

Netherlands Enterprise Agency



How we (could?) use Biomass in the Netherlands



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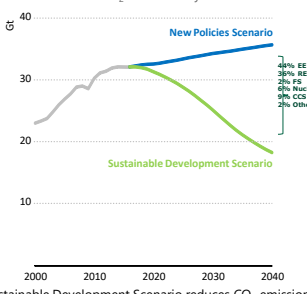
- Biomass use/availability
 - > Global
 - > Europe
 - > Netherlands

Use of biomass in the Circular Economy

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A new strategy for energy & sustainable development

Global CO₂ emissions by scenario

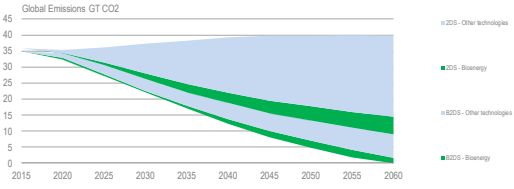



IEA Bioenergy www.ieabioenergy.com

▪ The Sustainable Development Scenario reduces CO₂ emissions in line with the objectives of the Paris Agreement, while also tackling air pollution and achieving universal energy access

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Bioenergy is essential component of IEA Low Carbon Scenarios



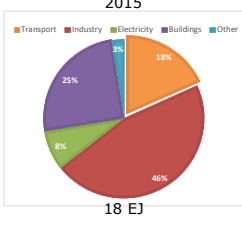

IEA Bioenergy www.ieabioenergy.com

Bioenergy to provide some 17% of cumulative carbon savings to 2060 in the 2DS and around 22% of additional cumulative reductions in the B2DS, including an important contribution from BECCS

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Bioenergy serves many energy uses in IEA 2DS scenario

Modern bioenergy in final energy consumption

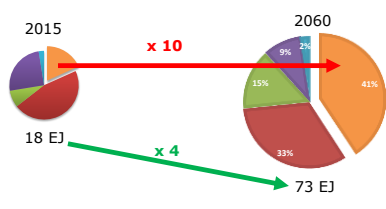
IEA Bioenergy www.ieabioenergy.com

<http://www.ieabioenergy.com/publications/technology-roadmap-delivering-sustainable-bioenergy/>

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Bioenergy serves many energy uses in IEA 2DS scenario

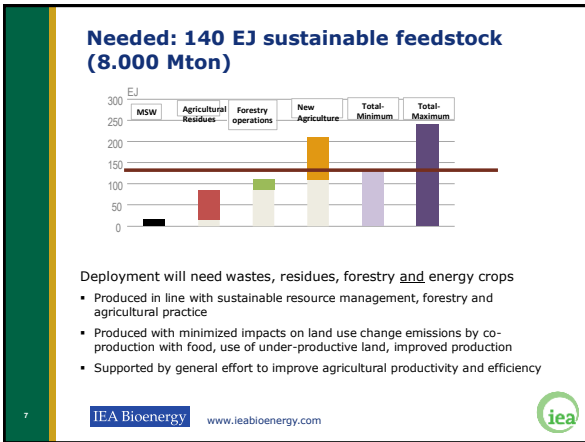
Modern bioenergy in final energy consumption



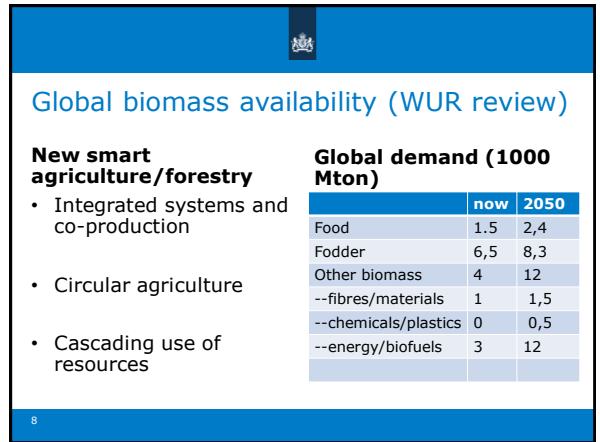
IEA Bioenergy www.ieabioenergy.com

Total final energy consumption of sustainable bioenergy increases four times by 2060 in the 2DS. Use of sustainable biofuels for transport increases tenfold, with a large majority of advanced biofuels.

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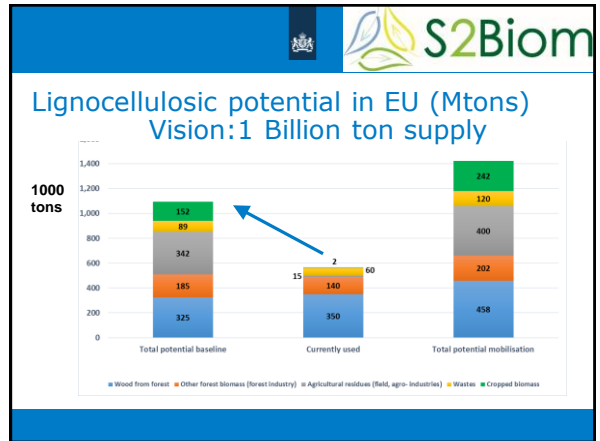
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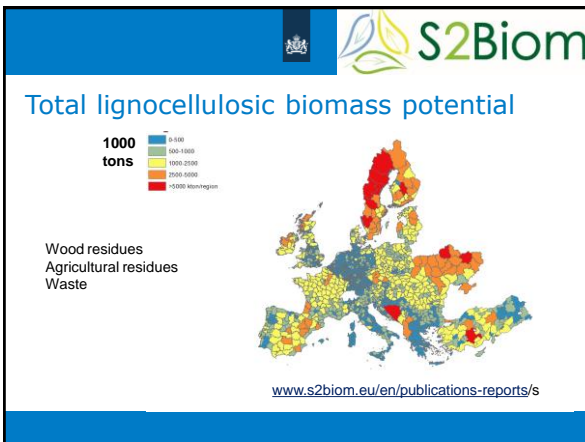
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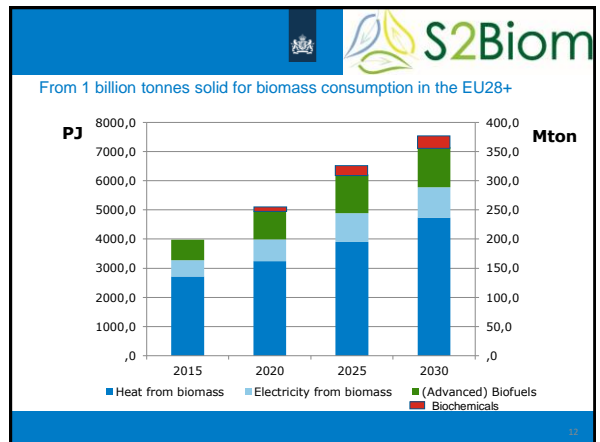
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Rijksoverheid
Nederland

The Netherlands Biomass Use

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Bioenergy Developments Netherlands

Renewable Energy [%]

2017	6,6
2020	13
2023	16

Bioenergy:
2017: 61%
2023: 47%

Reference:
Til 2017: CBS data
After : NEV 2017

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Support through SDE + scheme (up till now: 42 Billion € contracted)

- Since 2012 increased budget available,
- 9 – 12 Billion €/year
- In 12 years contracts
- 2 rounds per year
- Tendering in an auction system
- Since 2016 majority solar PV

Contracted Budget M€

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Realisation of projects

- About 70 % realised
- Wind on Sea: 2015 ... take more time
- Most contracts after 2016 still need to be realised

SDE+ Project Development

Maximal Expected Energy production [PJ/yr]

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Bioenergy contracted (8 - 12 year contracts) in the SDE+ scheme

- Support per kWh produced (20 – 50 €/MWh)
- Since 2012 also for heat
- Total 5756 MW contracted
- Biogas: 1064 MW
 - 2/3 from manure
 - 1/3 from organic waste
 - 1/2 for CHP and 1/2 for upgrading (methanisation)
- Total Budget claim: 18 Billion € (1500 M€/year)
- About 60% realised

MW contracted 2008 - 2018

technology	MW
Waste incinerator	816
Cofiring	1283
Heating	1393
CHP	1200
Biogas	1064
Total	5756

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Dry biomass for SDE+ projects (75% realised after 2016)

	MW	Hrs	PJ	n (%)	PJ input	2018 M ton dry	2020 M ton dry	from
Waste incinerator	816	7000	14,7	60	29,5	1,7	1,7	Waste
Cofiring	1281	3500	11,9	90	13,3	0,4	0,8	Imported pellets
Heating	1228	4500	14,8	85	17,5	0,8	1,0	Local wood & import
CHP	1187	6000	16,7					
Biogas	1002							
Total	5515							

Assumed 1 Mton dry biomass = 18 PJ
Present local biomass consumption about 1.8 Mton

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Biomass Use & Availability in the Netherlands

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Biomass use increase by 3%/year to 14 Mton

Mton

- other biomass for energy
- wood for power/heat
- biofuel export
- biofuel consumption NL
- material oils/fats
- material wood/paper

Wood based Oils

2010 2011 2012 2013 2014

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2014

Oils and fats 2014 (dry ton)

Raw material production

(Net) Import

Consumption

(Net) Export

C.S. Goh, 2016

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LULUCF directive for forests sets a limit

- Now: annual removal is 1 Mm3. (75% of growth)
- Can grow to 2 Mm3 in 2050.
- within the constraints of the LULUCF regulation.
- 0,25 – 0,5 Mdry ton/yr can be harvested from NL forests

Netherlands

Annual removal (1000m3 overland)

Year

2015 2020 2025 2030 2035 2040 2045 2050

Nibour, G.J., E. Anas, J.-P. Lescherer and M.J. Schepas. 2016. Effects of the EU LULUCF regulation on the use of biomass for bio-energy. Wageningen, Wageningen Environmental Research

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Woody Biomass for Energy:

- Platform Bioenergy inventory: (2017):
 - Total: 1,6 Mton
 - 82% local biomass
 - 18% imported
- CO2 reduction 1 Mton/yr

Solid woody biomass for energy	Kton dry biomass (2017)
Waste wood (B)	757
Forestry Residues	498
Industry residues	406
Other	5
Total	1766

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Origin of fresh wood chips en shreds

- 780 kton dry fresh wood
 - 49% from parks/lanes
 - 30% from landscape
 - 13% from forestry
- 43% used in NL

Potential to use

The exported wood

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Perspective for bioeconomy

Conditions:

- Sustainable
- Biodiversity improved

- Increased food

- Feed?

- Circular Biobased Economy

- Cascading use

	WORLD		Netherlands	
	Gton	Mton	now	2030
food	1,5	1,8	4	4,5
feed	6,6	7,8	23	27
non food	4	12	6,5	30
--bioenergy	3	9	3,5	20
--materiaal	1	3	3	10

Peer review Nederlandse beschikbaarheid en vraag naar biomassa, WUR, 2019

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Future is Circular Bioeconomy (biorefineries)

- Value creation
- Minimize impact
- Cascading use
- Bioenergy integrated in system
- IEA Bioenergy collaboration

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Thank you for your attention

Questions?

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