

# THE NETHERLANDS COUNTRY REPORT

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Berlin, Germany  
29<sup>th</sup> of October 2015

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

# DUTCH POLICY FORWARD

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- NEV (National Energy Lookout) 2015 → Focus on 2023
  - 16% sustainable energy in 2023 achievable
  - 14% sustainable energy in 2020 achievable
- Methods used to achieve this
  - Closing down old coal fired power plants
  - Increase tax on natural gas
  - Using subsidy SDE+ (on solar, wind, geothermal and biomass)
- SDE+ 2015 3.5 billion € subsidy on
  - Renewable electricity
  - Renewable heat or CHP
  - Renewable gas
- SDE+ 2016 8 billion € in two phases

# STRENGTHENING DUTCH BUSINESSES

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- TKI (Top Consortia for Knowledge and Innovation)
  - Consists of nine different areas, one of which is Energy
  - Tool to realize innovations which couples green and growth
  - Goal is to strengthen our position internationally, create jobs and prosperity
- TSE (Top Sector Energy)
  - Different subsidy programmes
  - Covers range of wind, solar, biomass and build environment
  - Strong focus on cost price reduction of sustainable energy

# STATUS OF SDE+ & TSE SUBSIDY

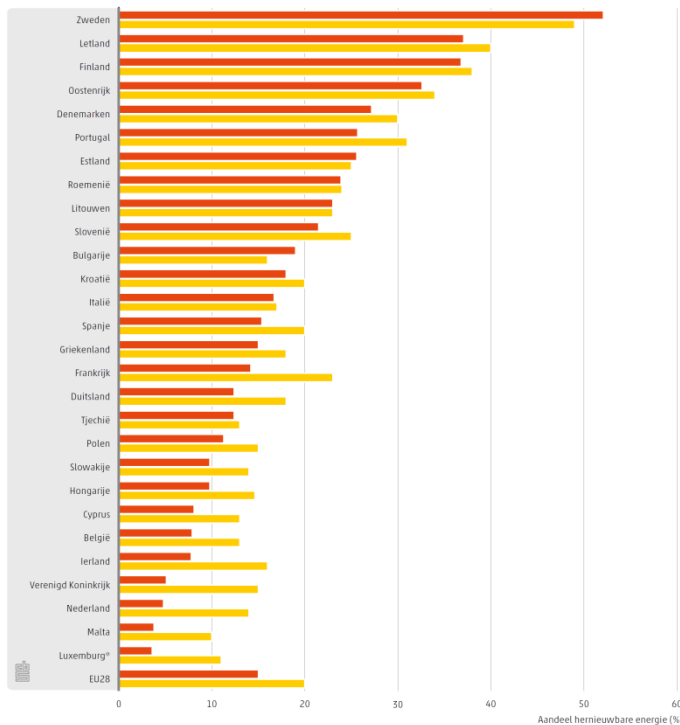
Catagory	Projects file	Granted	Claimed	Areas
Renewable electricity	590	145	1590 M€	Wind and Solar
Renewable heat and electricity	153	49	1910 M€	Solid or liquid biomass in boilers
Renewable gas	12	0	0€	
<b>Total</b>	<b>755</b>	<b>194</b>	<b>3500 M€</b>	

7th of October

Subsidy scheme	Maxium subsidy	Granted	Claimed	Not claimed
Early adopter	500.000	299.468	0	200.532
Renewable Energy	50.000.000	10.597.549	23.046.302	16.356.149
System integration studies	750.000	314.937	242.452	192.611
Off shore wind R&D	3.700.000	3.568.000	0	132.000

1st of October

# STATUS RENEWABLE ENERGY



■ 2013 ■ Doelstelling 2020  
Bron: CBS voor Nederland, Eurostat (2015a) voor andere landen.  
\* Geschat cijfer.

- NL is third one at the bottom with 4.8%
- CBS gives three reasons
  1. NL has almost no hydro power
  2. NL has no wood based house hold heating system, but gas based. Competition is difficult
  3. NL governments has not fully committed to supporting alternatives, unlike Denmark, Spain and Germany

## DEVELOPMENTS – RWE

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- MEP subsidy ended in 2013
- Mixtures of RDF fluff and demolition wood tested in 2014
- Applied for SDE<sup>+</sup>, but not successful
- 2016 will apply for SDE<sup>+</sup> again, if granted the installation will run from 2017 and onwards on mostly demolition wood and partly RDF

# DEVELOPMENTS – ESKA project



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Waste heat boiler (under construction)



Foundation of site





## DEVELOPMENTS - HoSt

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- Successful duration test done in Portugal operating ~1000 hours on RDF.
- Accumulation of wires in the gasifier eventually causes problems.



# DEVELOPMENTS – ROYAL DAHLMAN

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## India

- MILENA OLGA Gas Engine (4MWth/1MWeI) currently in commissioning phase

# DEVELOPMENTS – ROYAL DAHLMAN

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## Netherlands

- SNG Demonstration 4 MW<sub>th</sub> / 2.8 MW<sub>SNG</sub> being developed

## UK

- Finalist in the ETI tender. MILENA OLGA IGCC was regarded most efficient. Site selected and permitted. Financing of the project under evaluation
- Generation Park Norwich, selected MILENA OLGA. 24 MW<sub>th</sub> / 7 MW<sub>el</sub>. Fuel will be locally harvested straw

<http://www.generationparknorwich.com>

## South East Asia

- Multiple waste to energy projects under development
- Range from 24 – 60 MW<sub>th</sub> and 7 – 18 Mw<sub>el</sub>
- Most projects in an early stage
- One project close to realisation

## DEVELOPMENTS - SYNVALOR

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- Developing a project to produce 700 kW<sub>el</sub> and 1000 kW<sub>th</sub> for a nursery garden
- Company that will use the power and heat is also co-owner of the installation
- Currently in permitting phase
- Expected installation is mid 2016 and start up early 2017

# DEVELOPMENTS - TORRGAS

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## 0.7 MW demonstration in Groningen



- 1. Physical:** applying homogenous, pulverisable, moisture free torrefied bio-fuel.
- 2. Technical:** creating a tar and nitrogen free drop-in syngas without slagging.
- 3. Economical:** splitting biomass in high value biocarbon and high grade syngas and thus maximizing the value creation

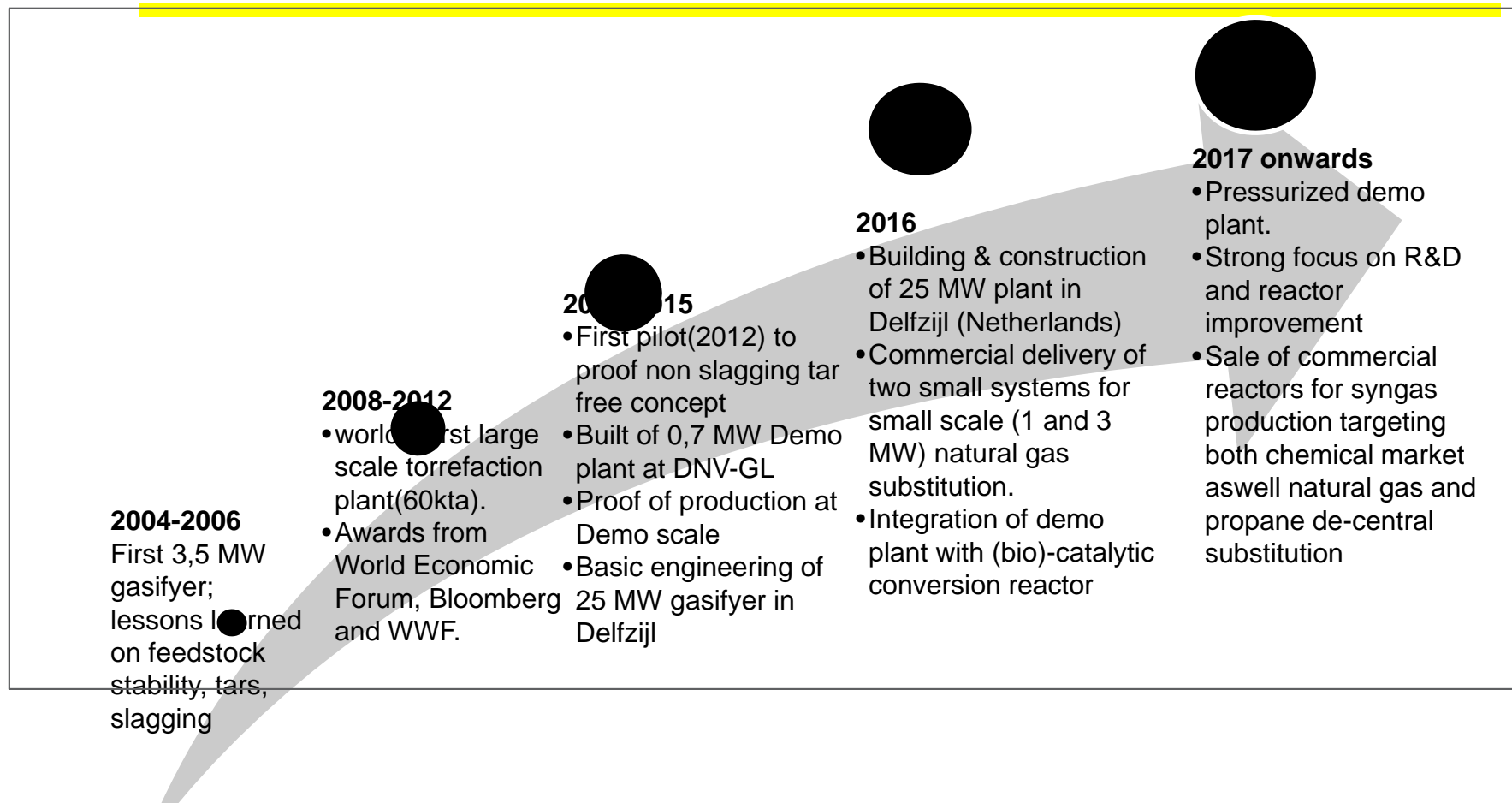
## DEVELOPMENTS - TORRGAS

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- 1. Drop-in properties:** 12 MJ/kg, nitrogen and tar free syngas meets requirements for direct mixing without major burner modifications
- 2. Skid mounted bio-syngas generator:** upto 15 MWth feed capacity can be installed on portable skid due to high volumetric reactor output
- 3. Limited logistic handling:** torrefied biomass handling is far less complicated and space intensive than untreated biomass

# DEVELOPMENTS - TORRGAS





# DEVELOPMENTS – SNG

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## **BMC (Zutphen) / BAVIO (Oss)**

- 14 MW<sub>th</sub> wood to SNG plant
- Repeat to reduce costs, 4 environmental permits granted
- SDE<sup>+</sup> subsidy granted for the project in Zutphen and Oss
- Status: Under development

CCS currently supporting these projects

## **CCS Energy Advice**

- Feasibility studies, from technical and economical viewpoint.
- From first idea to conceptual and basic engineering
- Initiating and participating in R&D projects related to bio-energy
- Eranet proposal “co-gasification” granted (subject to national approval), together with Berkhof, GPI, Repotec and TU Wien. Focusing on low-cost biomass gasification.

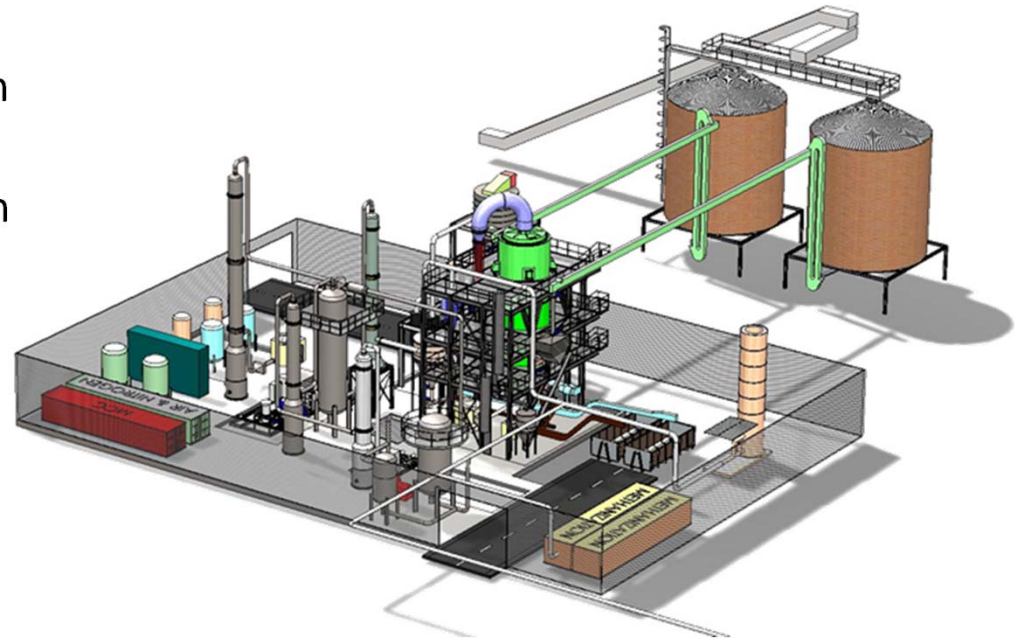


## DEVELOPMENTS – SNG

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### Alkmaar demonstration

- 4 MW<sub>th</sub> MILENA OLGA ESME
- Consortium of Gasunie, Dahlman and ECN
- 300 Nm<sup>3</sup>/h of bioSNG production
- Operational in 2017/2018
- Production subsidy has been granted



## DEVELOPMENTS - SYNOVA

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- Synova develops waste to energy projects: [www.synovapower.com](http://www.synovapower.com)
- Takes care of contracting, financing, permitting
- .. and financial and operating partner of the plant
  
- Synova focuses on gasification technology
- Works with several suppliers of gasification technology
- Invested in Dahlman and its OLGA technology to remove tars: [www.dahlman.nl](http://www.dahlman.nl)
- See movie at [www.fullcyclefund.com](http://www.fullcyclefund.com)
  
- Offices in Netherlands, Thailand, Philippines, Hongkong, US, UK



Thank you



# MORE INFORMATION

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Fuel composition database: [www.phyllis.nl](http://www.phyllis.nl)

Tar dew point calculator: [www.thersites.nl](http://www.thersites.nl)

IEA bioenergy/gasification: [www.ieatask33.org](http://www.ieatask33.org)

Milena indirect gasifier: [www.milenatechnology.com](http://www.milenatechnology.com)

OLGA: [www.olgatechnology.com](http://www.olgatechnology.com) / [www.renewableenergy.nl](http://www.renewableenergy.nl)

SNG: [www.bioSNG.com](http://www.bioSNG.com) / [www.bioCNG.com](http://www.bioCNG.com)

BTX: [www.bioBTX.com](http://www.bioBTX.com)

