



Ministry of Infrastructure and the Environment

Efforts and Policy of the Netherlands to Promote a Sustainable Use and Recycling of Phosphorus

Herman Walthaus MSc,
Ministry of Infrastructure and the Environment,
Department of Sustainability,
Herman.walthaus@minienm.nl



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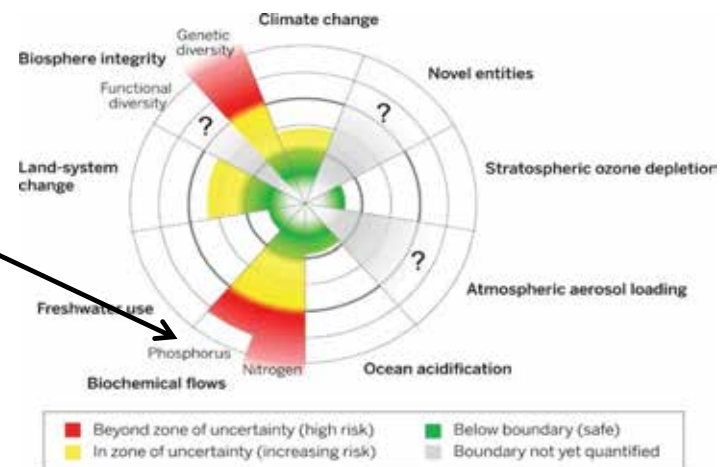
OUTLINE

- Why nutrient recycling?
- Recycling of nutrients in a circular economy: 'The Dutch Approach' – Nutrient Platform
- Circular economy in the Netherlands (Circular Economy Programme)
- Examples: projects and Green deal Dutch Water authorities
- Conclusion and usefull links



Why nutrient recycling?

Crossing planetary boundaries: biochemical cycles N and P?



Rockström, Stockholm Resilience Centre



Why nutrient recycling?

P is finite resource

Scarce, Essential
Increasing demand,
Quality

Almost no P rock in Europe

Geopolitical
dependency
(Morocco)

N is energy demanding

Impact on
food production

N & P cause environmental problems

Water & air quality
eutrophication

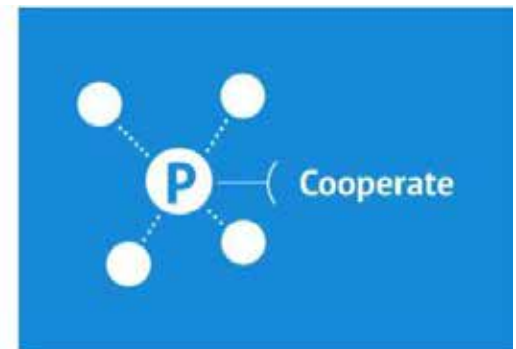
P on list of EU critical raw materials





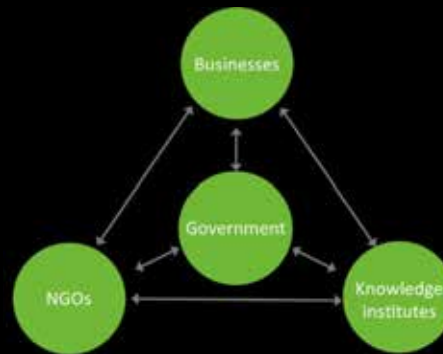
The 'Dutch Approach' for P

- Pressure: too much phosphate (livestock, feed, manure)
- NL big player in the food chain
- Innovative companies and institutes
- Culture of cooperation



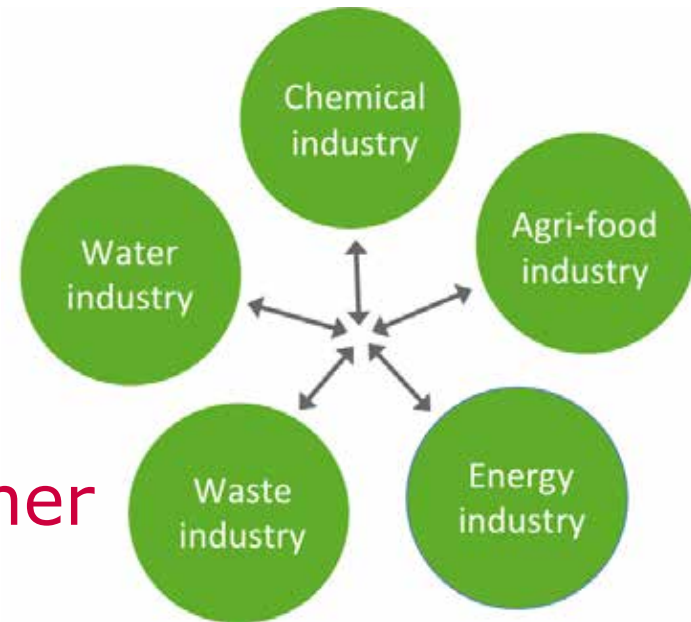
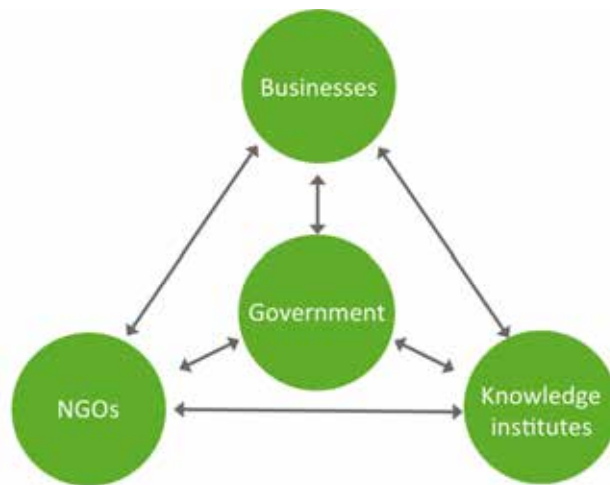


Film: The Dutch Approach <https://www.youtube.com/watch?v=4Px6LYp-I0U>





Cooperation in the Netherlands



Government as network partner



Green deals

[Agreement of private parties, local authorities and government to remove obstacles hindering green initiatives]

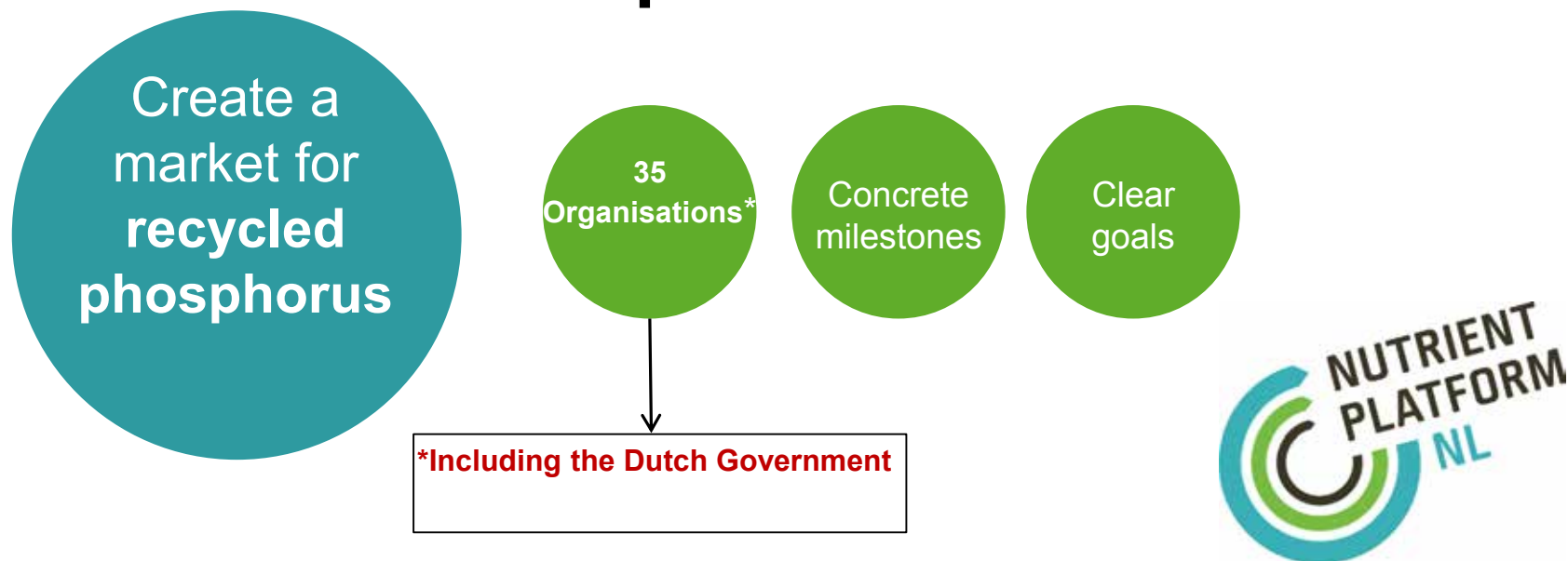
International experiments:
North Sea Resources Roundabout





A bit of history

2011 – First step: P value chain agreement start Dutch Nutrient platform



Cooperation in the Dutch Nutrient Platform



First successes of P value chain agreement

- Adjustment of the **Dutch Manure and fertiliser act**: Hygienized struvite is allowed as fertiliser in the Netherlands.



- Active roll in start European Sustainable Phosphorus Platform (ESPP).





Transition to a Circular Economy in the Netherlands

- Circular economy programme (2016), ambition:
100% circular economy by 2050
50% reduction in use of fossil / mineral resources by 2030
- National Agreement on the Circular Economy (January 2017)
> 300 Stakeholders: companies, waterboards, local authorities, NGO's, knowledge institutes and government together!





Transition agenda's

5 Transition agenda's: Actions, innovative projects, investments and adjustments in policy and legislation.

biomass and food → *Ambition: closing the nutrient cycle!*

plastics

manufacturing industry

construction sector

consumer goods

Publication: 15 January 2018



Nutrient platform Ambition 2018

Follow up of the P value chain agreement



- Part of the Dutch Circular Economy Programme
- Market and financial risks
- Innovation
- Legislative barriers
- Certification and labeling
- Knowledge and expertise
- Awareness
- Other nutrients





In practise

- International Green deals (Dutch struvite to France)
- Demonstration projects on nutrient recycling
- Phosphorus and other nutrients - Report: study to explore opportunities (English)



Tauw



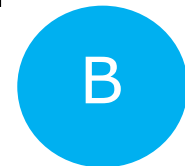
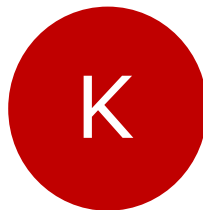
Possibilities and opportunities for recovery of nutrients other than phosphorus

An exploratory research



Micronutrients

Final, 29 September 2017





Examples of innovative projects

<https://www.nutrientplatform.org/en/success-stories/>



Fertilizers
(ICL)

Waste
water



Ecophos,
Belgium

Sludge



Pig slurry,
Groot
Zevert

Valorisation:

Biogas,
Ammonium-
sulphate
N,K concentrates
Calcium phosphate
soil improvers



Dutch water authorities pionering

P

Other circular products:
Alginate, cellulose, bioplastics (PHA), biomass energy, CO₂

Signed 20 november 2014



P recycling
(struvite 7 locations)





Obstacle: Waste status for struvite

- Obstacle for export and processing of struvite
- EU Waste directive (article 5):
'No overall adverse environmental or human health impacts'
- Quality and safety = Producer responsibility!
- Lack of data on **pharmaceuticals** and **pathogens**
- RIVM# risk development assessment system
- Measurements Dutch struvite
- Link German project (Wessling lab)
- STRUBIAS: review EU Fertiliser regulation



Conclusion



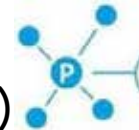
- The Netherlands is promoting nutrient recycling (Circular Economy Programme)
- Cooperation is key word
- Successes in P – recycling (Nutrient platform)
- Exploring recycling of other nutrients
- Promoting international cooperation (ESPP)





Usefull Phosphorus links 1

- ESPP (European Sustainable Phosphorus Platform)
<http://www.phosphorusplatform.eu/>
- Dutch Nutrient Platform:
<https://www.nutrientplatform.org/en/>
- Dutch Circular Economy Programme:
<https://www.government.nl/topics/circular-economy>
Download:
<https://www.government.nl/topics/circular-economy/documents/policy-notes/2016/09/14/a-circular-economy-in-the-netherlands-by-2050>





Usefull Phosphorus links 2

- Green Deal Resource Factory (Water authorities):
<https://www.efgf.nl/english>
Video:
<https://www.youtube.com/watch?v=CT9IVE6wfIc>
- Report 'Other nutriënts': <https://www.nutrientplatform.org/tauw-wur-presenteren-rapport-onderzoek-naar-andere-nutrienten/>
[click '**hier**' button]
- Systemic Horizon 2020:
<https://systemicproject.eu/the-plants/>

