

# WOW!

Wider business Opportunities for  
raw materials from Wastewater



**Silvia Venditti**  
University of Luxembourg

*30th September 2021 Aquarama*

# Programme

13.30h	WOW! welcome & introduction in circular use of raw material from sewage
13.40h	Aquafin: Developments in the recovery of raw materials from sludge/wastewater
14.00h	5 bio products from sewage (3 pilot projects)
14.45h	discussion
15.00h	End of session – drinks at the WOW! stand

# Presenters of today

**Francis  
Meerburg  
Aquafin**



**Marit Van Veen  
CirTec B.V.**



**Ámelie Rangué  
Natureplast**



**Silvia Venditti  
University of  
Luxembourg**



# Sewage is a valuable source

Biodiesel Kaumera



Humic acids



Struvite



Cellulose



PHA Bioplastics



More raw material: **long chain fatty acids**, metals, phosphorous...

## Why is **less than 1%** of the raw materials from sewage re-used?!

- The potential is unknown by the market
- It is a technical challenge to extract raw materials
- Sewage has an image of “dirty and unsafe”
- The legal framework to commercialize raw materials is complex

# Moving towards...

- Strong intention to recover valuable products out of waste
  - Strategy on the management of sewage sludge, including nutrient recovery



# Wow! goals

- We aim to start a transition towards a circular approach in sewage treatment
- For this purpose we want to:



SHOW THAT IT IS TECHNICALLY POSSIBLE TO RECOVER RAW MATERIALS FROM SEWAGE.



LET MARKET PARTIES BECOME ACQUAINTED WITH THE POTENTIAL OF RAW MATERIALS FROM SEWAGE (PRODUCTION OF BIODIESEL, BIO-OIL, BIOCHAR, ACETIC ACID ETC).



CREATE A EUROPEAN FRAMEWORK FOR THE STEPS THAT NEED TO BE FOLLOWED FROM WASTE TO RAW MATERIAL.



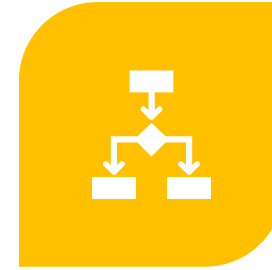
# When the WOW! project ends we have...



5 VALUE CHAINS FOR OUR  
BIOPRODUCTS FROM  
SEWAGE



3 PILOTS FOR THE  
PRODUCTION OF 5  
DIFFERENT TYPES OF RAW  
MATERIAL



A SUPPORTING TOOL TO  
HELP SEWAGE TREATMENT  
PLANT OPERATORS IN THEIR  
CHOICES TO A CIRCULAR  
APPROACH



A EUROPEAN LEGAL  
ROADMAP



# Wow! pilots

CELLULOSE

Bio-oil, biochar and acetic acid  
from pyrolyzed cellulose



BIOCHAR

PHA

Bioplastics by microbial PHA  
accumulation



PHA BIOPLASTIC

LIPIDS

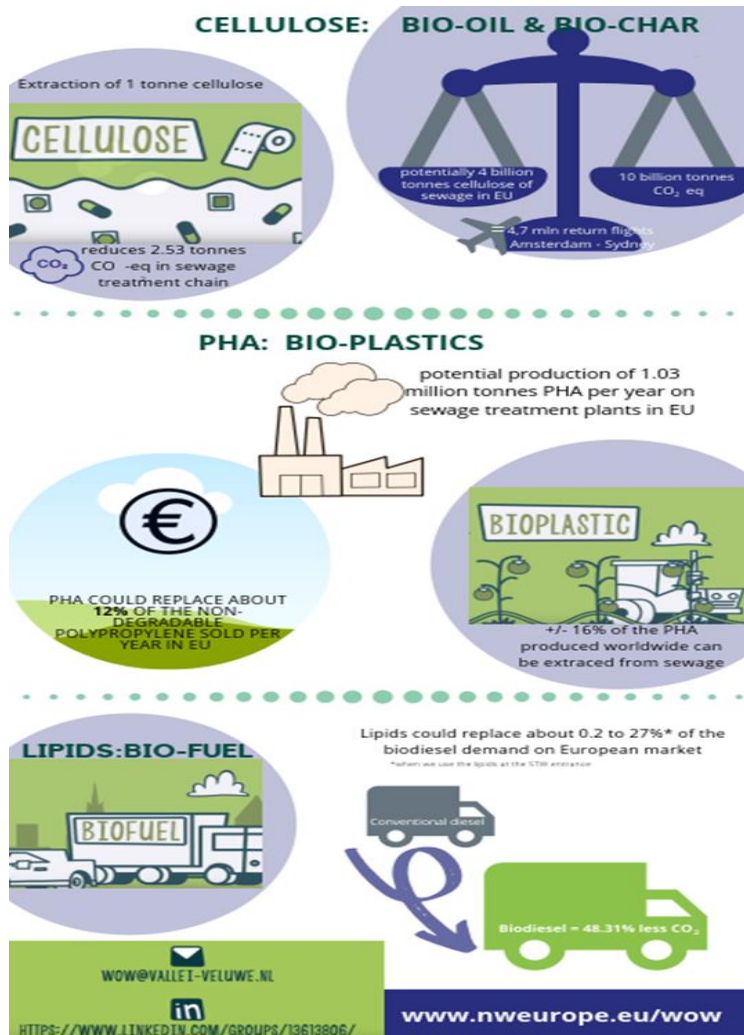
Biofuel from microbial lipids  
accumulation



BIOFUEL

# So far we...

- have 3 pilots running
- created an overview of current value chains and market potential in NWE
- have 5 national legal action plans



# Challenges

- From lab experiment to pilot. From pilot to market
- Involve the market (in an early project stage)
- Getting information about legal situation

# Our partners



Francis  
Meerburg  
Aquafin



# Developments in the recovery of raw materials from sludge/wastewater

# Cellulose pilot

Marit Van Veen  
CirTec B.V.



## From toilet paper to....

# PHA pilot

Ámelie Rangué  
Natureplast



## Residual Streams from Sewage Treatment Plants As A Source for PHA-Bioplastic End Products

# Lipids pilot

Silvia Venditti  
University of  
Luxembourg



## Recovery of Lipids from sewage sludge for biodiesel production



# Thank you for your attention

[WWW.NWEUROPE.EU/WOW](http://WWW.NWEUROPE.EU/WOW)



[WOW@VALLEI-VELUWE.NL](mailto:WOW@VALLEI-VELUWE.NL)