



WELCOME TO FLANDERS (BELGIUM)

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Researcher Water & Soil

Research Station for the Vegetable Production



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818088



Location:



Our goals:

- Practical & applied scientific research
- Interact with all actors involved in horticulture
(growers - research - technology
suppliers – advisors - policymakers, ...)
- Act as dissemination channel

Our research topics:

- Drip irrigation in horticulture
 - Irrigation scheduling
 - Use of soil moisture sensors
 - Dimension of water reservoirs
- Use of alternative water sources
(reclaimed water)



SUMMARY STATE OF PLAY

FLANDERS/ GENERAL OVERVIEW

1.100 to 1.700 m³

Water availability
water per capita per year

Messely et al. (2008) and MIRA (2010)

740 million m³

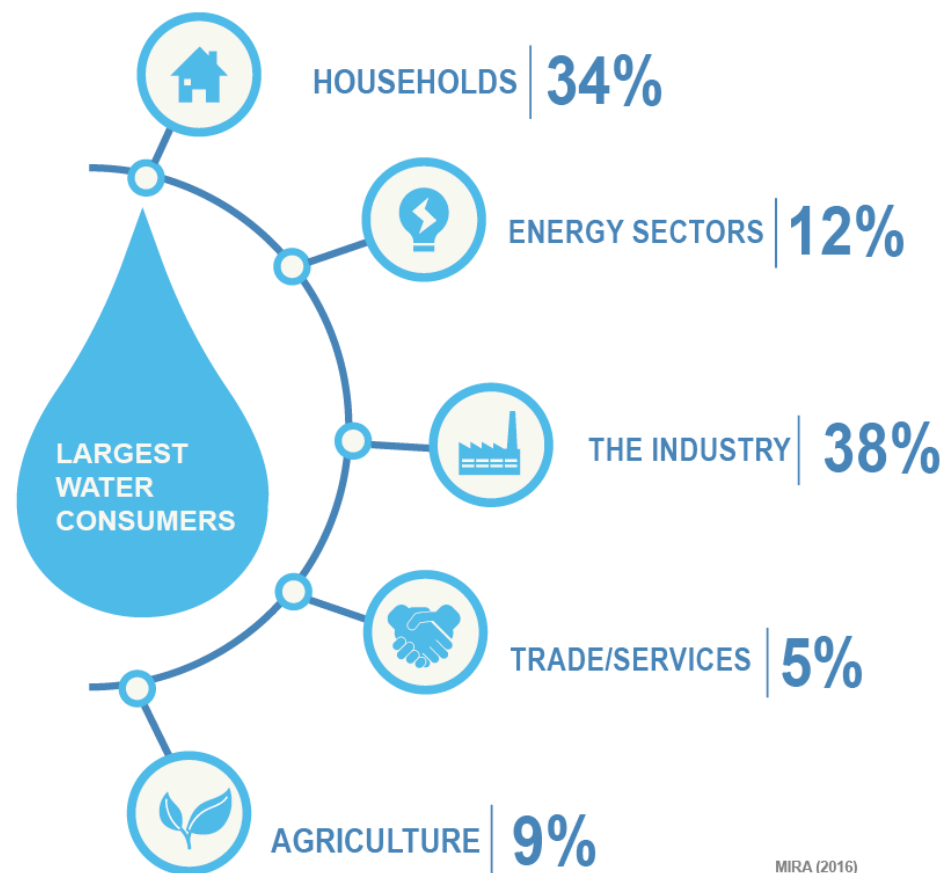
Total water consumption
in the region of Flanders

MIRA (2016)

61,34 million m³

Water consumption
of the Flemish
agricultural sector

PSKW (2019)
Estimation based on Statbel (2018) and D'hooge et al. (2017)



MIRA (2016)



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SUMMARY STATE OF PLAY

FLANDERS/ CLIMATE CHANGE

Climate studies have shown that precipitation will increase during winter time while summers will become dryer. In general, a structural annual precipitation shortage is expected

-16%

-16%

-16%

-16%

The province of Antwerp elaborated more than two climate scenarios for the region. The severe scenario predicts 16% precipitation decreases during the summer period by 2030. In winter time precipitation might raise up to 9,9%.

Provincie Antwerpen (2016)



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WATER SOURCES FOR IRRIGATION

- **Rainfall**
Higher frequency of dry summer periods
- **Surface water**
Prohibition during droughts
Ecological minimum flows in river
- **Ground water**
Permits for drilled wells under pressure

**Vanaf donderdag al
oppompverbod in vrijwel heel
Vlaanderen: “Historisch vroeg
op het jaar door extreme
droogte”**

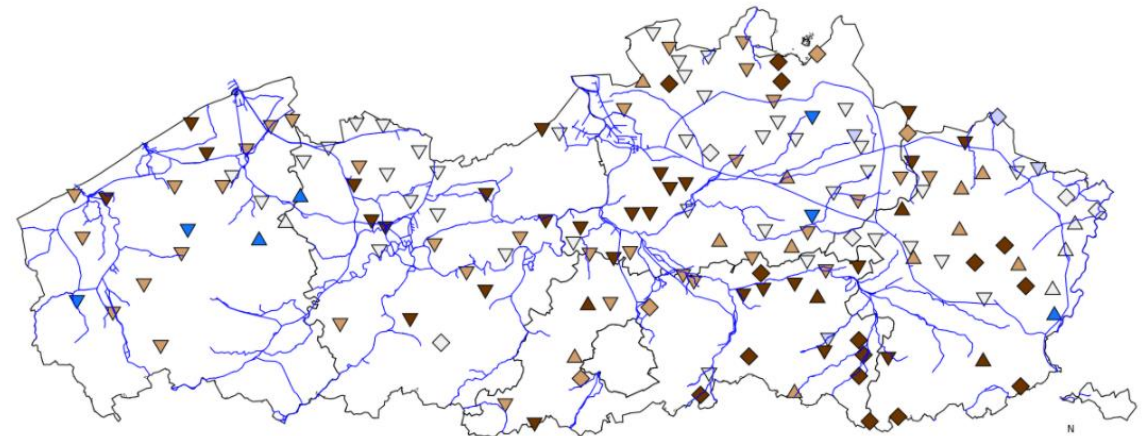
20/05/2020 om 16:20 door vln, nadb, gjs | Bron: EIGEN BERICHTGEVING, BELGA - [Print](#) - [Corrigeer](#)

Grondwaterwinning op de helling in Vlaanderen



Vlaams minister van Omgeving Zuhair Demir waarschuwt dat een nieuw waterarrest vergunningen uit het verleden voor grondwaterwinning onderuit kan halen. ©Photo News

WIM VAN DE VELDEN | 02 april 2021 01:00



Toestand van de grondwaterstand voor de tijd van het jaar op de referentiedatum (kleur):

- < P10, zeer laag
- P10-P30, lager dan normaal
- P30-P70, normaal
- P70-P90, hoger dan normaal
- >P90, zeer hoog

Verandering van de grondwaterstand in de voorbije maand (symbool):

- Gestegen
- Stabiel
- Gedaald

0 10 20 30 40 50 Kilometer

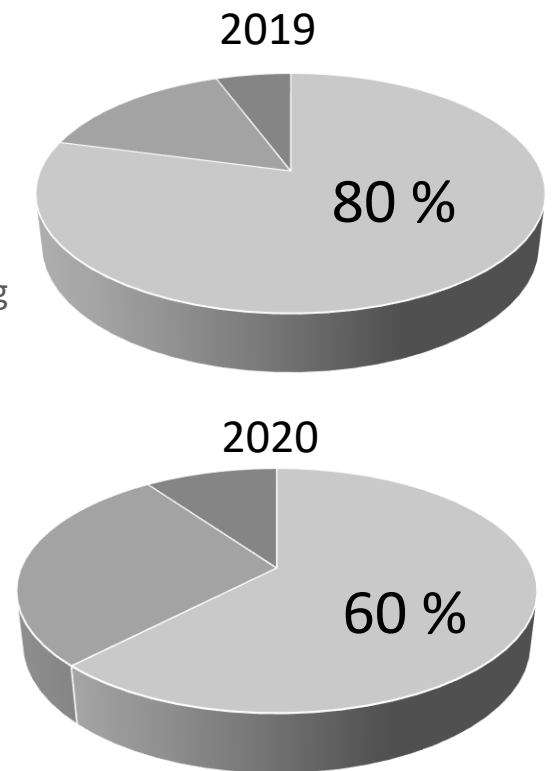
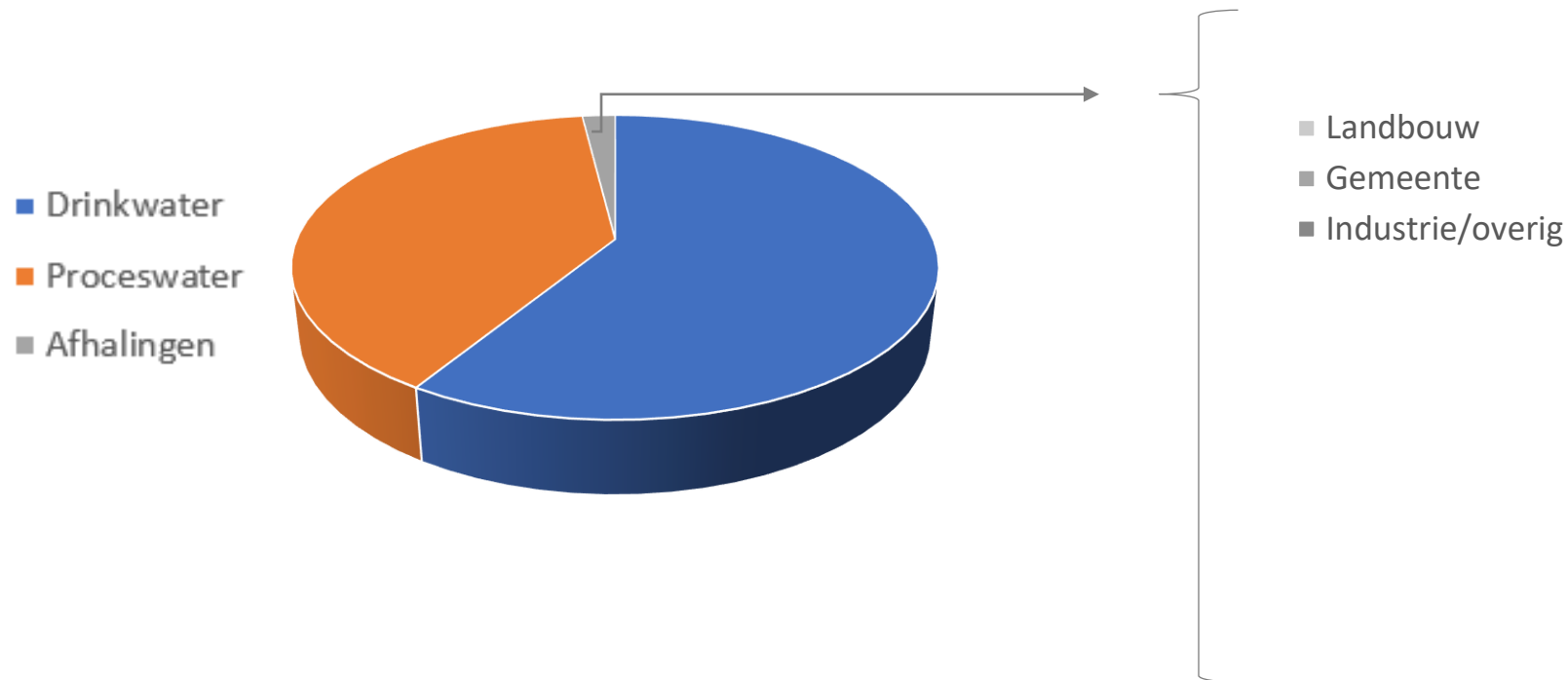
Bron: Vlaamse Milieumaatschappij

RECLAIMED WATER IN FLANDERS

Treated wastewater: 800M m³ per year in Flanders

Wastewater treatment operator:

Reuse : < 0,6 %



USING RECLAIMED WATER FOR

AGRICULTURAL IRRIGATION IN FLANDERS (BELGIUM)

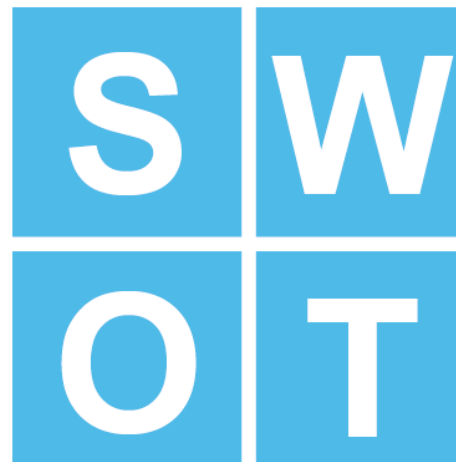
STRENGTHS

- Optimisation of land use
- Constant supply of water during the periods of drought
- Available treatment technologies and knowledge

OPPORTUNITIES

- Political vision and the future legislation
- Occurrence of droughts
- Technology transfer between countries
- Set up of water committees

2019



WEAKNESSES

- Temporal and discontinuous water demand
- Cost of additional treatments, storage and transport of the reclaimed water
- Lack of a distribution network
- Current legislation restricts the use of the water resource

THREATS

- Political vision and fragmentation
- Negative public opinion
- Market demand for reclaimed water
- Treatment intensity



REGIONAL ACTION PLAN



SUWANU
EUROPE

Deliverable 2.6

Development of a Regional Action Plan

RESULTS & STEPS

LEGAL FRAMEWORK

EUROPEAN NETWORK

INVESTMENTS

SOCIAL ACCEPTANCE

Not ad-hoc but
structural approach

Understanding of
long-term effects

Defining agronomic
water quality
requirements

Case-by-case
evaluation

Cost-benefit analysis



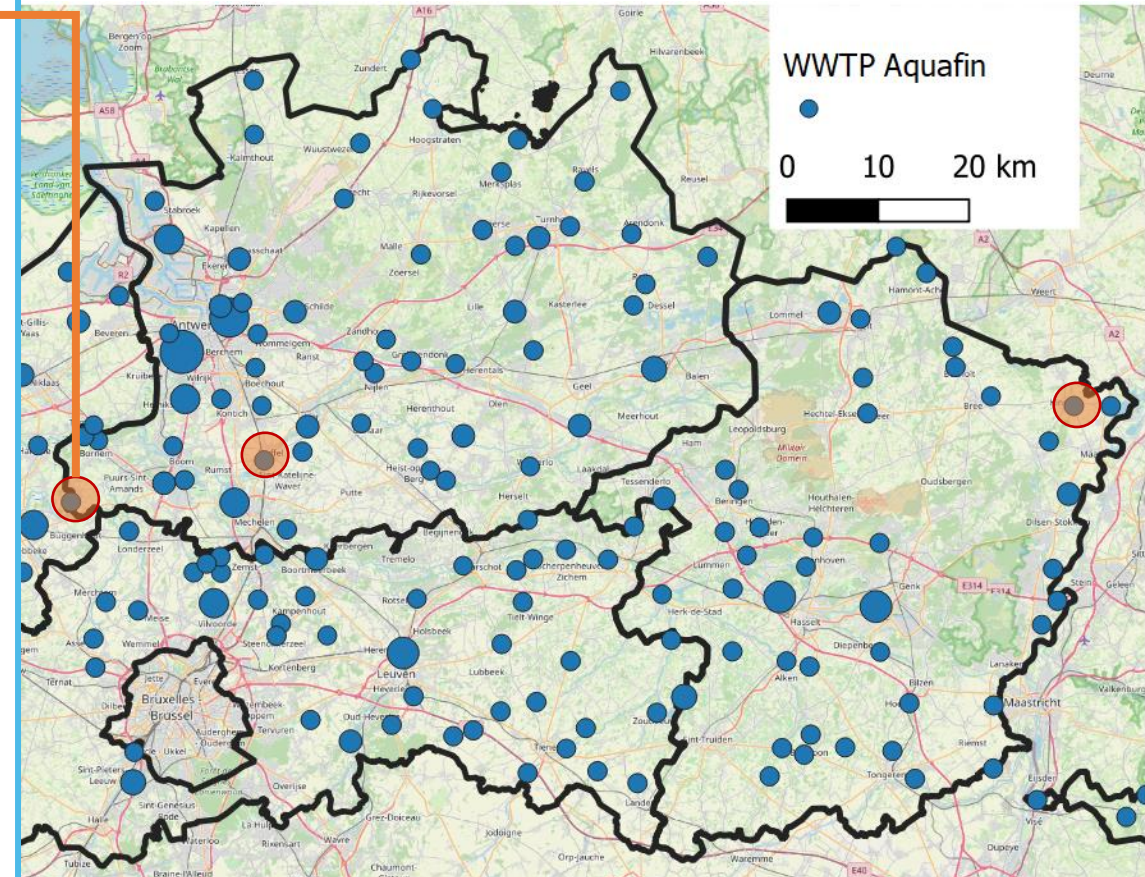
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WATER REUSE INITIATIVES FOR AGRICULTURAL IRRIGATION IN FLANDERS

Reclamation treatment for drip-irrigated vegetable production

- Sint-Amands (Province of Antwerp)
- Reclamation treatment with container
- Evaluation on effect on *E. coli*
- Disinfection trains:
 - In 2020: Sand filtration-Active carbon – H₂O₂
- Operational Group AWAIR 'gezuiverd AfvalWater voor Irrigatie'



Europees Landbouwfonds
voor Plattelandsontwikkeling
Europa investeert
in zijn platteland



VLAKEWA

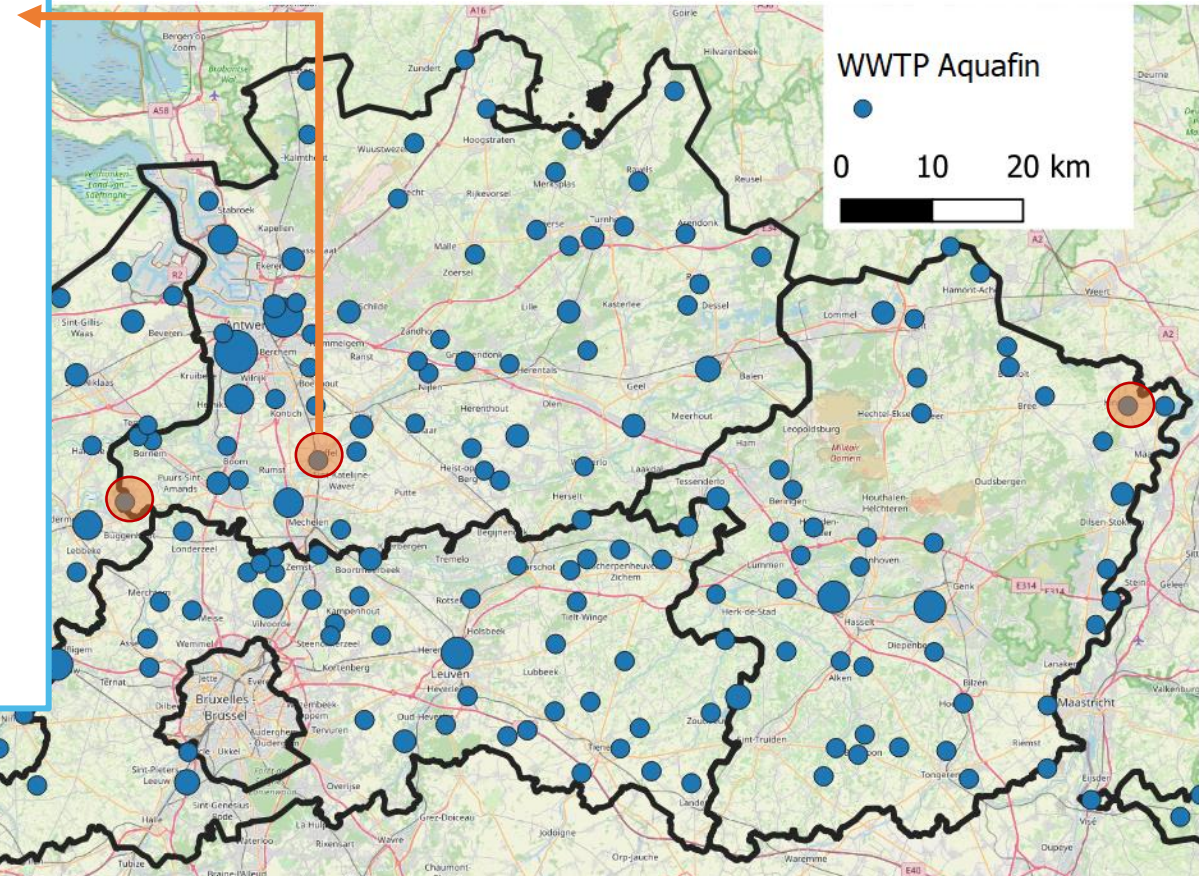


SUWANU
EUROPE

WATER REUSE INITIATIVES FOR AGRICULTURAL IRRIGATION IN FLANDERS

Reclaimed water as water source for a substrate cultivation

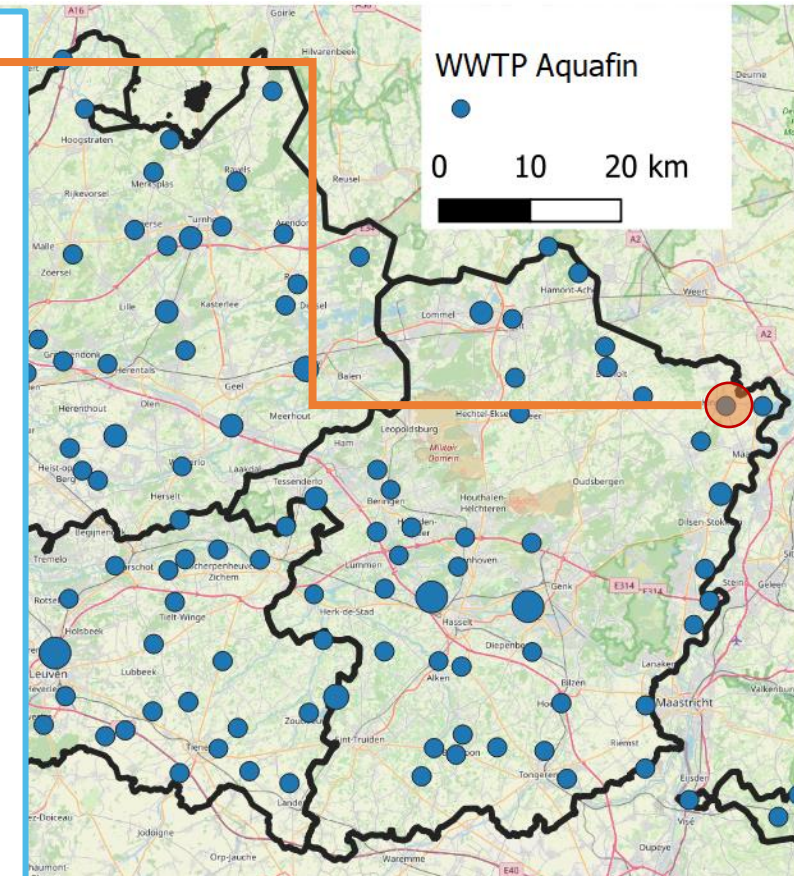
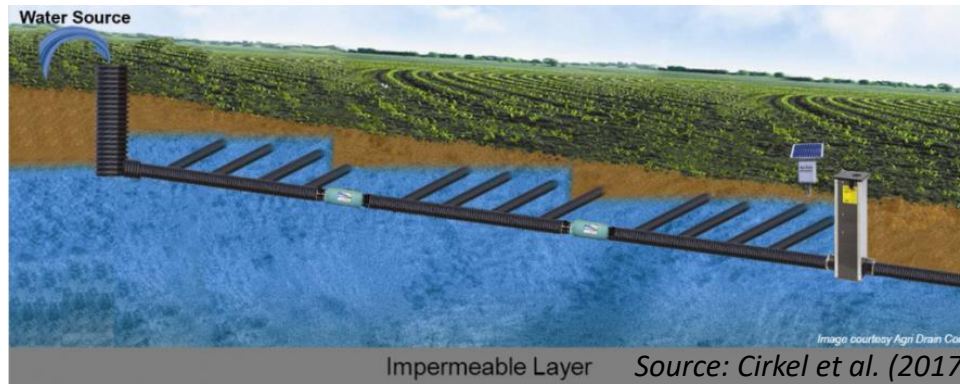
- Closed hydroponic system
- Cucumber
- Sodium-rich water
- Ultrafiltration
- 'Partners4Water'



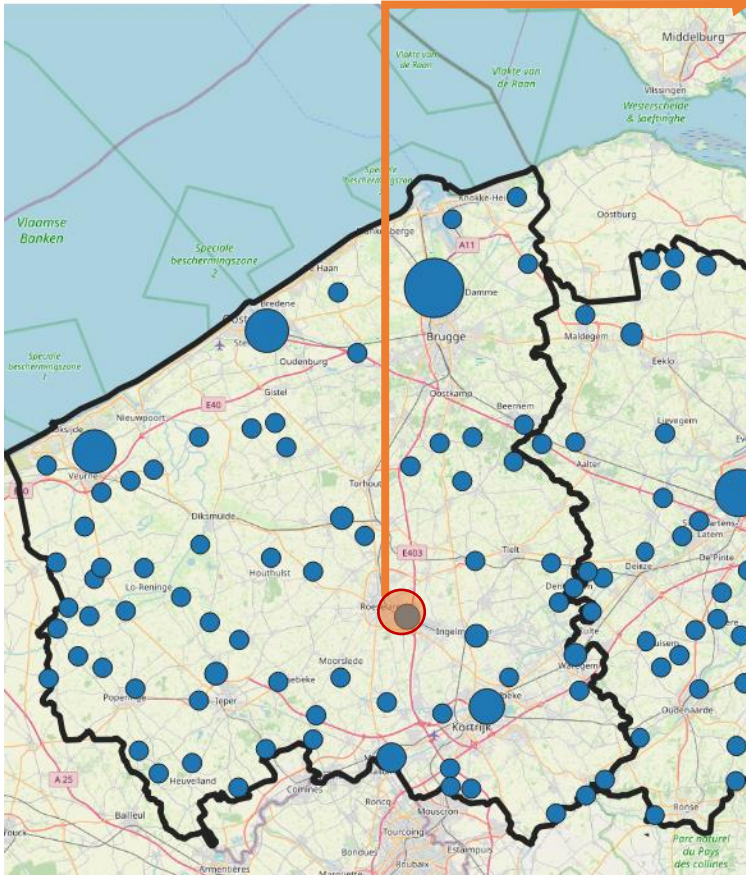
WATER REUSE INITIATIVES FOR AGRICULTURAL IRRIGATION IN FLANDERS

Subirrigation with reclaimed water

- Kinrooi (Province of Limburg)
- Subirrigation
- Water quality monitoring of groundwater & surface water
- Corn & vegetable production
- LEADER 'Gezuiverd afvalwater voor subirrigatie'



WATER REUSE INITIATIVES FOR AGRICULTURAL IRRIGATION IN FLANDERS



Effect of irrigation with treated wastewater

- Rumbeke-Beitem (Province West-Flanders)
- Spinnach, potato, cauliflower
- Effects on soil salinization
- Evaluation of treated wastewater and industrial wastewater
- 'Irrigatie 2.0'



inagro
ONDERZOEK & ADVIES IN LAND- & TUINBOUW

ILVO
Instituut voor Landbouw-
Visserij- en Voedingsonderzoek

vito
Vlaakwa
VLAAMS KENNISCENTRUM WATER
FLANDERS KENNISNETWERK WATER

AGENTSCHAP
INNOVEREN &
ONDERNEMEN



Vlaanderen
is ondernemen



Thank you!



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