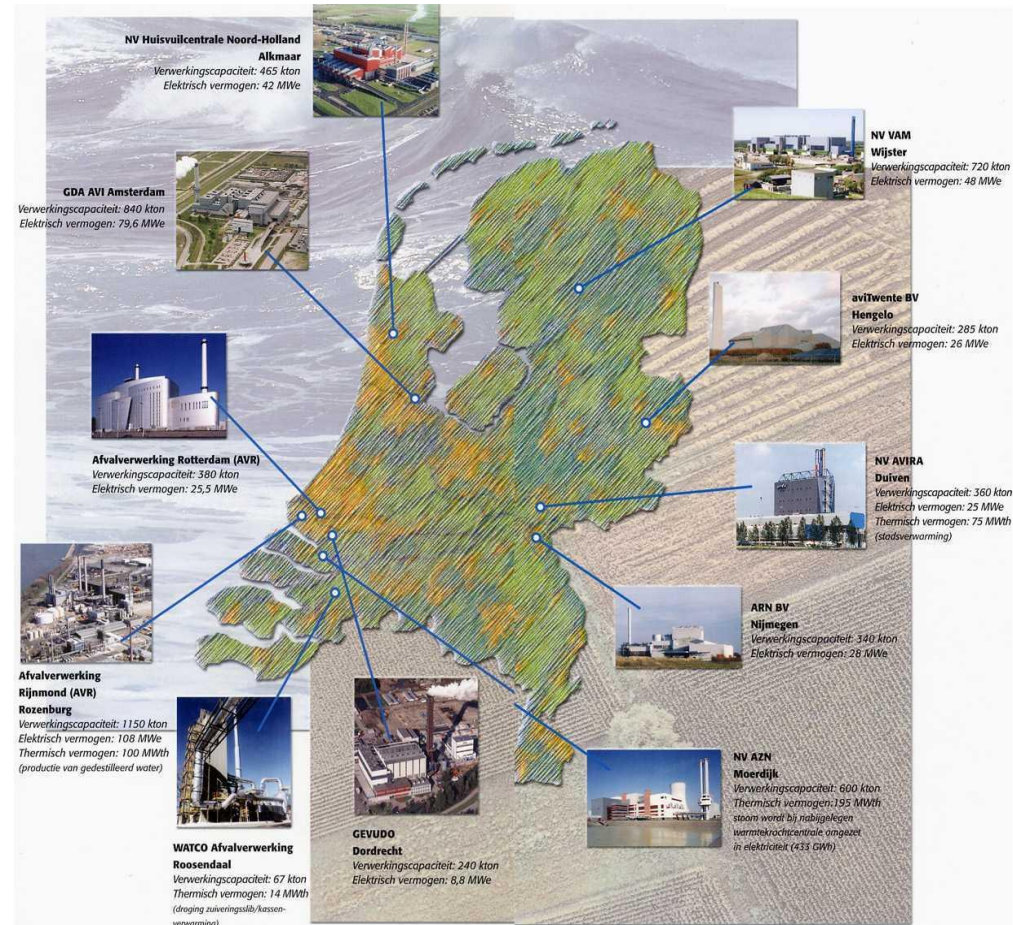
- 5.5 Mton waste
- After recycling
- No more landfilling
- For power and
- Heat (Rotterdam)
- Import of waste in EU

Afvalverbrandingsinstallaties  
in Nederland

Waste to Energy Plants  
in the Netherlands

Elektrisch vermogen =  
Electric Power in MWe

Verwerkingscapaciteit =  
Waste capacity in kTon/a





## Example of small scale digesters (Microferm)



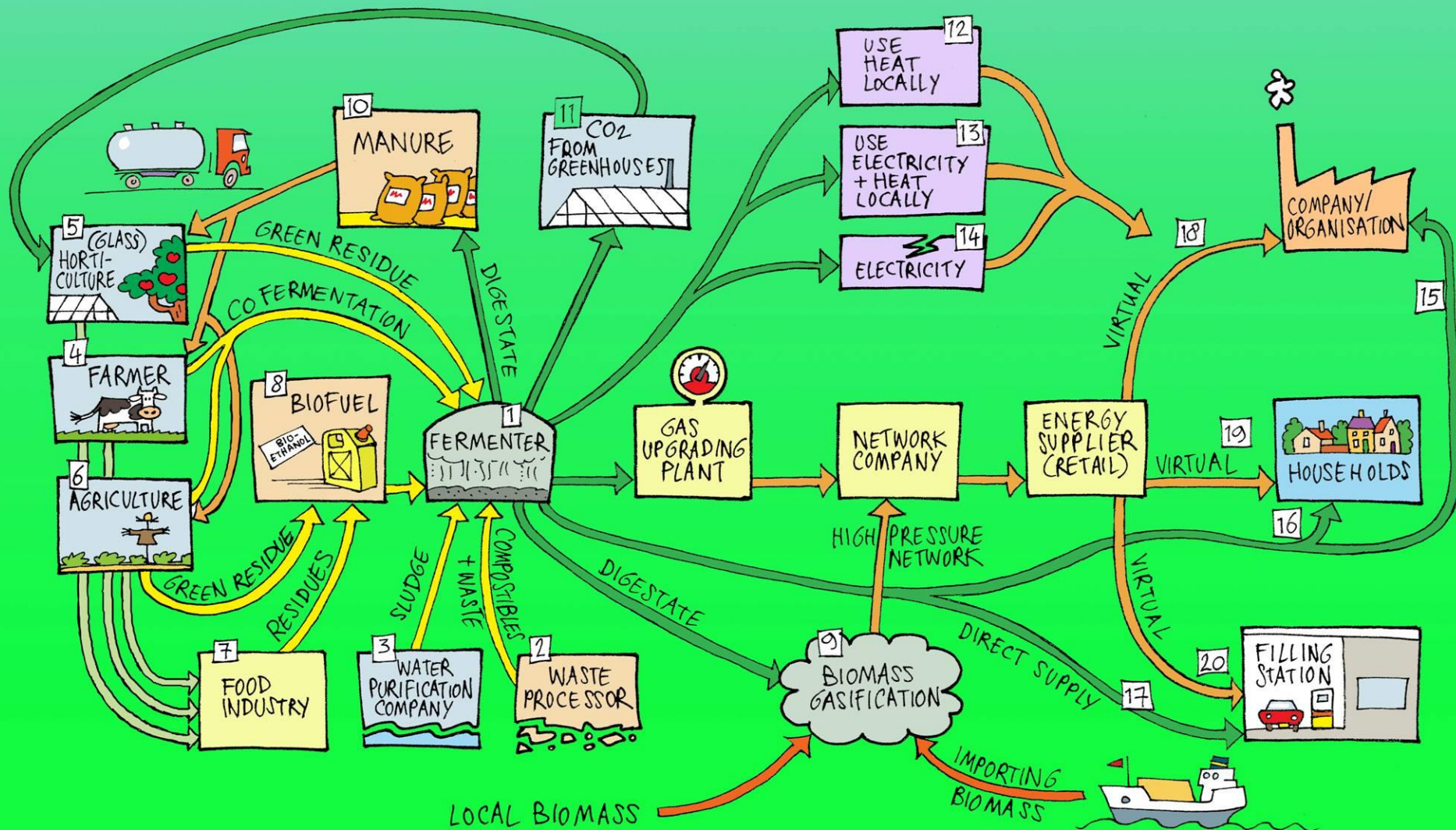
[www.host.nl](http://www.host.nl)



# THE GREEN GAS CHAIN

## 20 ROUTES TO GREEN GAS

GREEN GAS WORKING GROUP / NEW GAS PLATFORM





## Good practice example with heat utilisation (Zeewolde)

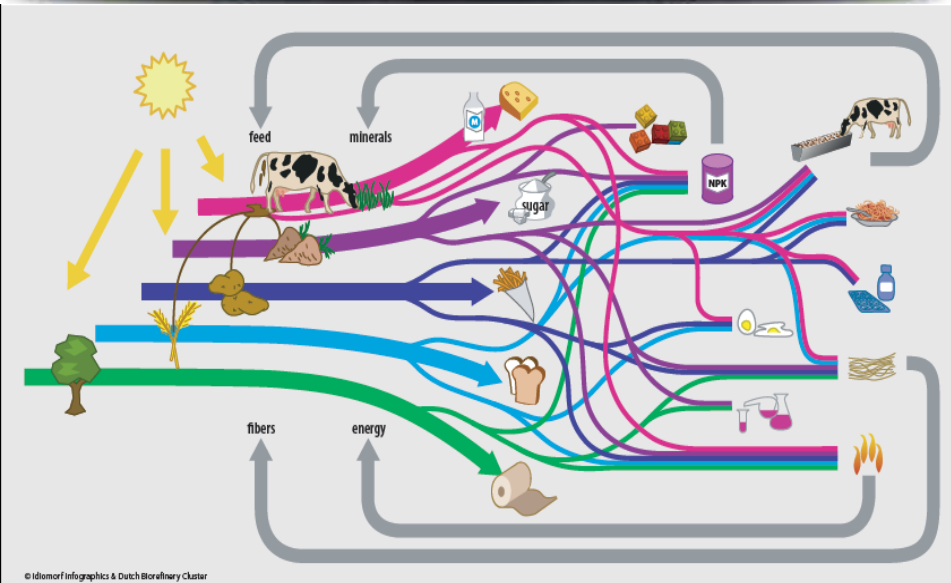




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# Sustainable Biomass







# 40 projects in 20 countries



[Watch our movie](#)



# Sustainability: Learning and Practical experiences

- Increased Sustainable Biomass Production is possible
- Synergetic effects between food and biomass supply exist
- Control of sustainability by certification is possible
- Additional demand for biomass will continue for biobased applications

Web: [www.rvo.nl/biomass](http://www.rvo.nl/biomass)



# IMPLEMENTING A BIOGAS PROJECT IN SOUTH AFRICA

Lessons Learned

JANUARY 2014

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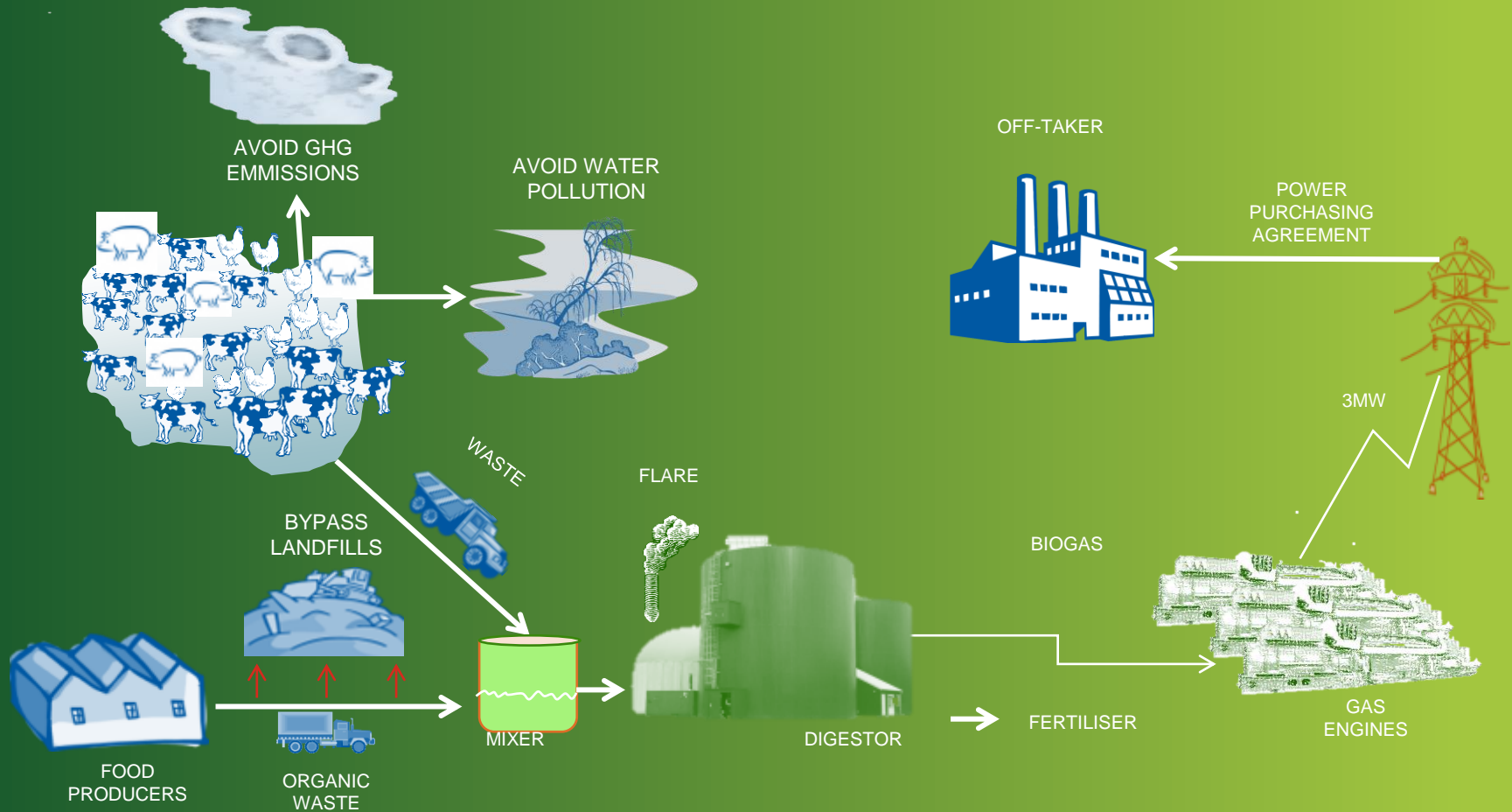
[sean@bio2watt.com](mailto:sean@bio2watt.com)



# PROJECT SUMMARY

- Bio2Watt, a Renewable Energy Project development Company which develops, owns and operates its projects, has started construction of the 1<sup>st</sup> commercially viable biogas project wheeled in South Africa – Bronkhorstspuit Biogas Project (Pty) Ltd (“BBP”), approximately 40kms east of Pretoria on a 20,000 cattle feedlot.
- BBP will operate for 10 years, with the opportunity to renew agreements for an additional 10 years.
- The 4MW of electrical power generated will be sold to an industrial off-taker via a power purchasing agreement (PPA).
- Total project costs are estimated to amount to R135m. The project is structured as a limited recourse finance transaction, with the IDC providing a commercial loan equal to 70% of total project costs.
- BBP has achieved financial close, we are currently in construction

# THE BRONKHORSTSPRUIT BIOGAS PROJECT



WASTE  
REDUCTION

LANDFILL  
AVOIDANCE

JOB CREATION

CLEANER  
ENVIRONMENT

PROVIDE  
ENERGY SECURITY



01 January 2007

01 January 2008

31 December 2008

31 December 2009

31 December 2010

31 December 2011

30 December 2012

30 December 2013

2 years

Environmental Impact  
Assessment

Supply Agreements

Negotiating and Finalising a  
PPA

Interconnection Agreements  
(Eskom & Tshwane)

Licenses and Permits

Term sheet to Loan  
Agreement

EPC Wrap Agreement

O&M Agreement

Approaching Investors to  
Investment

Feasibility Study

# Environmental Escalations

- **Full EIA required whereas a Basic Assessment would have sufficed:**
  - Triggered by Air Emission License because of the plant being considered as “animal processing facility” because of the presence of abattoir waste
  - Also “” Water Use License: irrigation, storage of dirty water, use of water from Dams
- **Biogas is not properly understood by officials as a result it is added to listed activities: further specialist costs and time for assessment**
- **DWA officials had no set time frame within which to respond unlike other licensing departments**
- **The digestate from fertiliser is a high grade organic fertiliser in Europe and is used for crops such as Maize. Local regulations requires the project at great cost to get rid of valuable nutrients.**

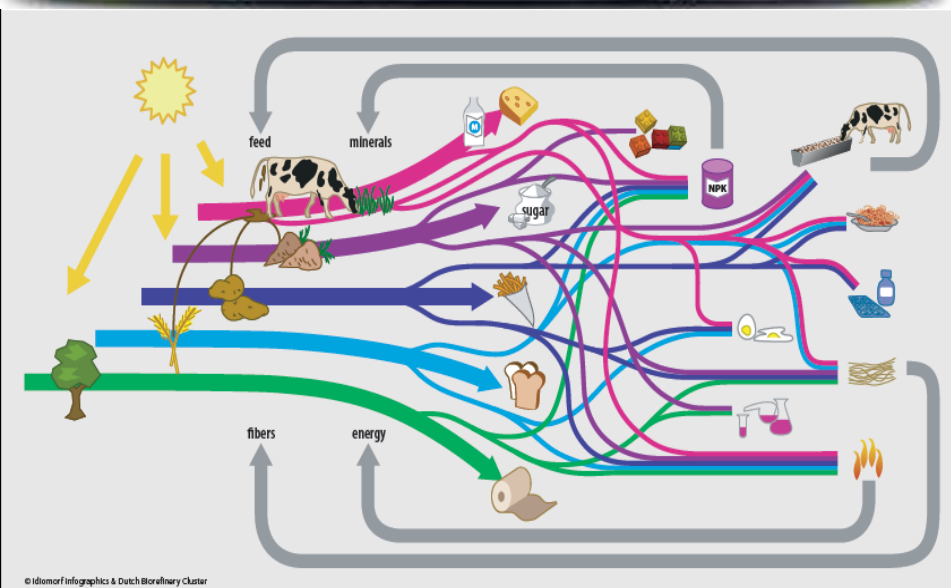


# LESSONS FOR REGULATORS:

- LICENSES:** Simplify and streamline the processes – one license for land use, water usage, waste management.  
Application process could seriously be quicker.
- MUNICIPALITIES:** Provide clear directives and a wheeling protocol.
- DOE, NERSA & ESKOM:** Industry is best supported through strong supportive policy frameworks



# Conclusion





## Conclusion

- Policy measures create economic opportunities for industry
- Integration: Energy, Forestry, Agriculture
- Results;
  - Job Creation, Rural Development
  - Sustainable Development,
  - Cleaner Environment
  - Energy Security