



Nutri2Cycle

Transition towards a more carbon and nutrient efficient agriculture in Europe



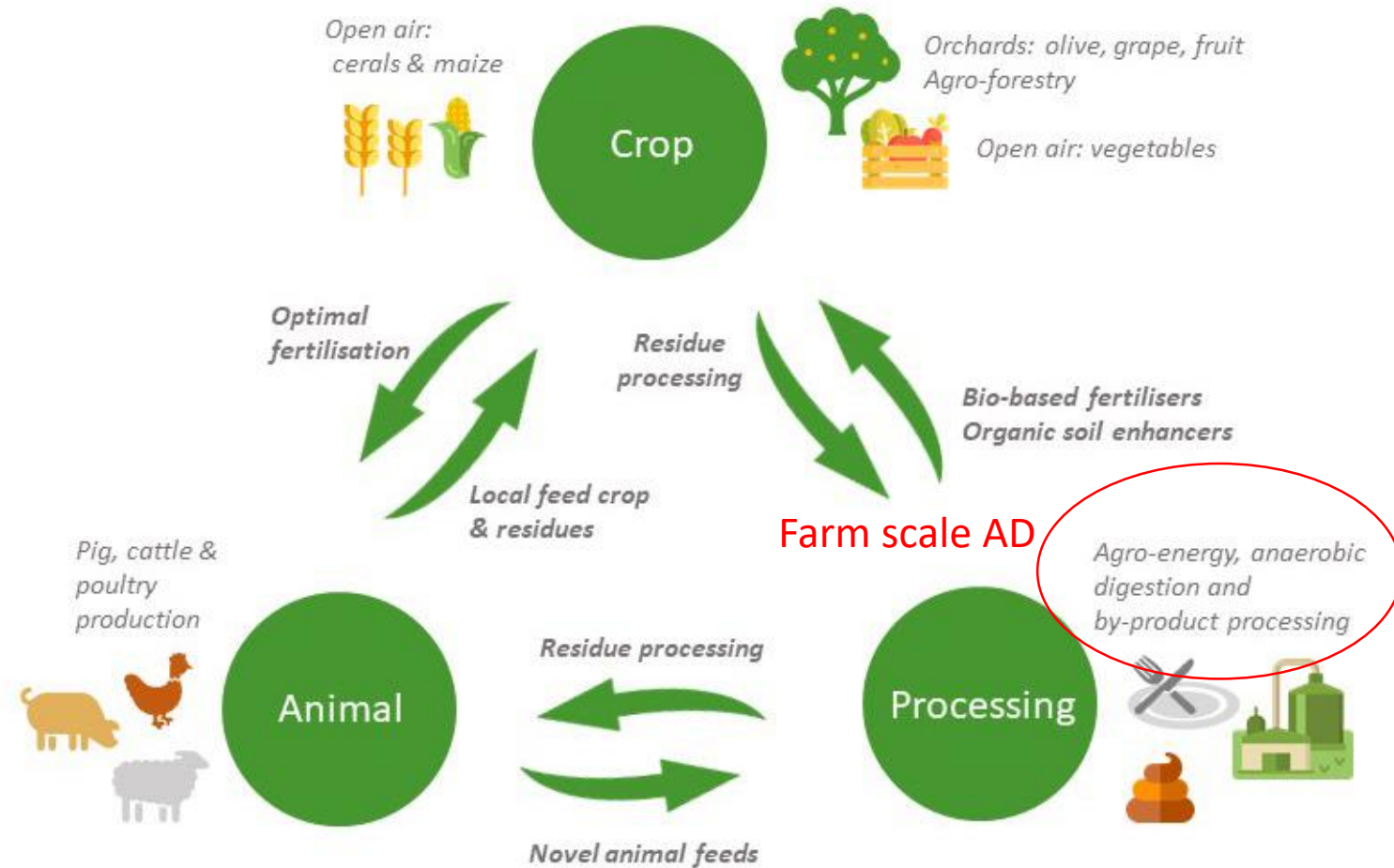
Farm-scale AD of agroresidues to increase local nutrient cycling & improve nutrient use efficiency



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 773682.

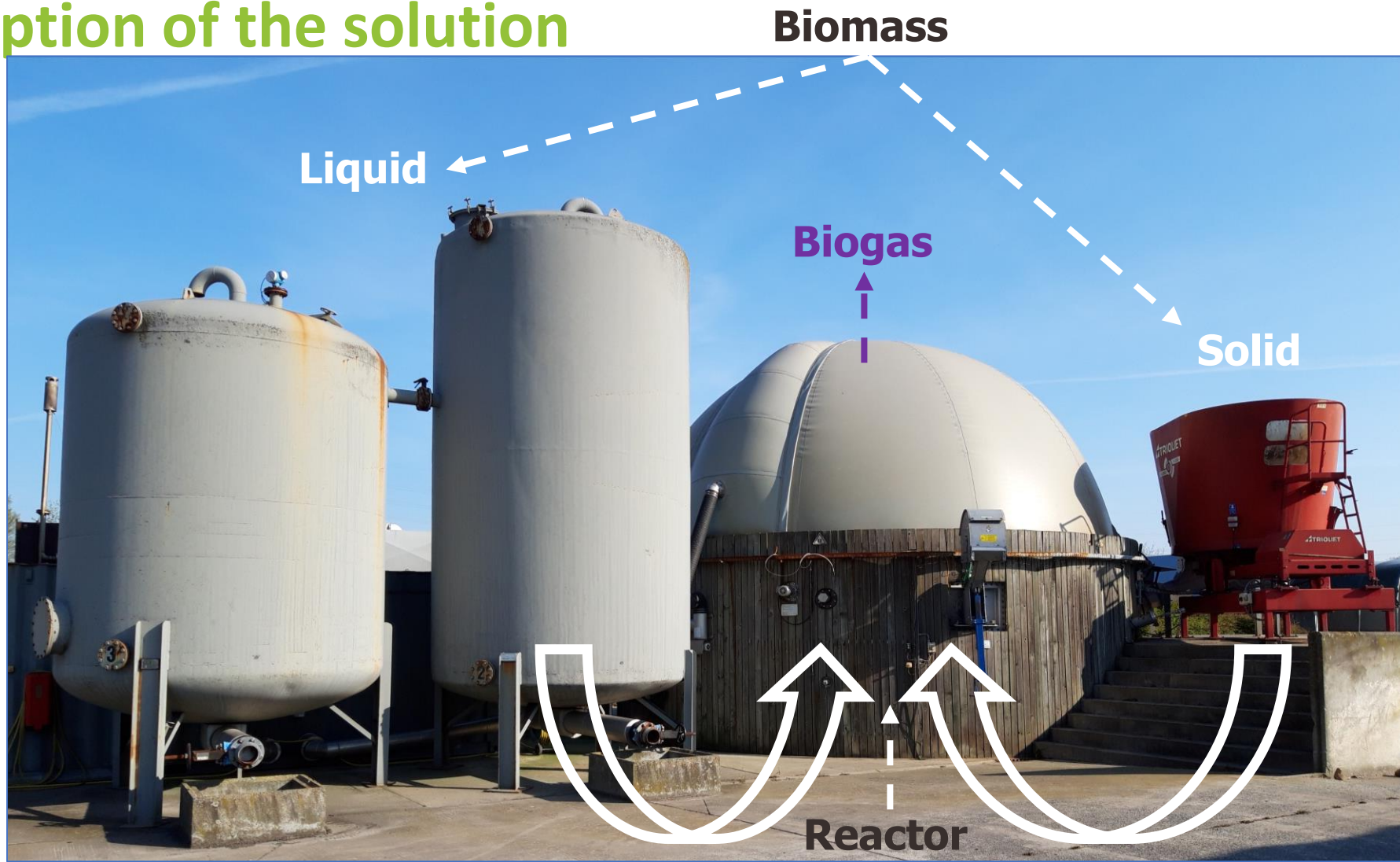


Closing nutrient loops



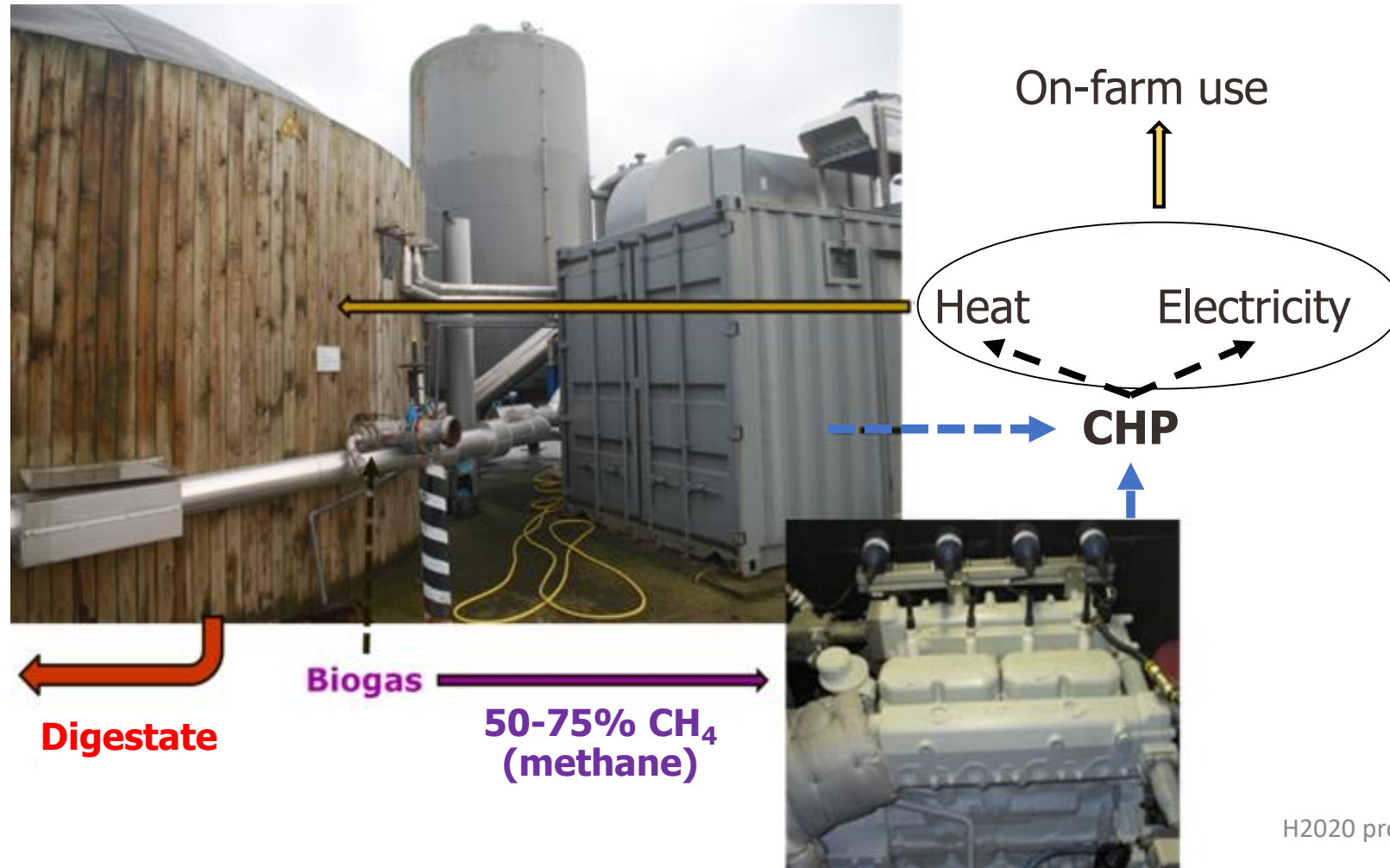


Description of the solution





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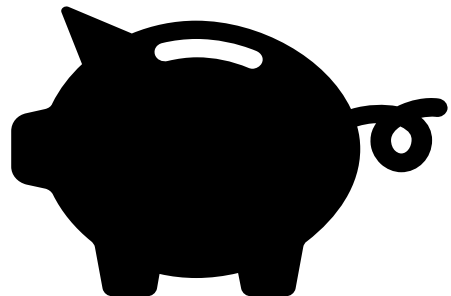




Farm scale Anaerobic Digestion

- On-farm biomass → renewable energy
- ≤ 5,000 tonnes biomass/year
- Co digestion vs mono digestion

Advantages	Disadvantages
Self sufficient (heat & electricity)	Daily follow-up
GHG emissions ↓	Extra administration
N_{\min} digestate > N_{\min} manure	
Profitable for a lot of farms	





Digestate

- Digested biomass → external storage

	DM (%)	OM (%)	N _{tot} (kg/ton)	N _{min} (kg/ton)	P ₂ O ₅ (kg/ton)	K ₂ O (kg/ton)
Cattle slurry	9,83	7,54	4,31	2,07	1,6	4,33
Digestate	6,54	4,69	3,91	2,46	1,4	4,33

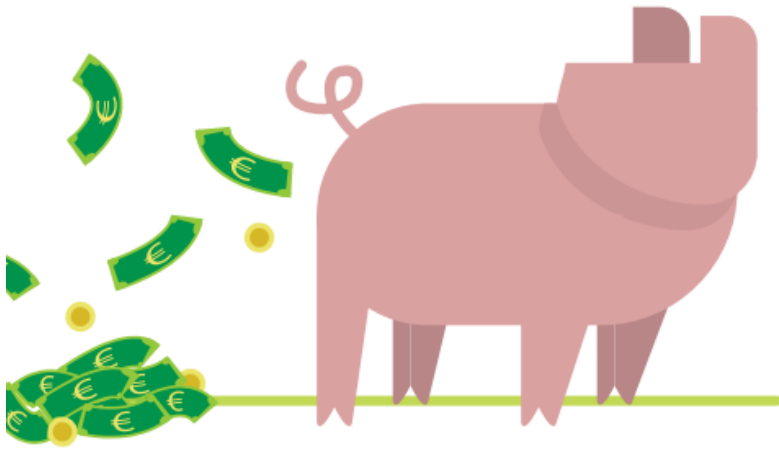
- Further processing
 - Biological treatment
 - Stripping scrubbing
 - Membrane filtration







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What's next?





Potential (in Flanders)

- Animal husbandry 
 - Cattle farming
 - 44% of pig farms (manure separation at the source) ~ 900 digesters
- Crop residues 

AGENTSCHAP
INNOVEREN &
ONDERNEMEN



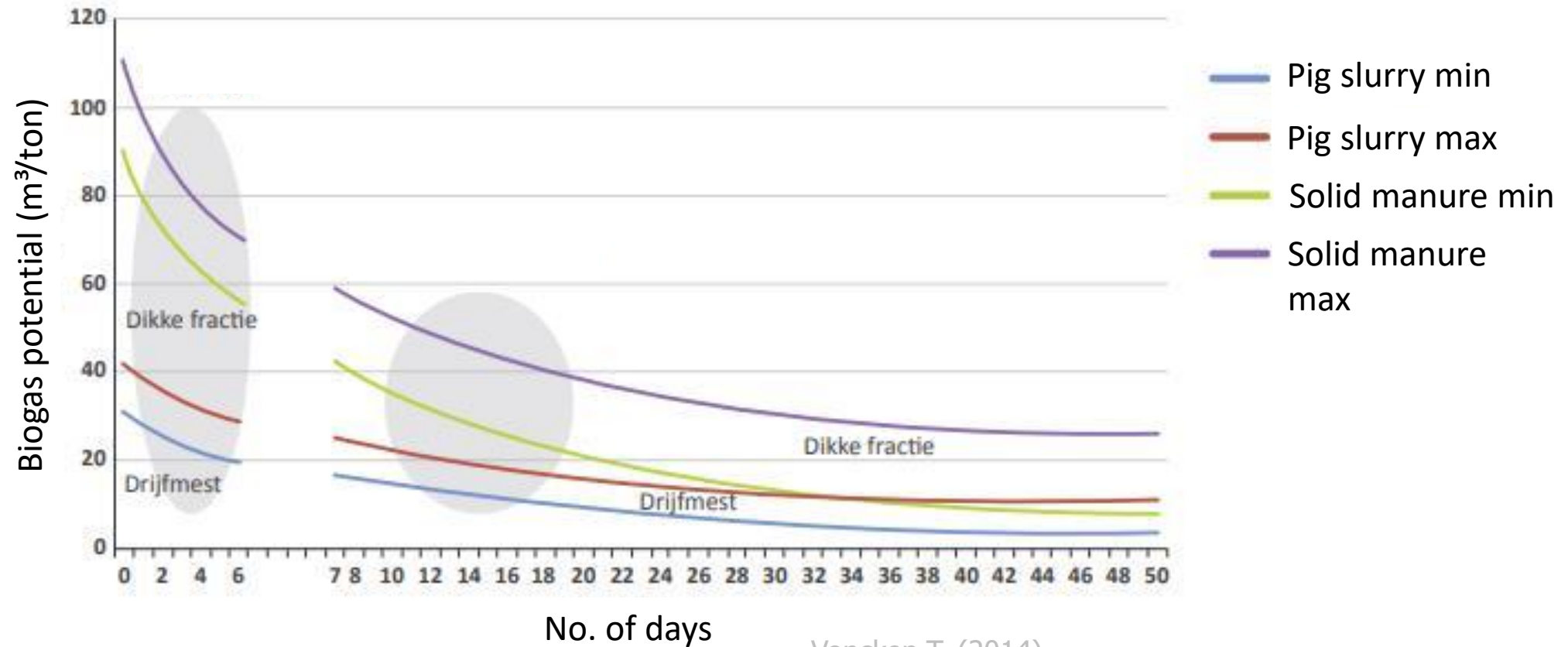
Vlaanderen
is ondernemen

Vergote, T. (2020). *Farm-scale anaerobic digestion of agricultural waste as potential greenhouse gas abatement measure.*

Universiteit Gent. Faculteit Bio-ingenieurswetenschappen.



Supply



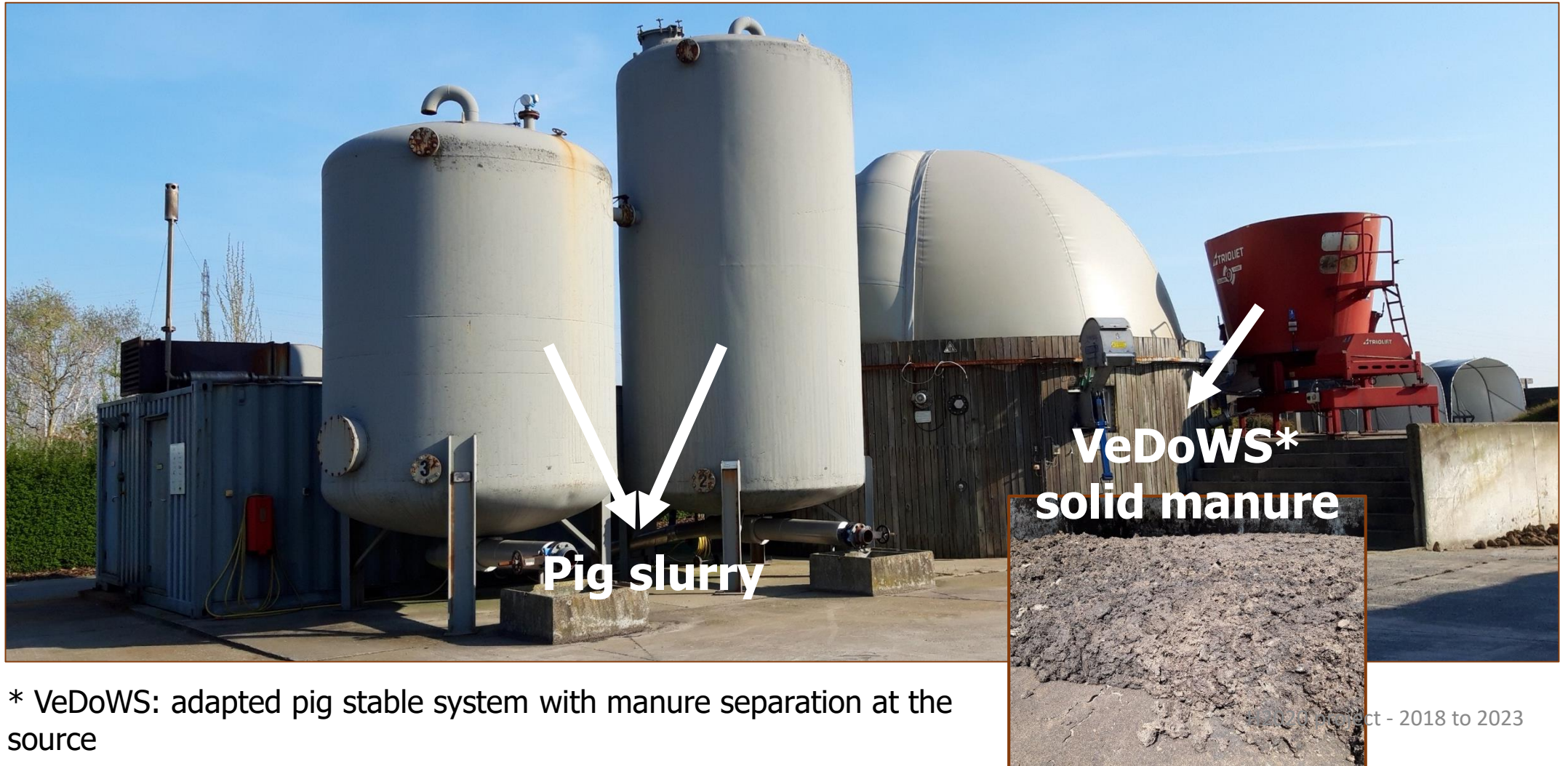
Voncken T. (2014).

! Fresh supply or stabilisation !



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Pilot scale test

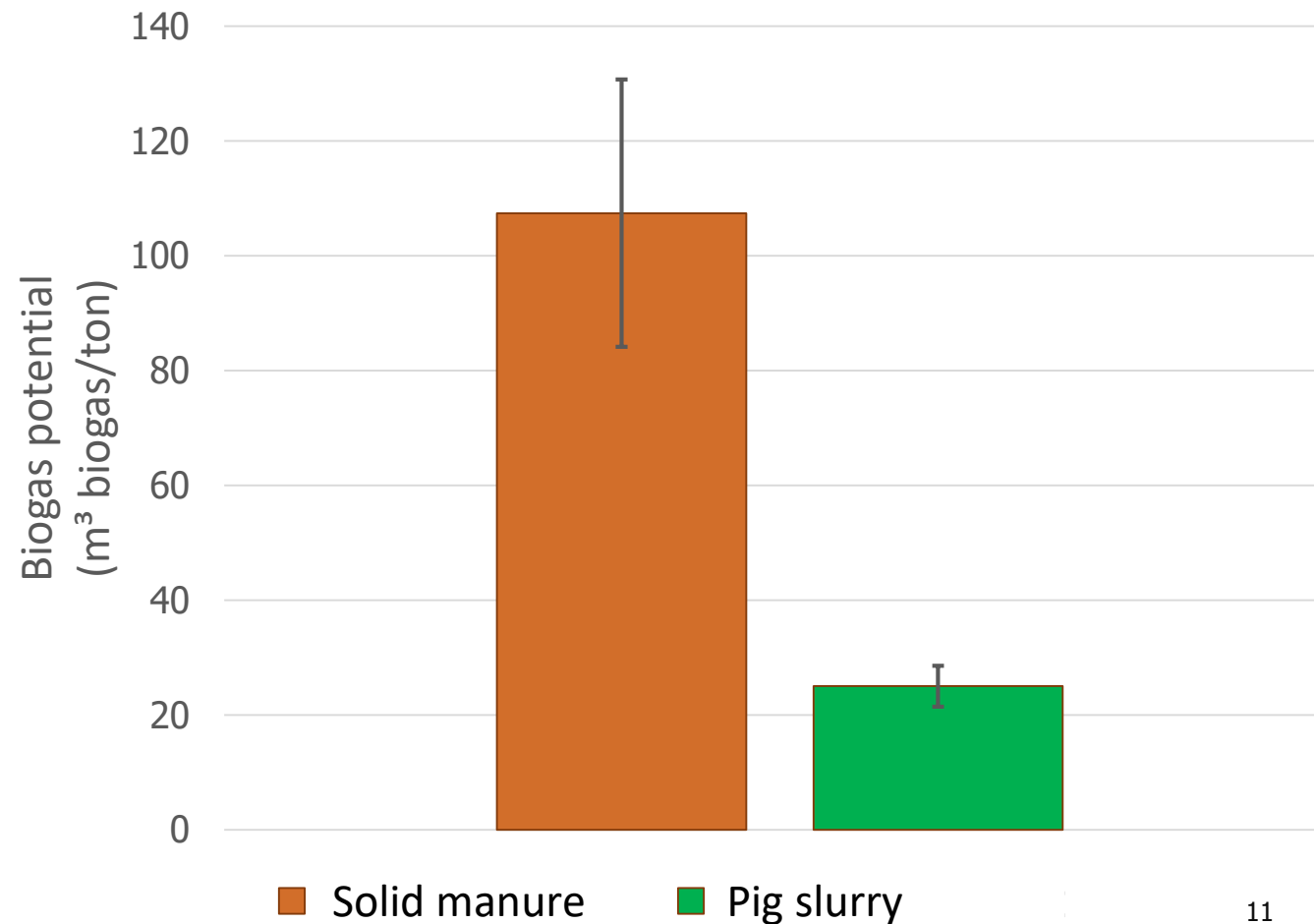


* VeDoWS: adapted pig stable system with manure separation at the source

2018-2023

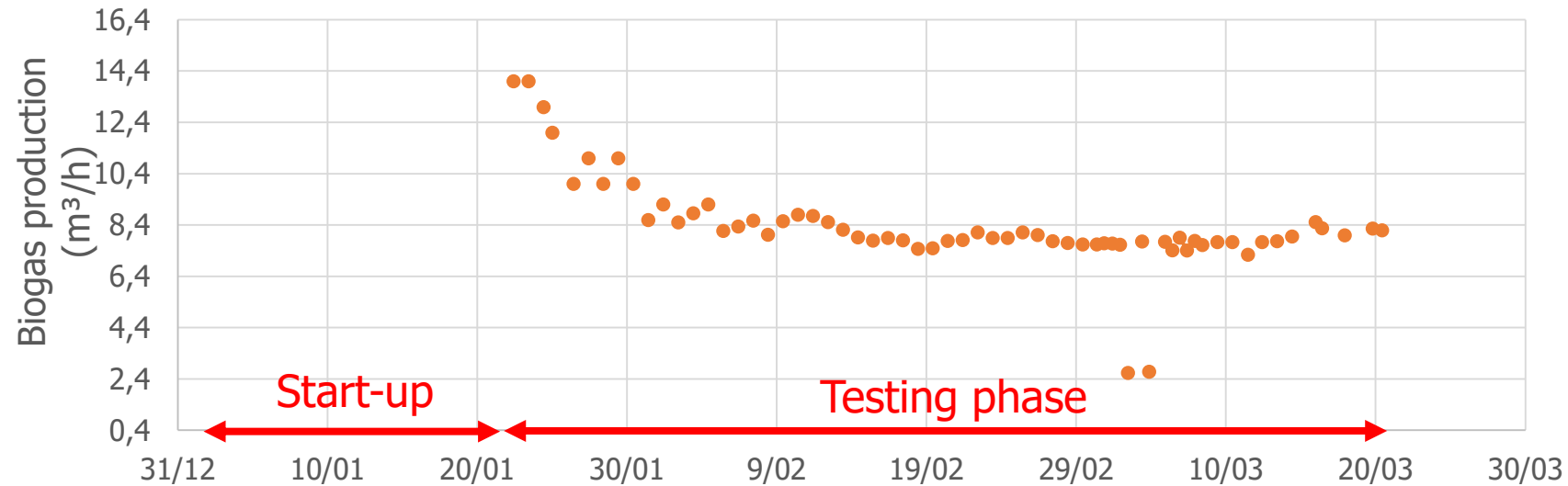


Pilot scale test: biogas potential





Pilot scale test: biogas production





Future perspectives

- Stable AD is possible, BUT attention:
 - Mixing
 - Fresh supply and/or stabilisation of the manure (adapted stable construction)
 - Recirculation?
- Combination with nutrient recovery (RENURE)?
- Opportunities for cooperations?

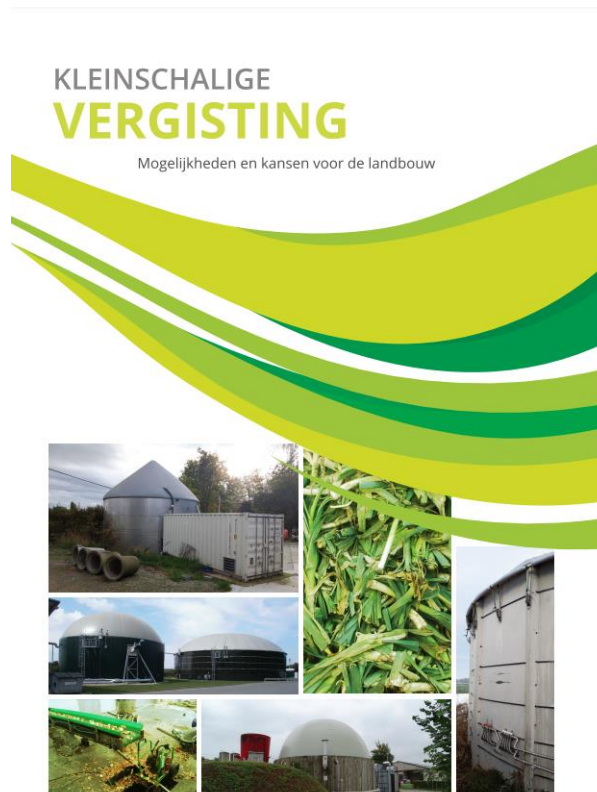




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More information

- [Farm scale AD – YouTube](#)
- [Website](#)
- Brochures





Nutri2Cycle
Nurturing the Circular Economy

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