



NL Agency
Ministry of Economic Affairs,
Agriculture and Innovation

Biogas Situation in the Netherlands

Workshop Task 37 IEA-Bioenergy
Moss 19 April 2012

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NL Agency

» Focus on sustainability,
innovation and international

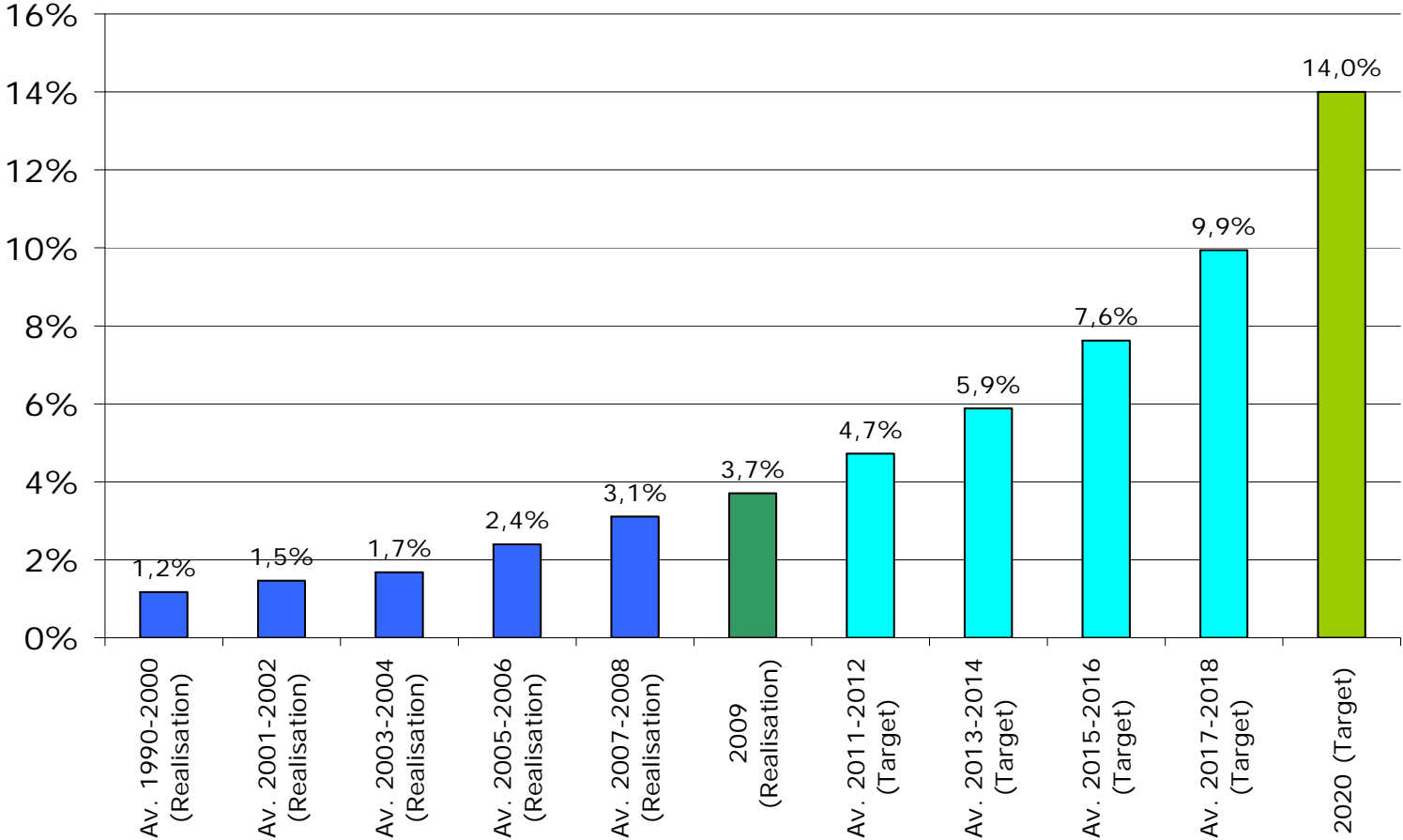


Contents

- State of the art in biogas development; statistics
- Approach Green Gas production with Gas Grid injection
- Results of evaluation of the biogas sector in NL during 2011
- Legislation (feed-in tariff system and law on fertilizers)

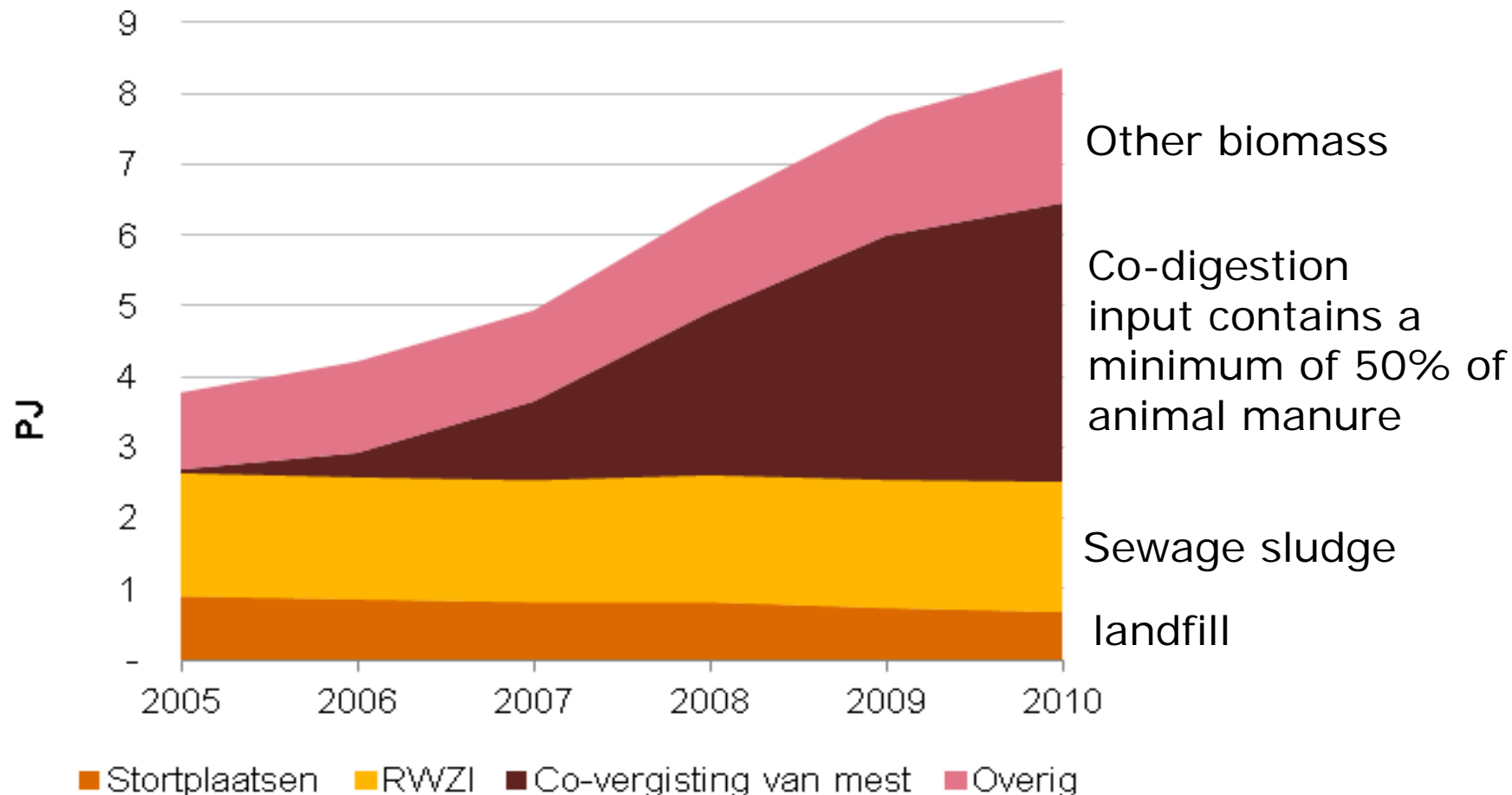


Share and target Renewable Energy The Netherlands



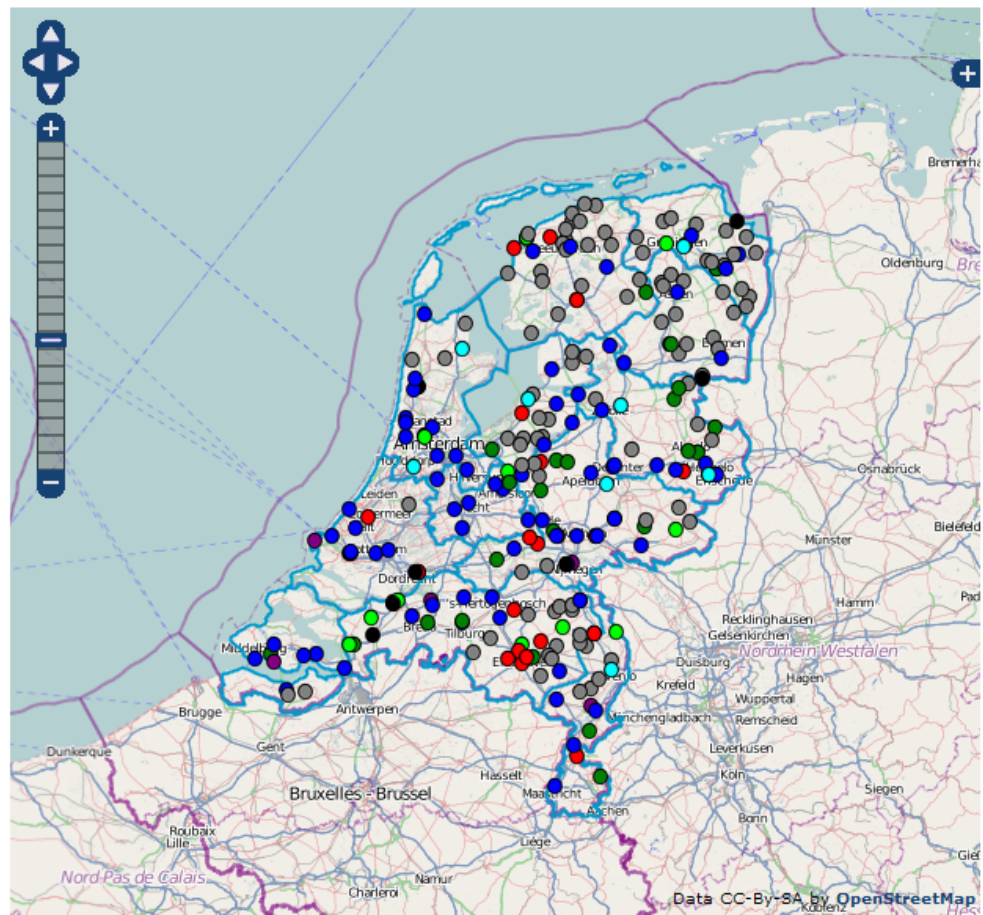


Development of biogas production





Distribution of bioenergy projects (www.b-i-o.nl)



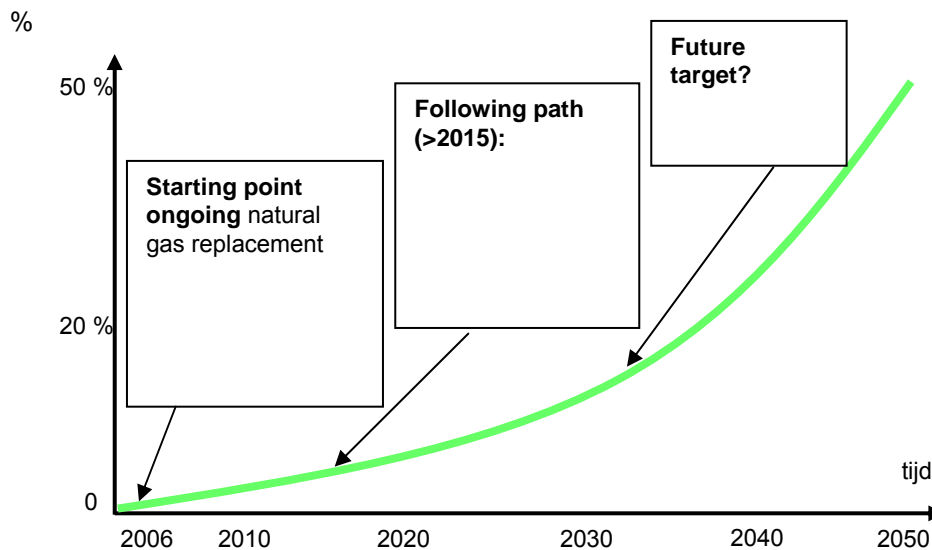
Klik op de rondjes (projecten) om meer informatie op te vragen.

- Filter Bio-energieinstallaties:
- Grootschalige verbranding (>50 MWe)
 - Kleinschalige verbranding (<50 MWe)
 - Stortgasinstallatie
 - AVI
 - RWZI/AWZI
 - Co-vergistingsinstallatie
 - GFT vergistingsinstallatie
 - VGI-vergisting
 - Alle Bio-energieinstallaties

- Legenda:
- Grootschalige verbranding (>50 MWe)
 - Kleinschalige verbranding (<50 MWe)
 - Stortgasinstallatie
 - AVI
 - RWZI/AWZI
 - Co-vergistingsinstallatie
 - GFT vergistingsinstallatie
 - VGI-vergisting



Ambition for Green Gas (vision document Dec. 2007 ppc group)



Short-term target: 1-3% replacement of natural gas by upgraded biogas

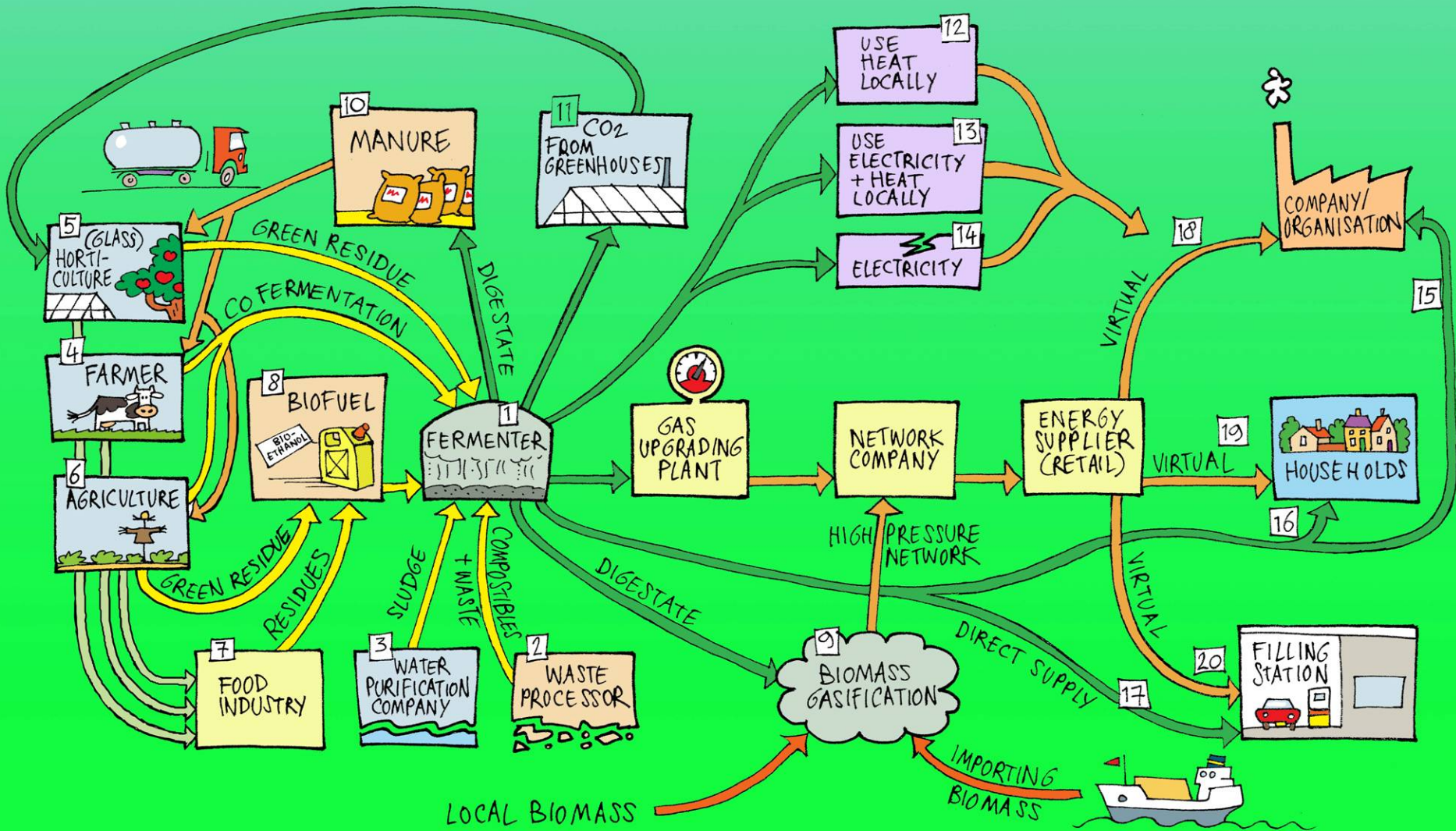
Mid-term target: 8-12% replacement of natural gas in 2020 (4 billion Nm³/y), inclusive SNG production from biomass

Long-term: Up-scaling to 50% replacement of natural gas by Green Gas in het gas grid

THE GREEN GAS CHAIN

20 ROUTES TO GREEN GAS

GREEN GAS WORKING GROUP / NEW GAS PLATFORM



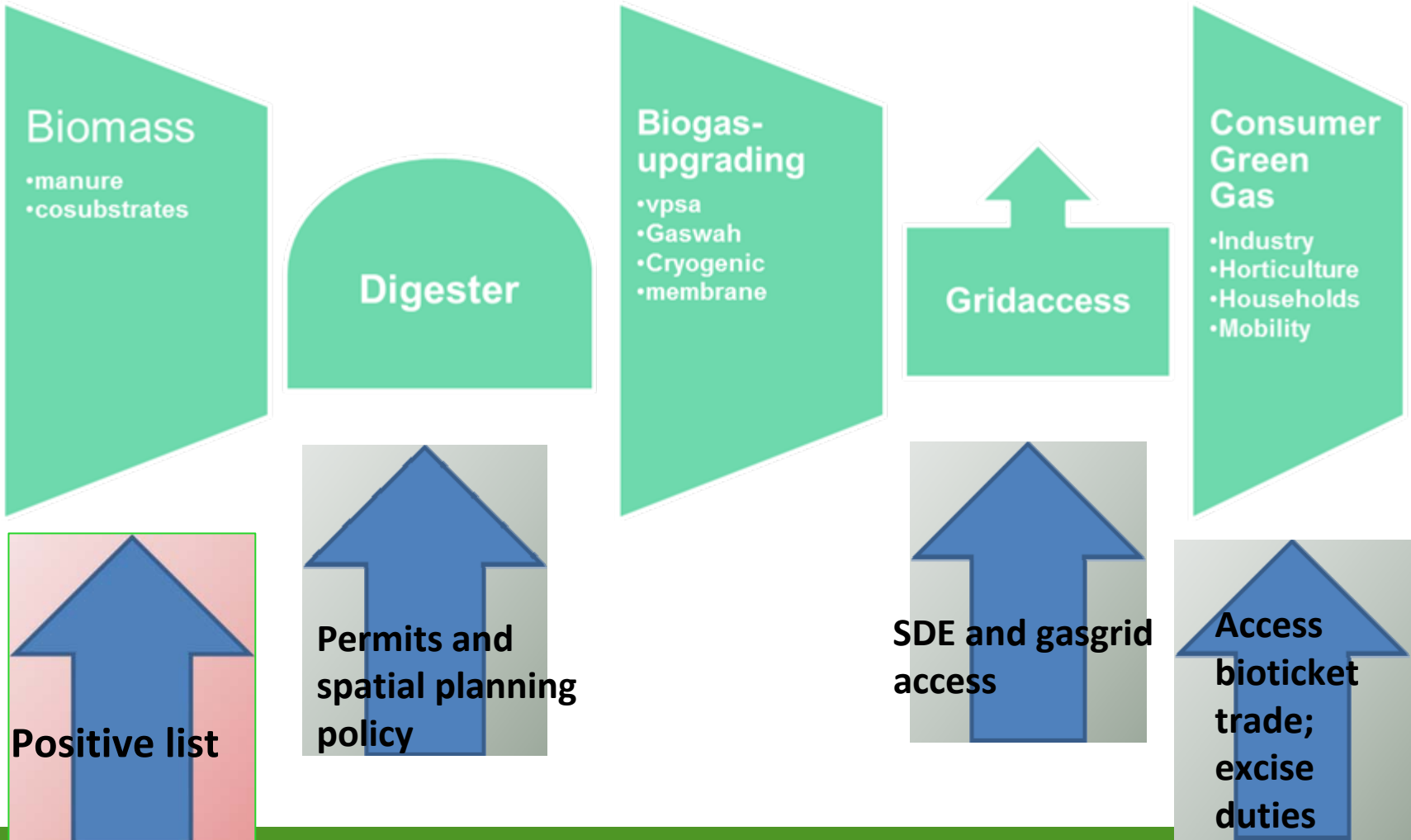


Milestones in Green Gas production: Approach Green Gas development in NL

- Medio 2006: start of a working Group "Green Gas" in a public-private-cooperation model
- December 2007: Publication of a Vision Report with general conclusions on ambition and pre-conditions for the development of a Green Gas market
- April 2008: First Publication of a stimulation programme (SDE) with feed-in tariff for biogas upgrading and gas grid injection
- July 2009: Operation of virtual trade system for Green Gas certificates
- December 2009: Installation of a Governmental speed-up team to "solve" legislative barriers for Green Gas development
- January 2010: Publication of an Action Plan
- March 2011: first publication of the speed up team Green Gas
- December: 2011: second release report speed-up team



Approach of speed-up team Green Gas (in the production chain)





Approach in legislation

In fertilizer act:

Positive list of biomass which can be used as co-substrate in co-digestion

Alternative route for proving avoidance of environmental risks of digestate application as fertilizer (summer 2012; based on a quality assurance system)

Energy law:

Feed-in subsidy: biogas in CHP application max. 15 €/kWh, but a bonus possible if produced heat is used effectively (until now about 140 MWe)

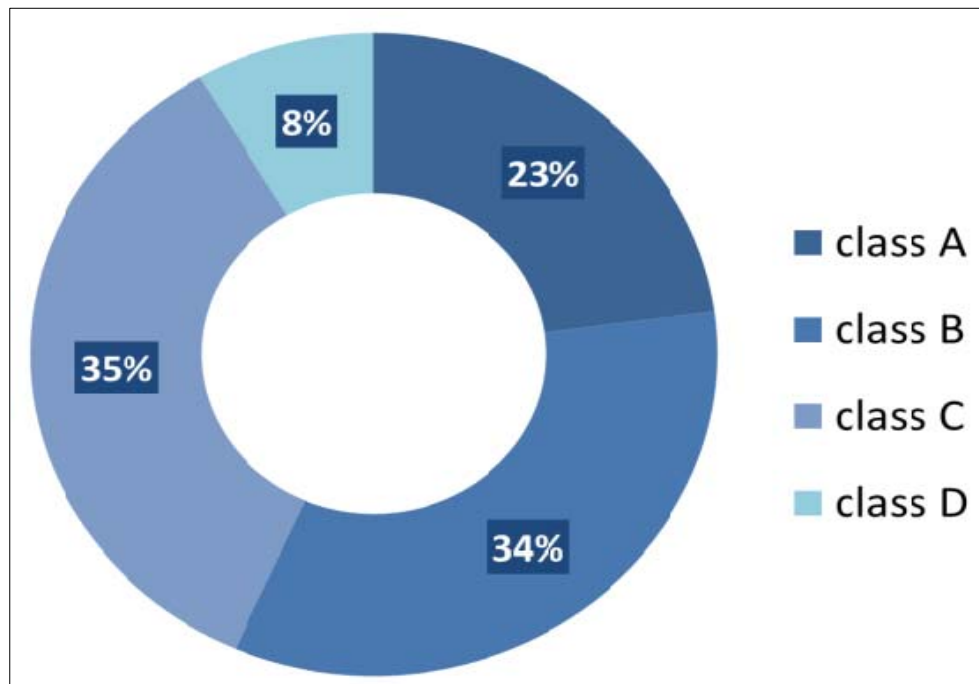
Feed-in tariff biogas upgrading with grid injection max. 62 €/Nm³ co-digestion (until now: 300 miljon Nm³/y).

New approach (2012): Support by government based on green deals approach (leading approach is the private initiative).





Evaluation of the biogas sector in the NL in 2011



class A:

co-digestion < 500 kWe

class B:

co- digestion between
500 and 1000 kWe

class C:

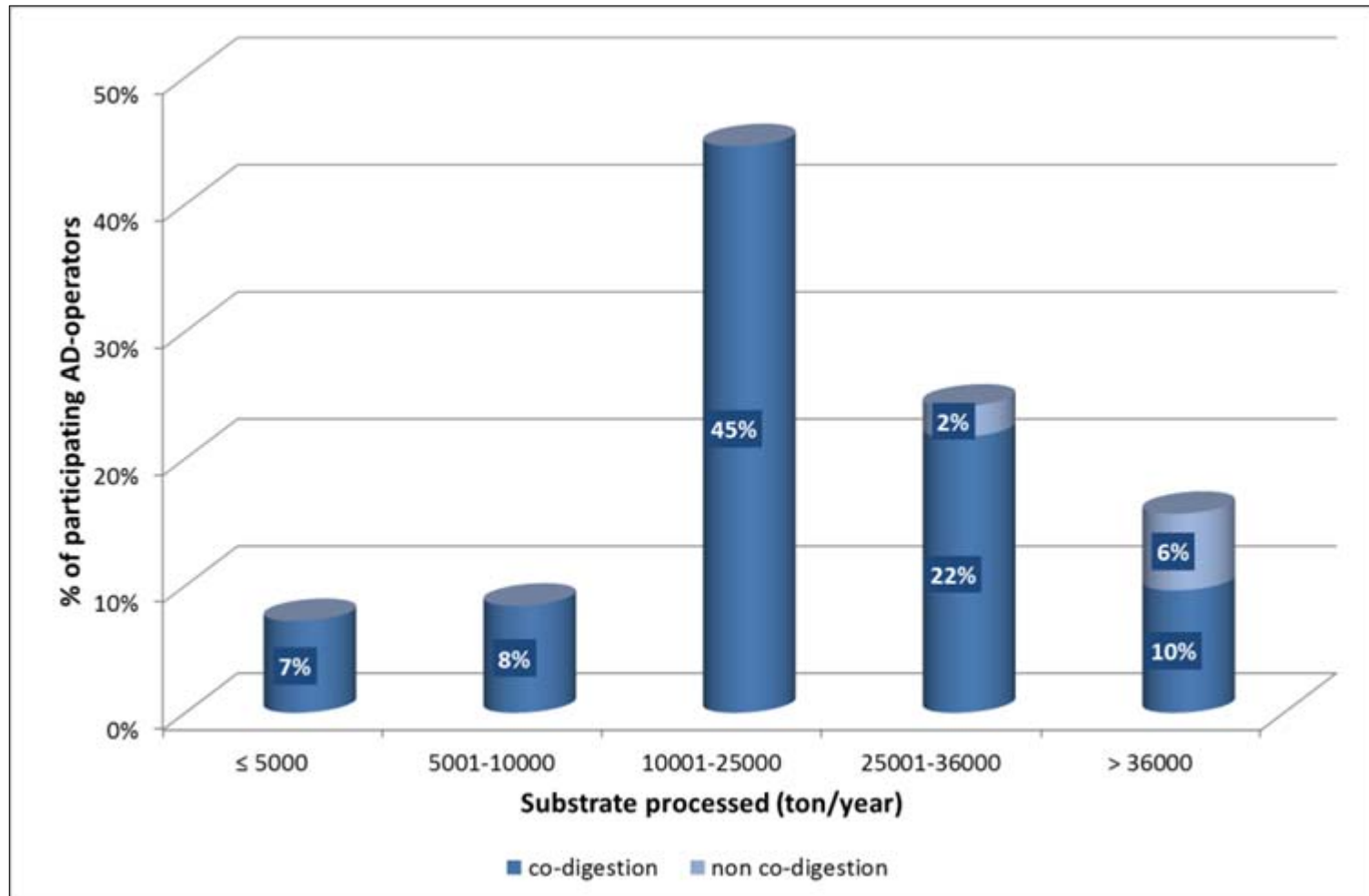
co- digestion \geq 1000 kWe

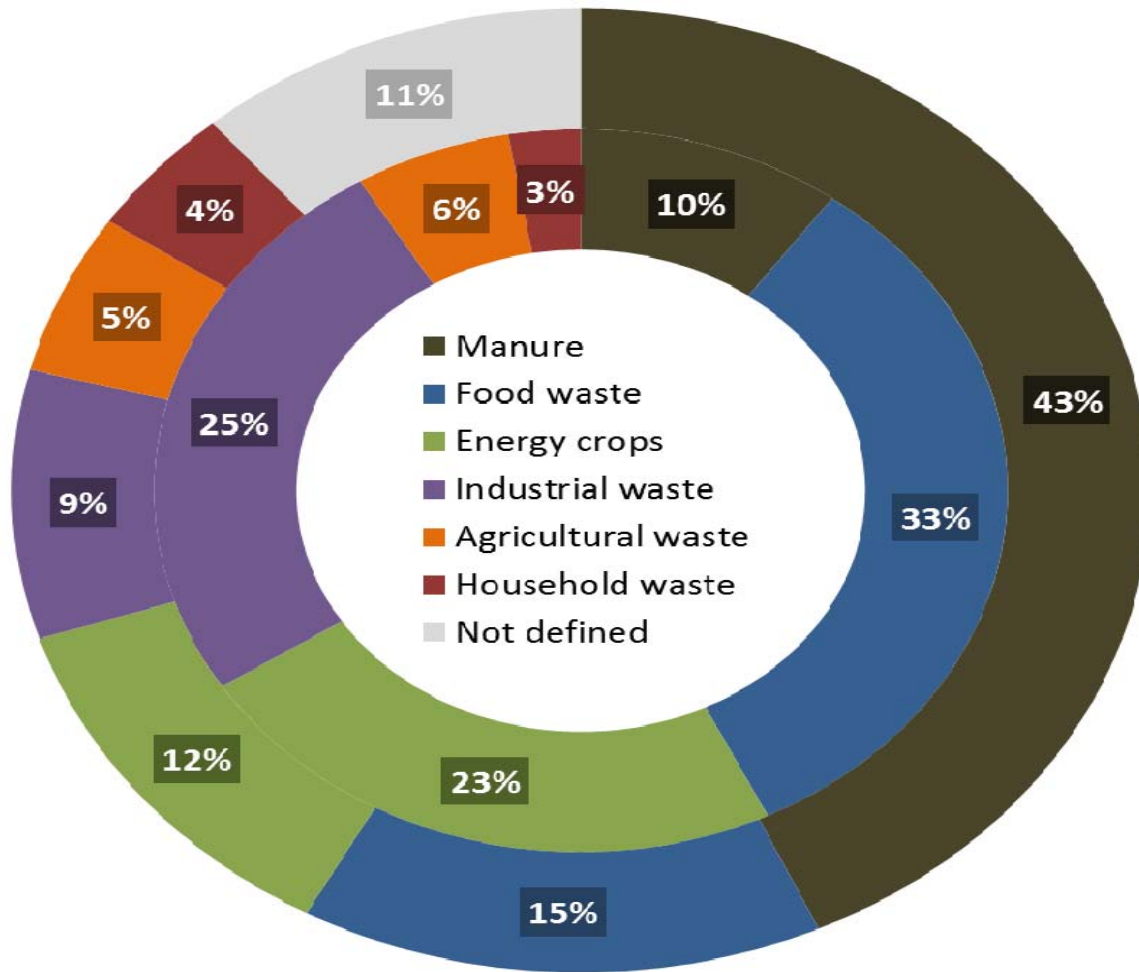
class D:

other digestion (no co-
digestion of manure)



Distribution of the average annual input in the AD-sector in NL

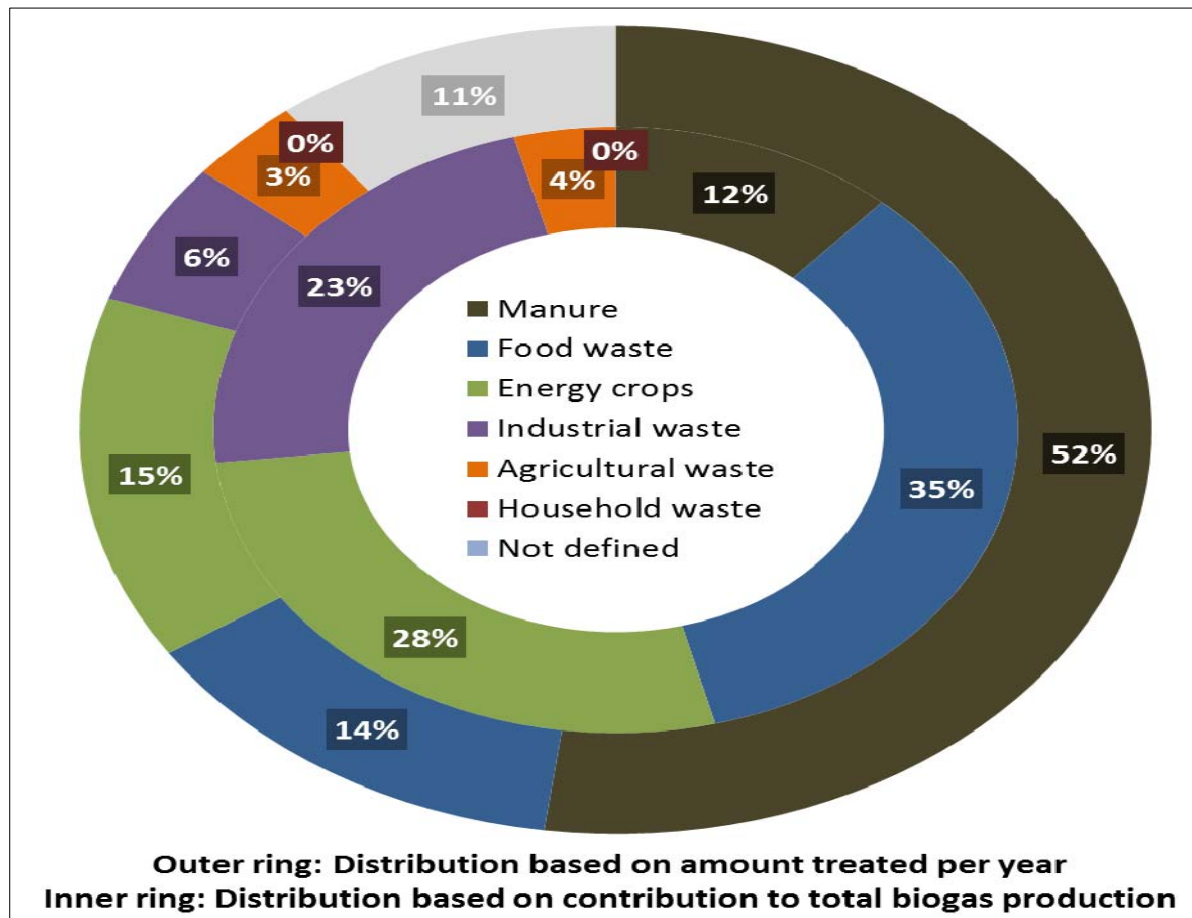




Outer ring: Distribution based on amount treated per year
Inner ring: Distribution based on contribution to total biogas production

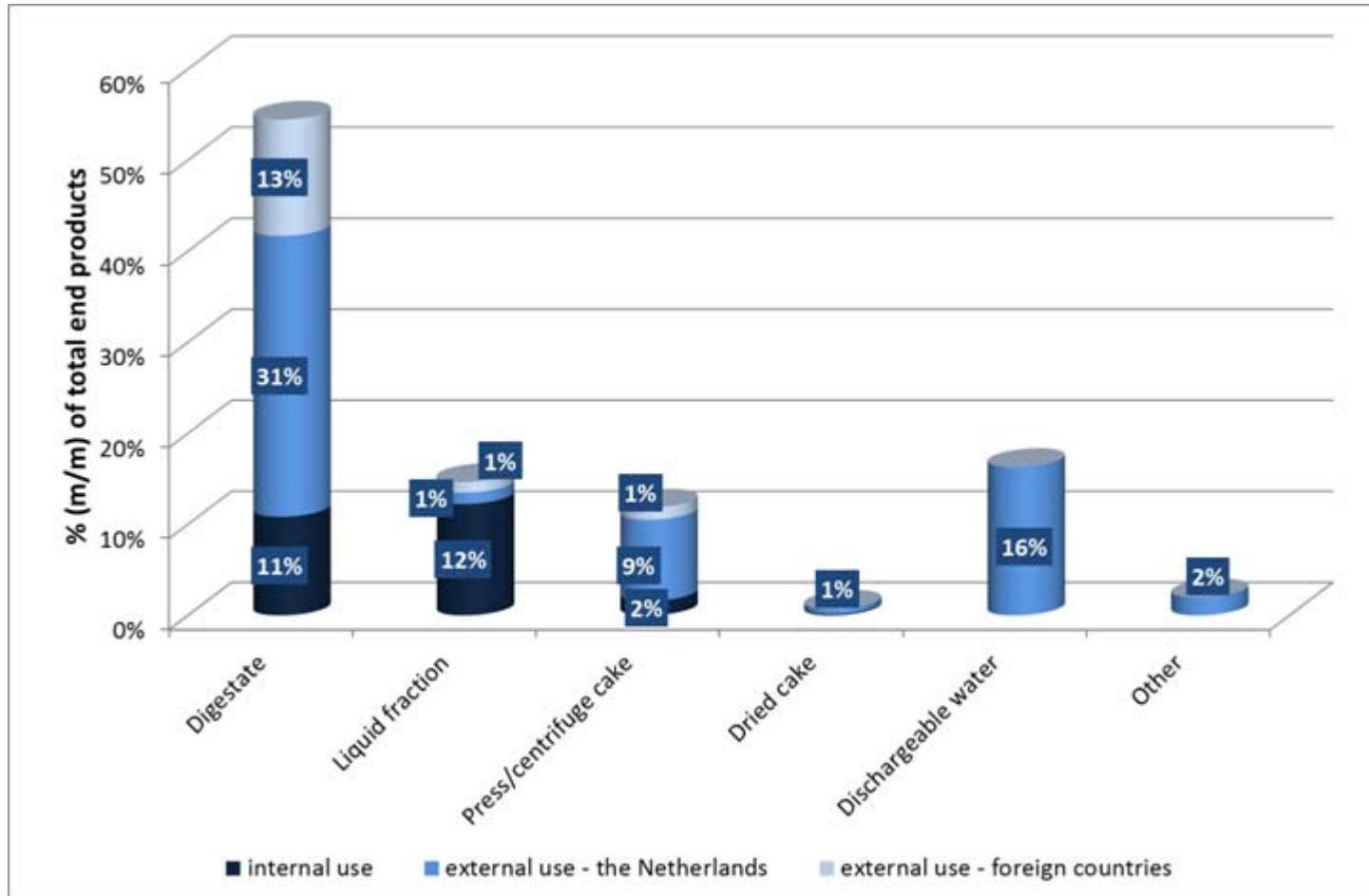


Input distribution only of co-digesters



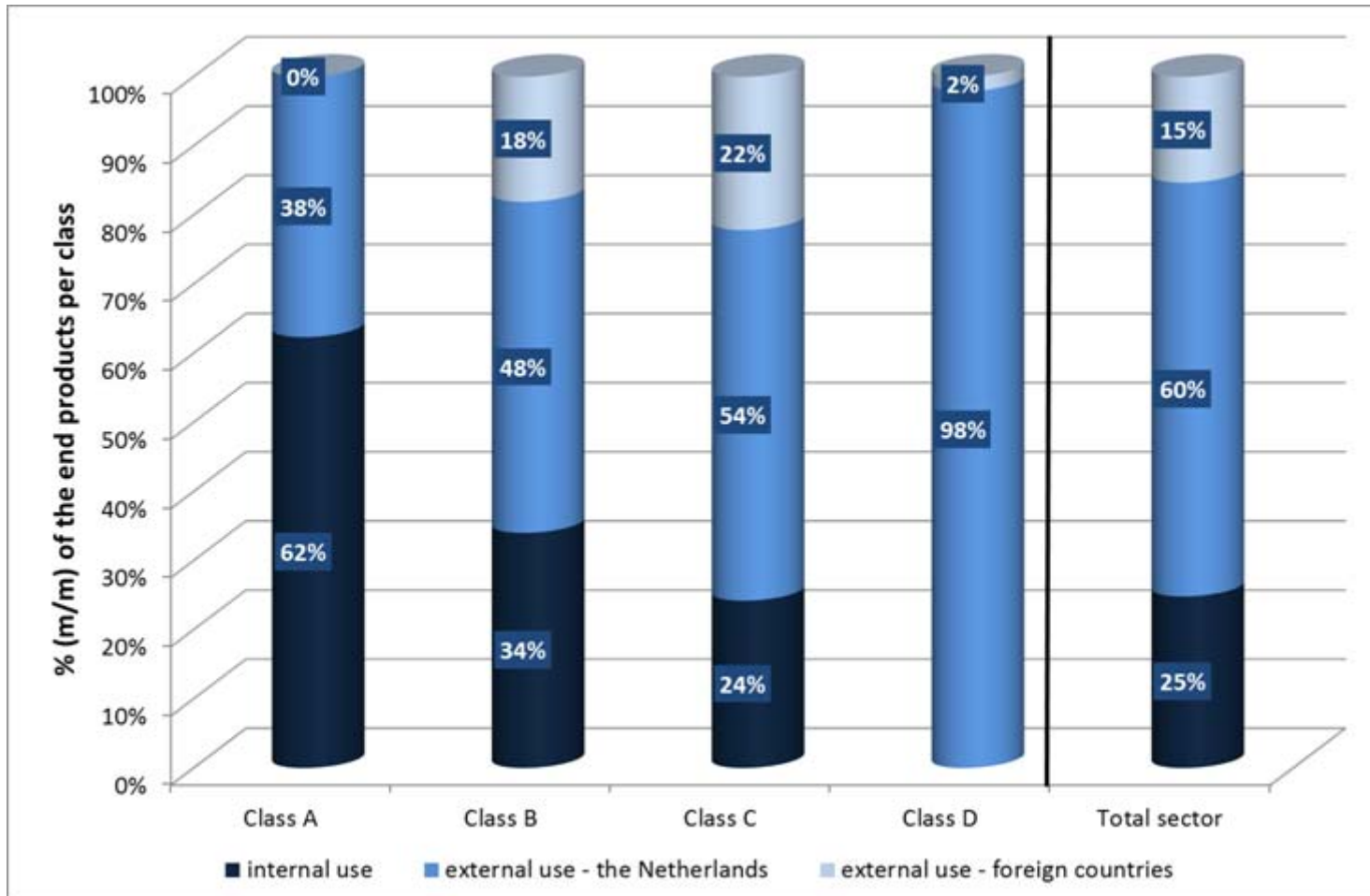


Disposal routes for the different end products. The figure also represents the mass distribution of the different end products of AD





Distribution of the end products over the different disposal routes per class





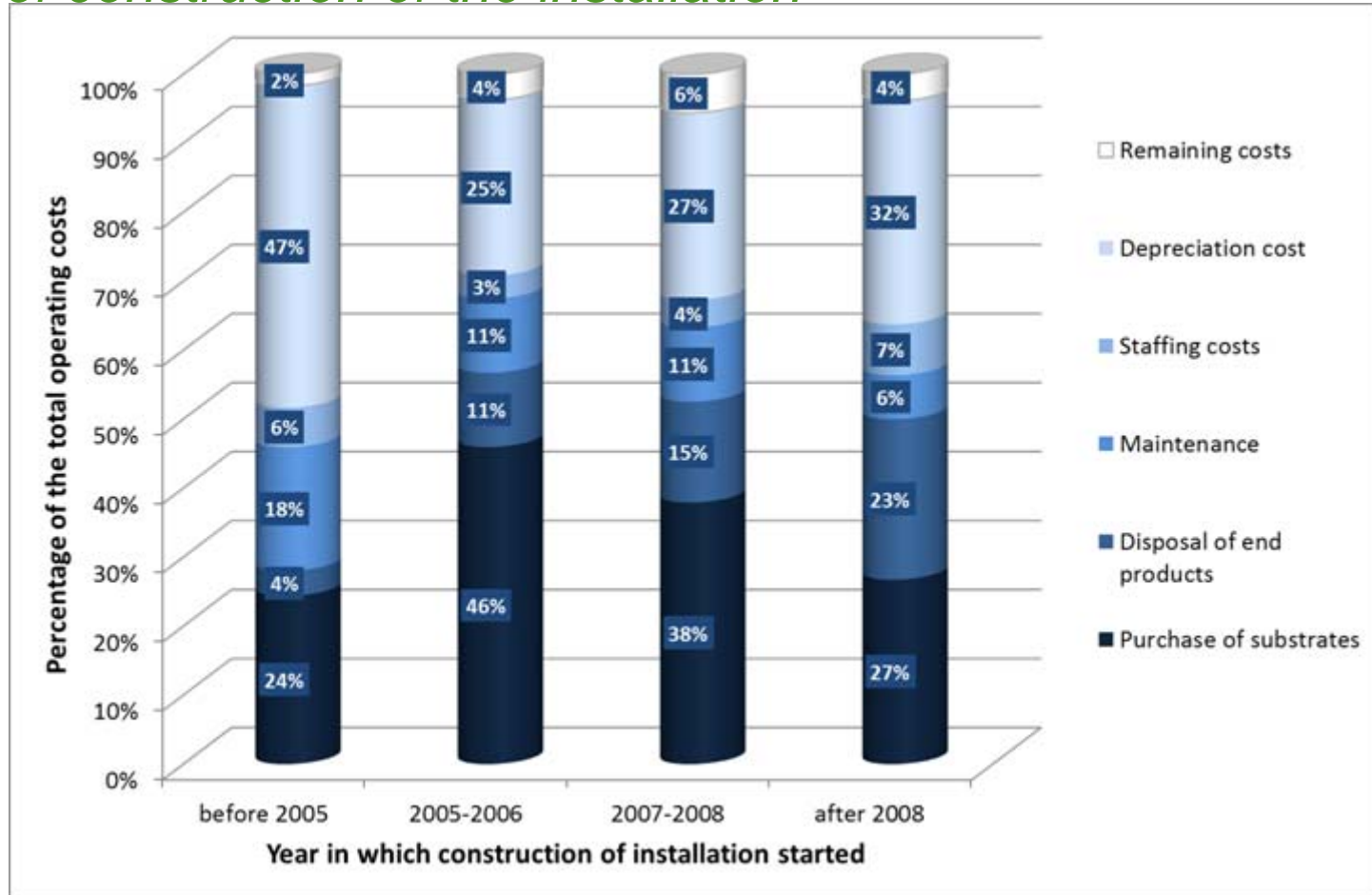
Tonnage disposed of in 2010 by the participating co-digesters as function of the input mixture

Type of manure in input	Internal use ton/year	External use the Netherlands ton/year	External use foreign countries ton/year
> 80% pig manure ¹	77 701	347 523	196 677
> 80% cattle manure ¹	269 127	205 040	20 350
mix of pig and cattle manure	39 800	103 530	0
Sum of all co-digesters	386 628	656 093	217 027

1 expressed on total share of manure

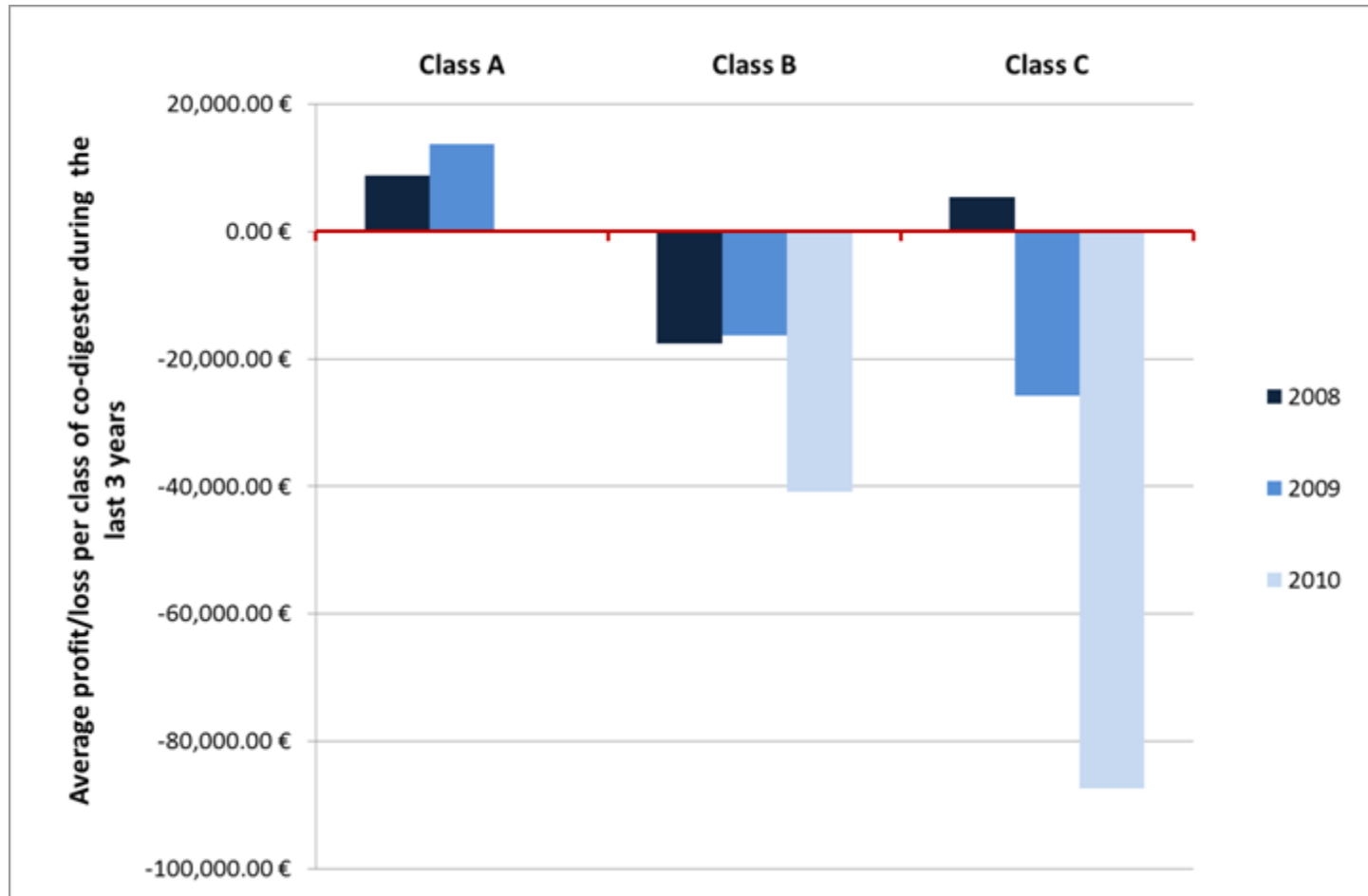


Distribution of the different operating costs in function of the year of construction of the installation



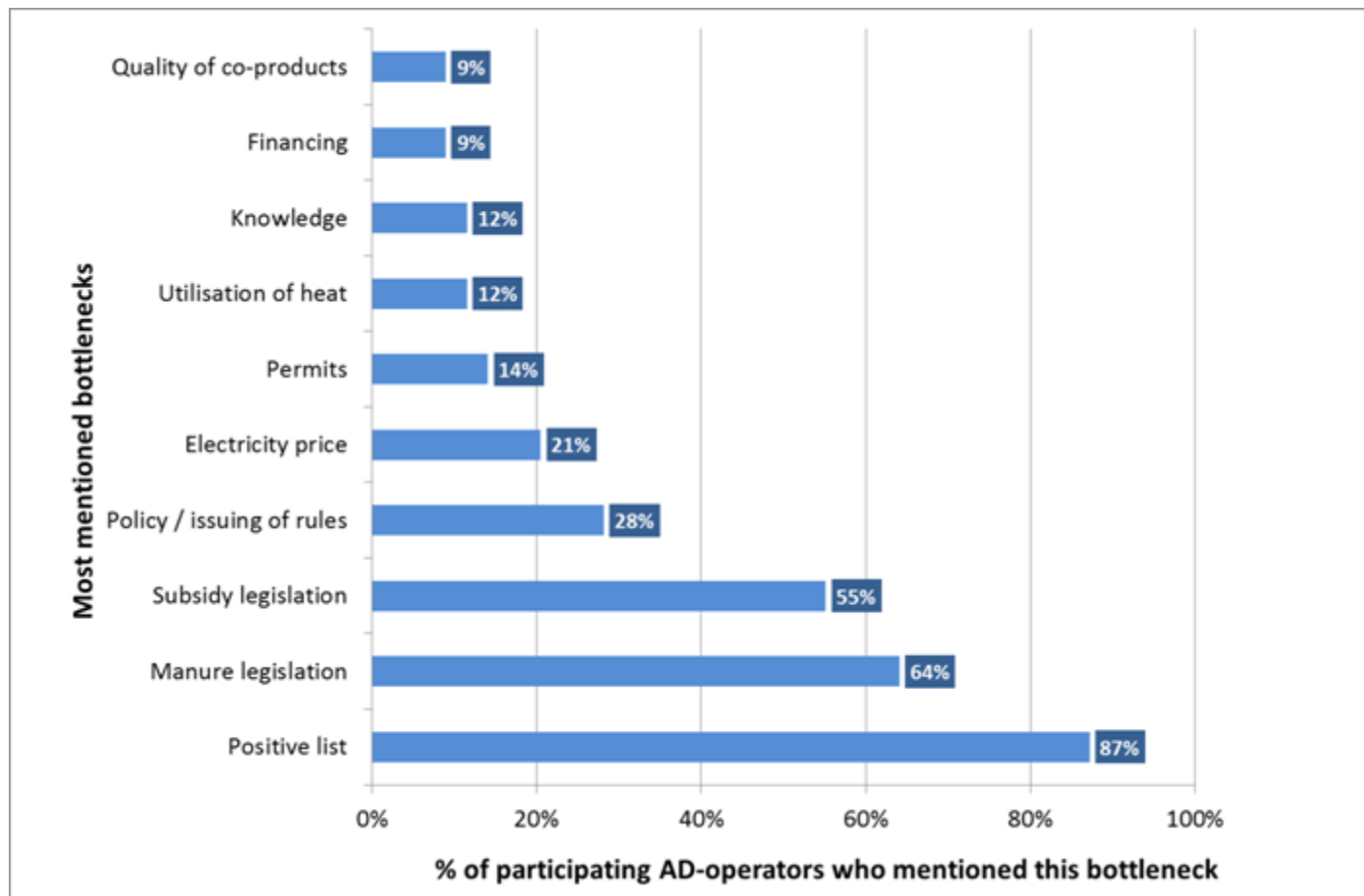


Profit/loss of the representative installations during the last 3 years





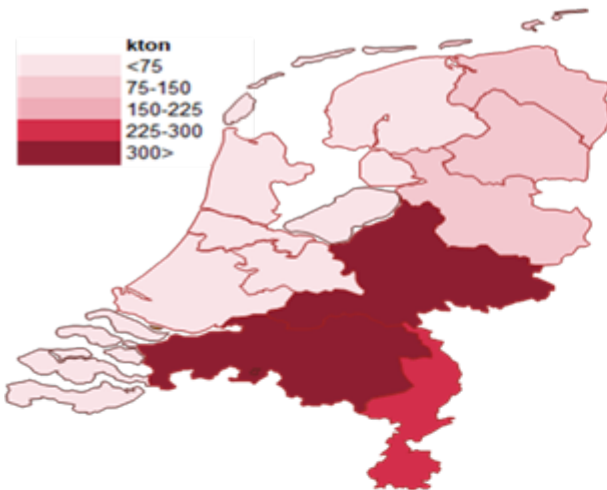
Overview of the most mentioned categories of bottlenecks with the participating AD-operators



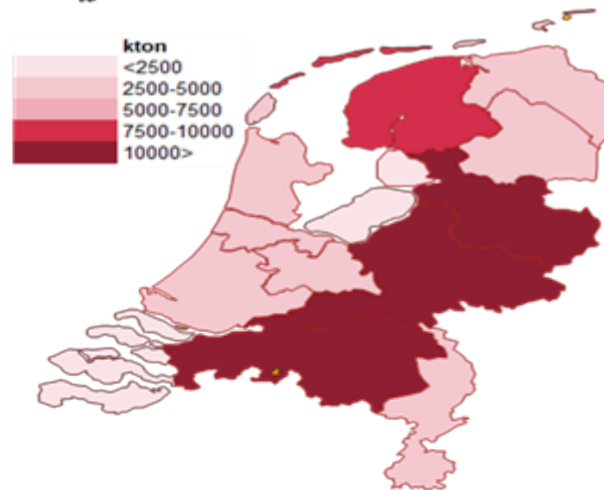


Distribution of main biomass resources

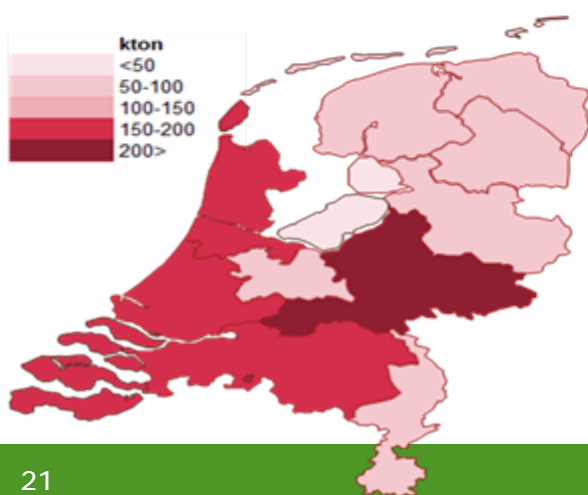
Pluimveemest



Drijfmest



GFT



Legend for translation:

- Pluimveemest = Chicken manure
- Drijfmest = manure slurry (pigs en cows)
- GFT = municipal biowaste

In NL: no focus on energy crops



Dutch approach to develop a competitive Green Gas sector

Developing innovation contracts:

-Digester type 1.0

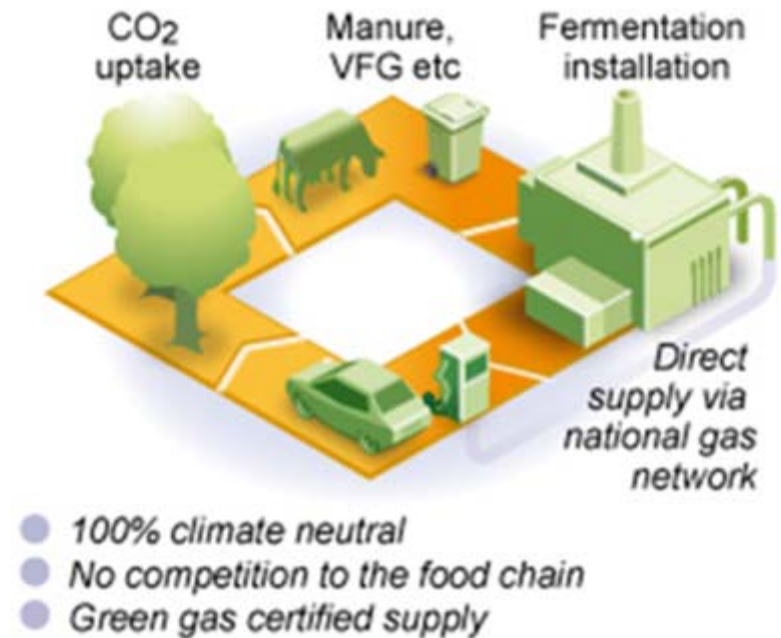
Optimisation of performance and sustainability

-Digester type 2.0:

With combination of applications in the production chain, for example: biogas hubs or increasing efficiency in combination with district heating systems.

-Digester type 3.0:

Close the loop in the digestion chain (cradle to cradle approach) including fertilizers in manure and co-substrates.





Increasing E-efficiency by installing an ORC-unit



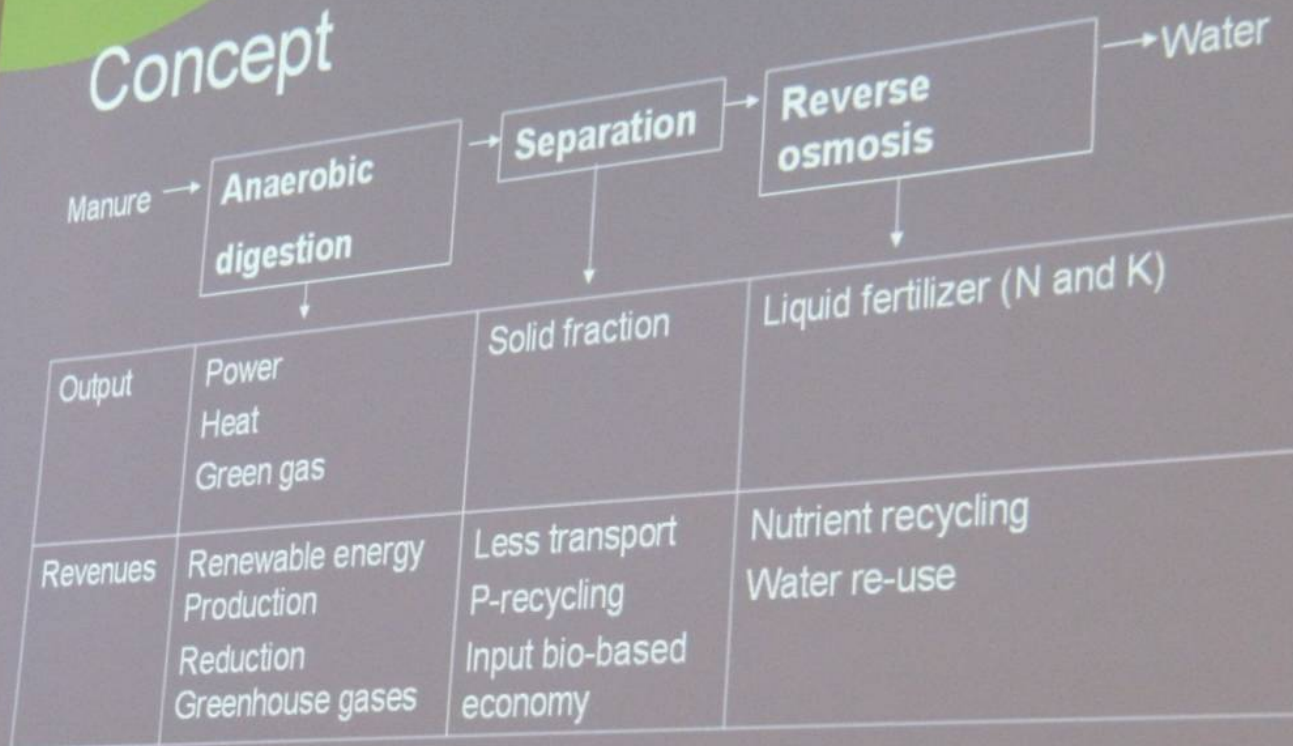


Good practice example (Biogas project Polderwijk Zeewolde with 5 km biogas pipeline to the nearby village)





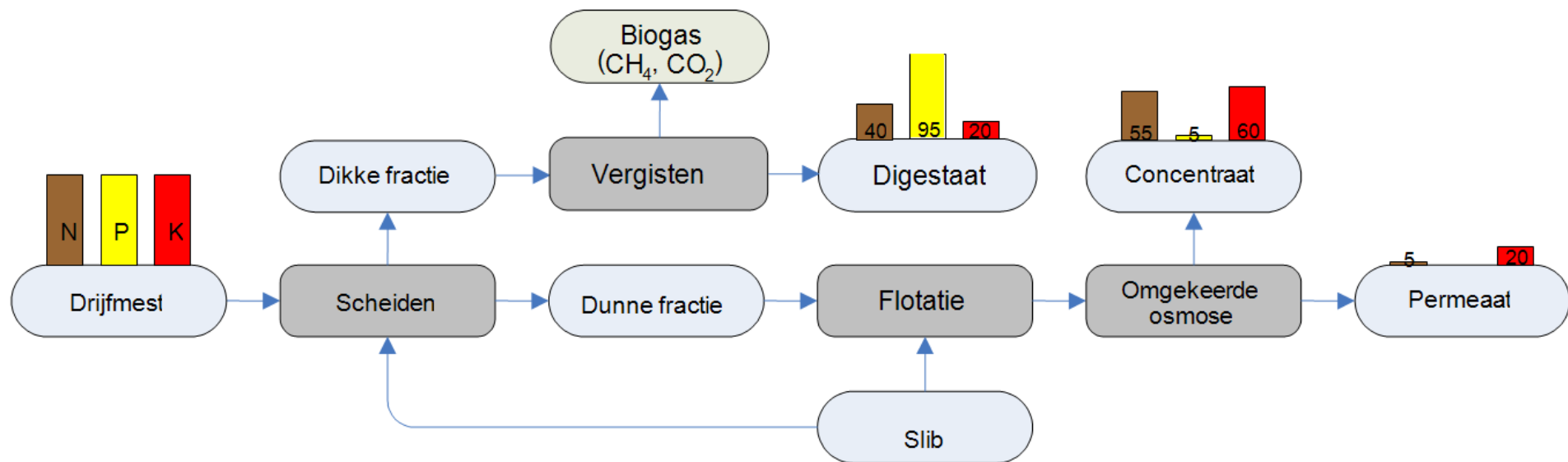
Concept





Vision Agriculture sector: Two possible pathways for the future

- small scale digestion on farms
- manure treatment with mineral recovery (including digestion?)
- Discussions of the use of recovered minerals as artificial fertilizer in the future (now in pilot phase)





Treatment of digestate UF and reverse osmosis





Small scale digester based on mono(manure) digestion (+/- 40 kWe)





Total view of the farm with a “microferm” digester





Other pathways for using biogas: Filling stations biofuels (blue and green with gas supply)

<input type="checkbox"/> Alle brandstoftypen	▼
<input type="checkbox"/> Alle brandstoftypen	
<input type="checkbox"/> Aardgas / Groengas	
<input type="checkbox"/> Biodiesel	
<input type="checkbox"/> Bio-ethanol	
<input type="checkbox"/> Waterstof	
<input type="checkbox"/> Nog te realiseren	

- [pdf file](#): Download de pdf file met alle tankstations.

TOMTOM

Voeg de locatie van alle tankstations direct toe aan je tomtom door de knop hieronder te gebruiken.



- [ov2 file](#): het is ook mogelijk een losse ov2 file te downloaden en later op uw tomtom te plaatsen. Deze bevat alle aardgas/ groengas tankstations.



De tankstations op deze kaart bieden **naast de reguliere brandstoffen** ook de aangegeven **schone brandstoffen** aan



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