



European Sustainable
Phosphorus Platform



This project has received funding
from the EU Horizon 2020
research and innovation
programme under grant
agreement No. 690323



SMART-Plant



Green & Circular Economy
6-9 Novembre 2018
Rimini Italy

IN CONTEMPORANEA CON
KEY ENERGY

15 years after the first Italian struvite recovery plant in a MWWTP: lesson learnt, perspective of a water utility

Pierpaolo Florian – Alto Trevigiano Servizi



ALTO TREVIGIANO SERVIZI

3rd EUROPEAN NUTRIENT EVENT @ ECOMONDO 2018

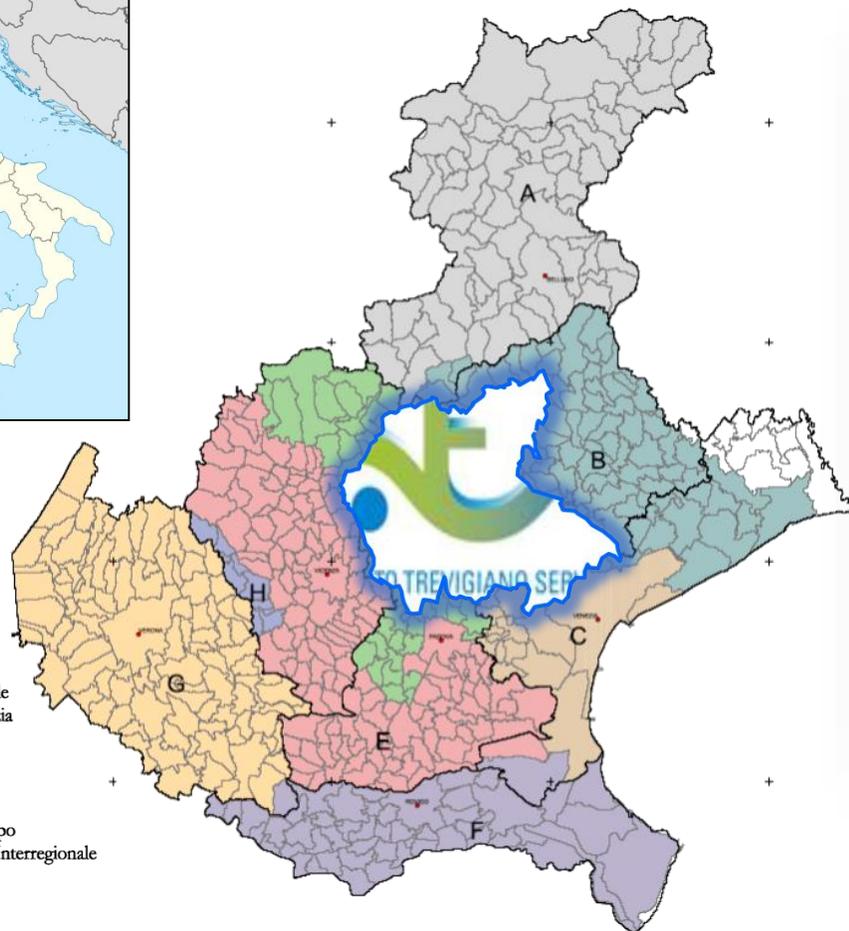
8 - 9 November 2018, Rimini, Italy

www.smart-plant.eu/ENE3





Alto Trevigiano Servizi profile



LEGENDA

- A - Alto Veneto
- B - Veneto Orientale
- C - Laguna di Venezia
- D - Brenta
- E - Bacchiglione
- F - Polesine
- G - Veronese
- H - Valle del Chiampo
- Ambito Territoriale Interregionale

ALTO TREVIGIANO SERVIZI

Water utility company

Municipalities 53

Area [km²] 1'375

Citizens [inh.] 500'000

Utilities 213'000

Turnover [€] 50'000'000

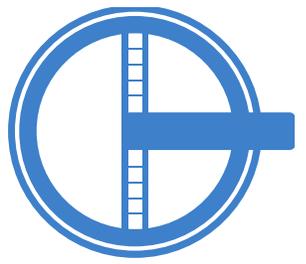
Treated WW [m³/y] 30'000'000

WWTPs 70

Employees 250



Timeline and optimization of wastewater department of ALTO TREVIGIANO SERVIZI



2007
Constitution of
ATS

2008-2013
Acquisition of
WWTPs

2008-2017
Management and
upgrade of
WWTPs

2012-2017
Optimization
R&D



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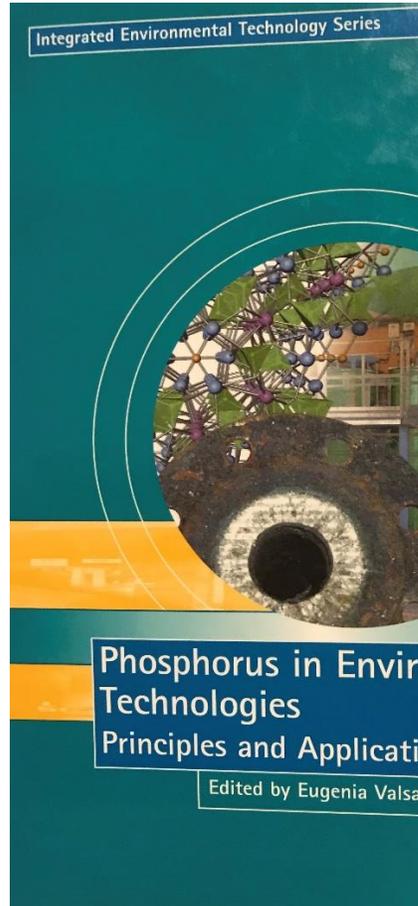
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Italian Phosphorus
Platform

75
ANNI



ECOMONDO
THE GREEN TECHNOLOGIES EXPO
Green & Circular Economy
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<https://www.iwapublishing.com/books/9781843390015/phosphorus-environmental-technology>



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STRUVITE

2000

TIMELINE TOWARDS RESOURCE RECOVERY

2007

Constitution of
ATS

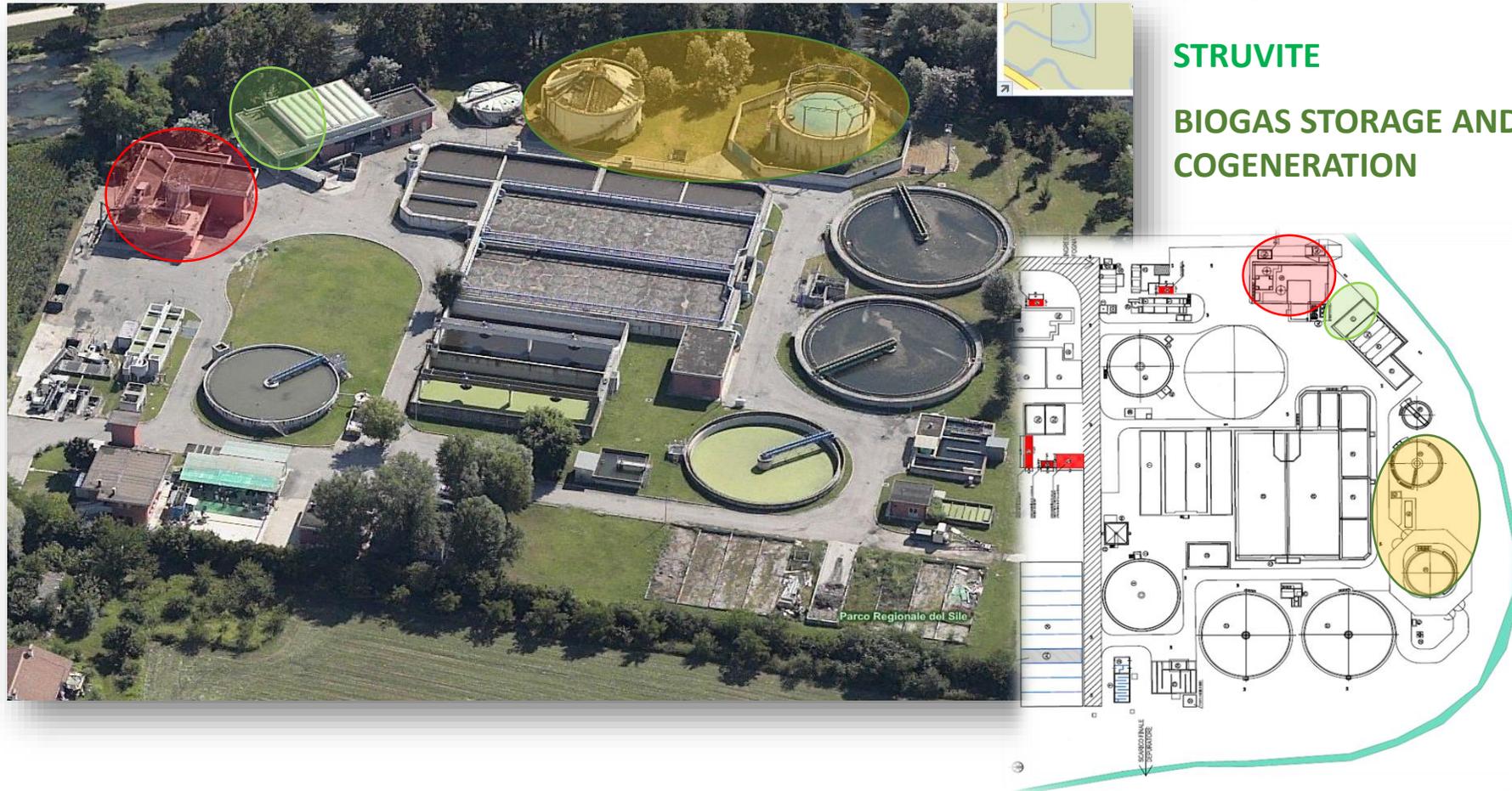


Treviso WWTP

TREATMENT OF
OFMSW

STRUVITE

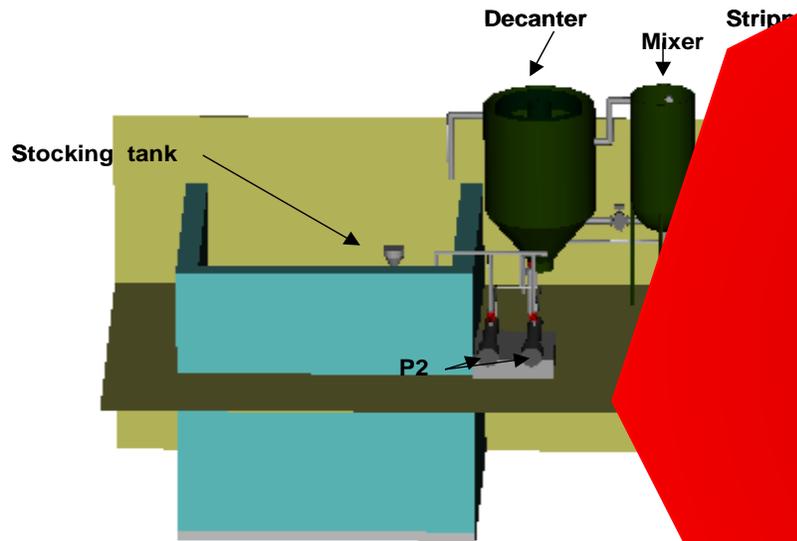
BIOGAS STORAGE AND
COGENERATION



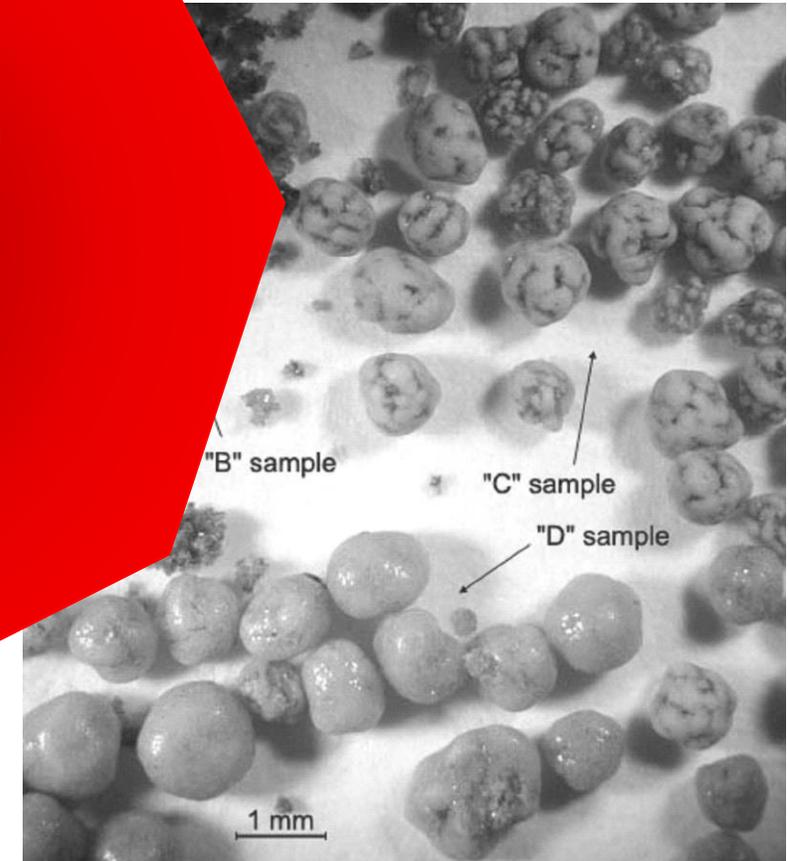


2000 Treviso: struvite recovery

The Struvite low release fertilizer



Struvite Crystallization beginning...





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GRUPPO
HERA

ECOMONDO
THE GREEN TECHNOLOGIES EXPO

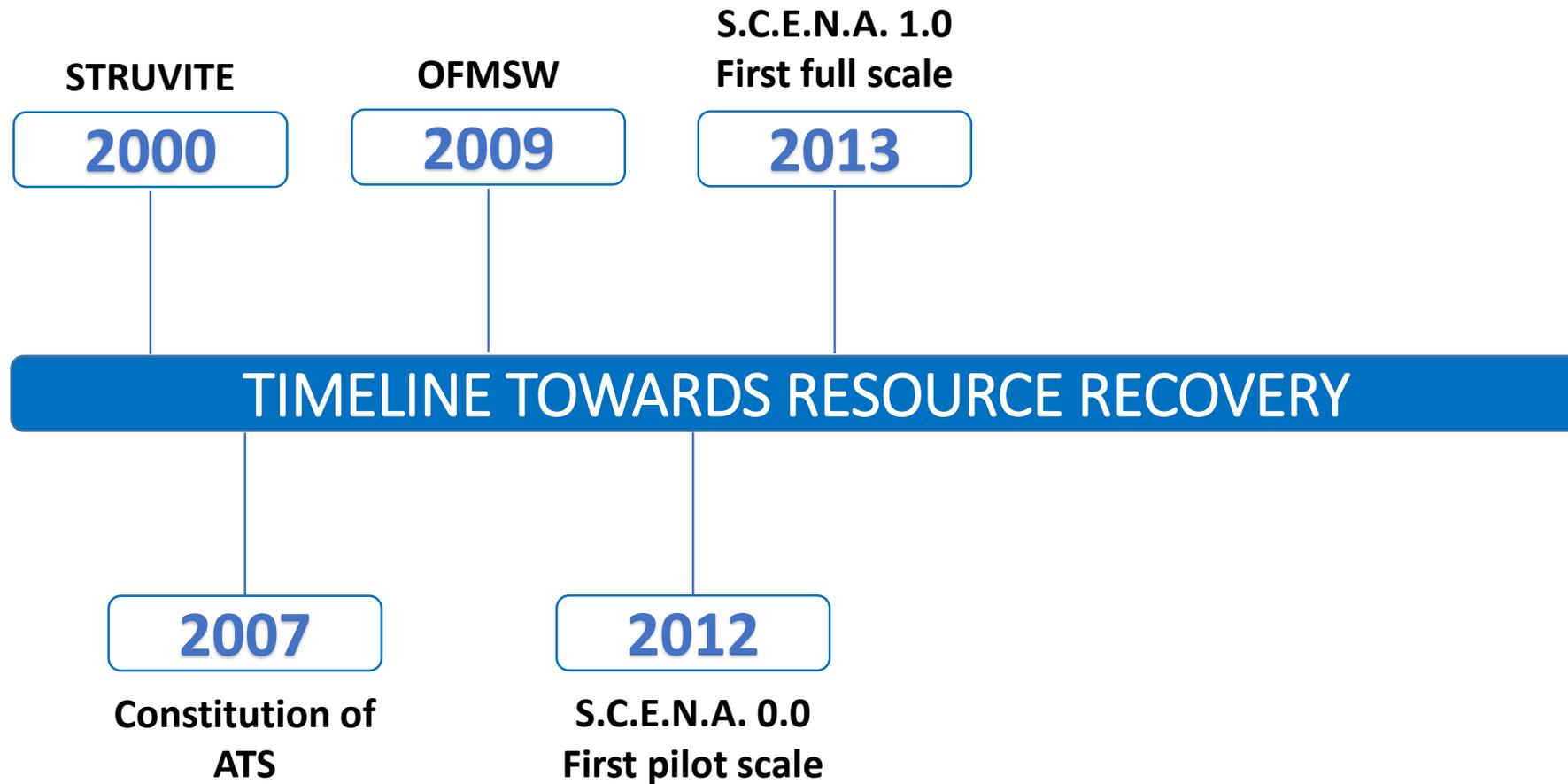
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Struvite Crystallization Plant at the
beginning...



And now...





Carbonera WWTP (60'000 P.E. layout)





2012 Carbonera: S.C.E.N.A. 0.0 – first pilot scale



Fermentation unit:
0.5 m³ for mixed sewage sludge
(primary and secondary)

Storage tank (1 m³) for
Sewage Sludge Fermentation
Liquid (SSFL)

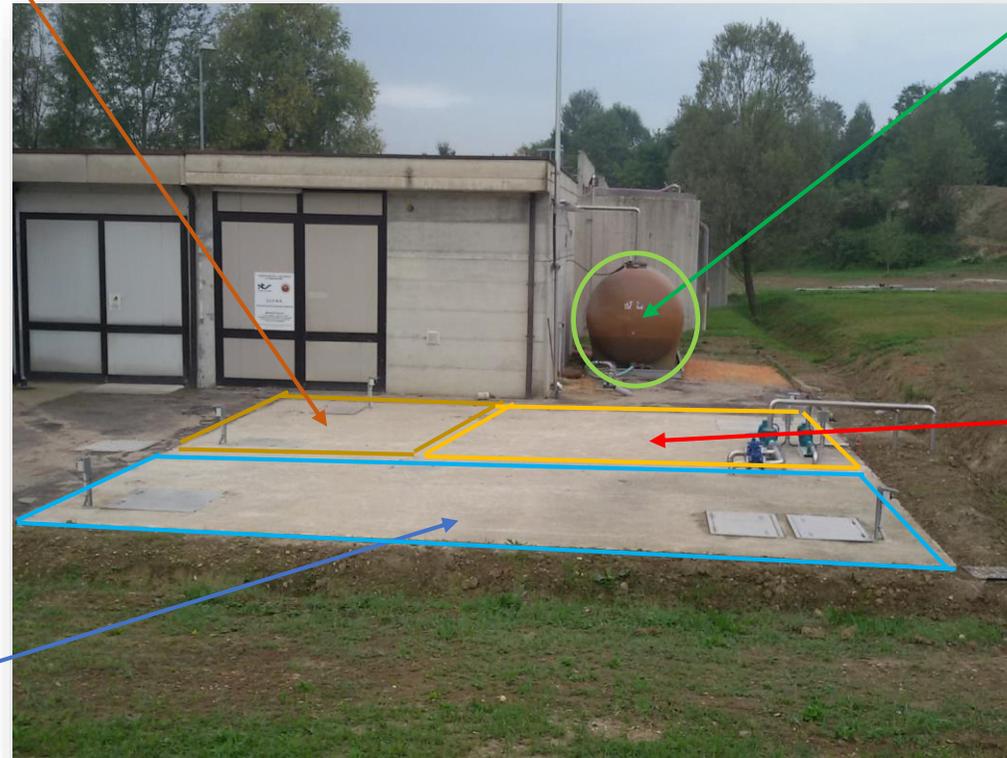
2.8 m³ short-cut SBR reactor



2013 Carbonera: S.C.E.N.A. 1.0 – first full scale

STORAGE TANK

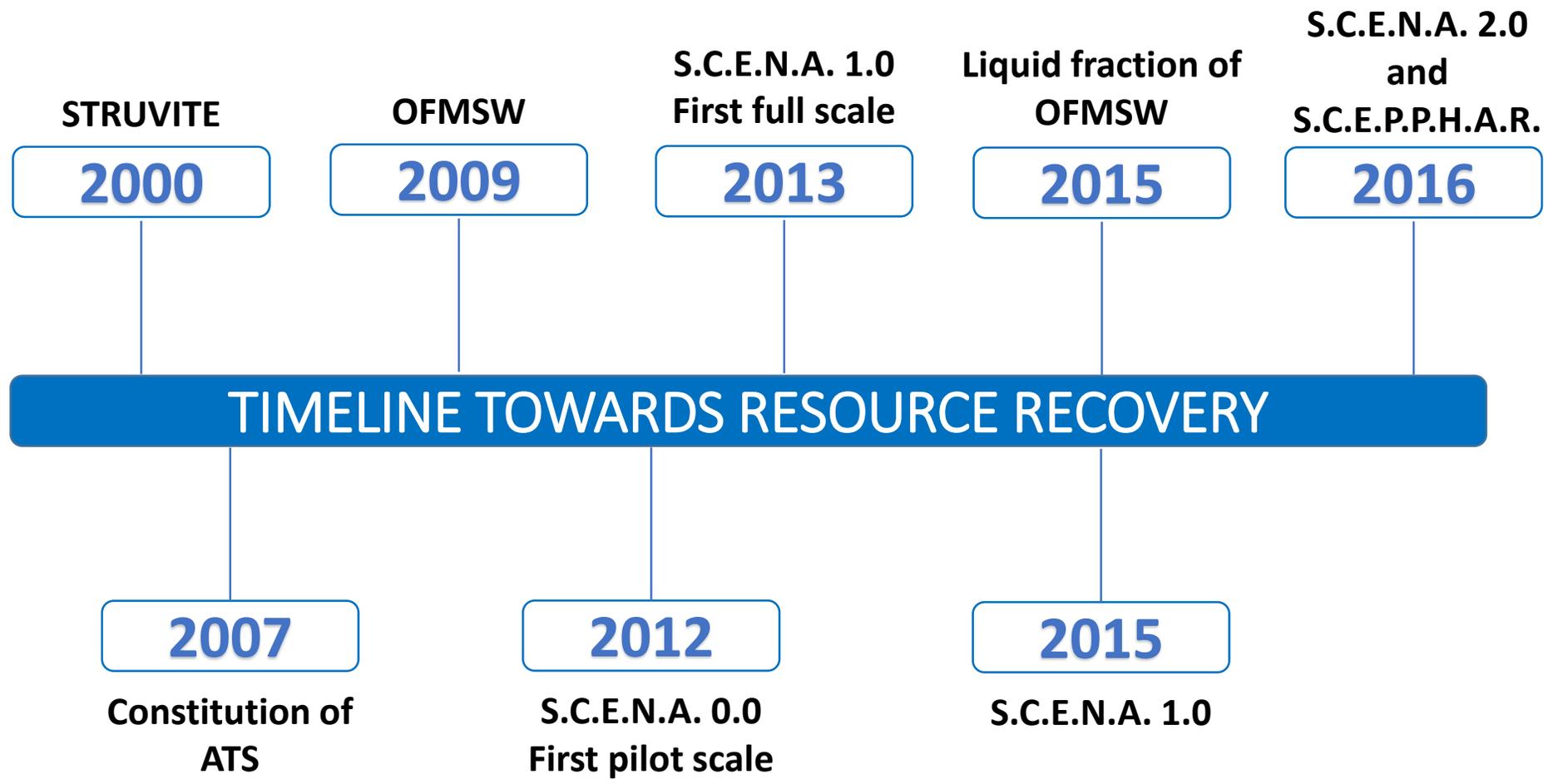
CARBON SOURCE
STORAGE



FERMENTER



VIA-NITRITE SBR





2016 Carbonera: HORIZON2020 SMART-Plant project

S.C.E.N.A.2.0 and S.C.E.P.P.H.A.R.

The
facilities...





2016 Carbonera: HORIZON2020 SMART-Plant project S.C.E.N.A.2.0 and S.C.E.P.P.H.A.R.



cellulose

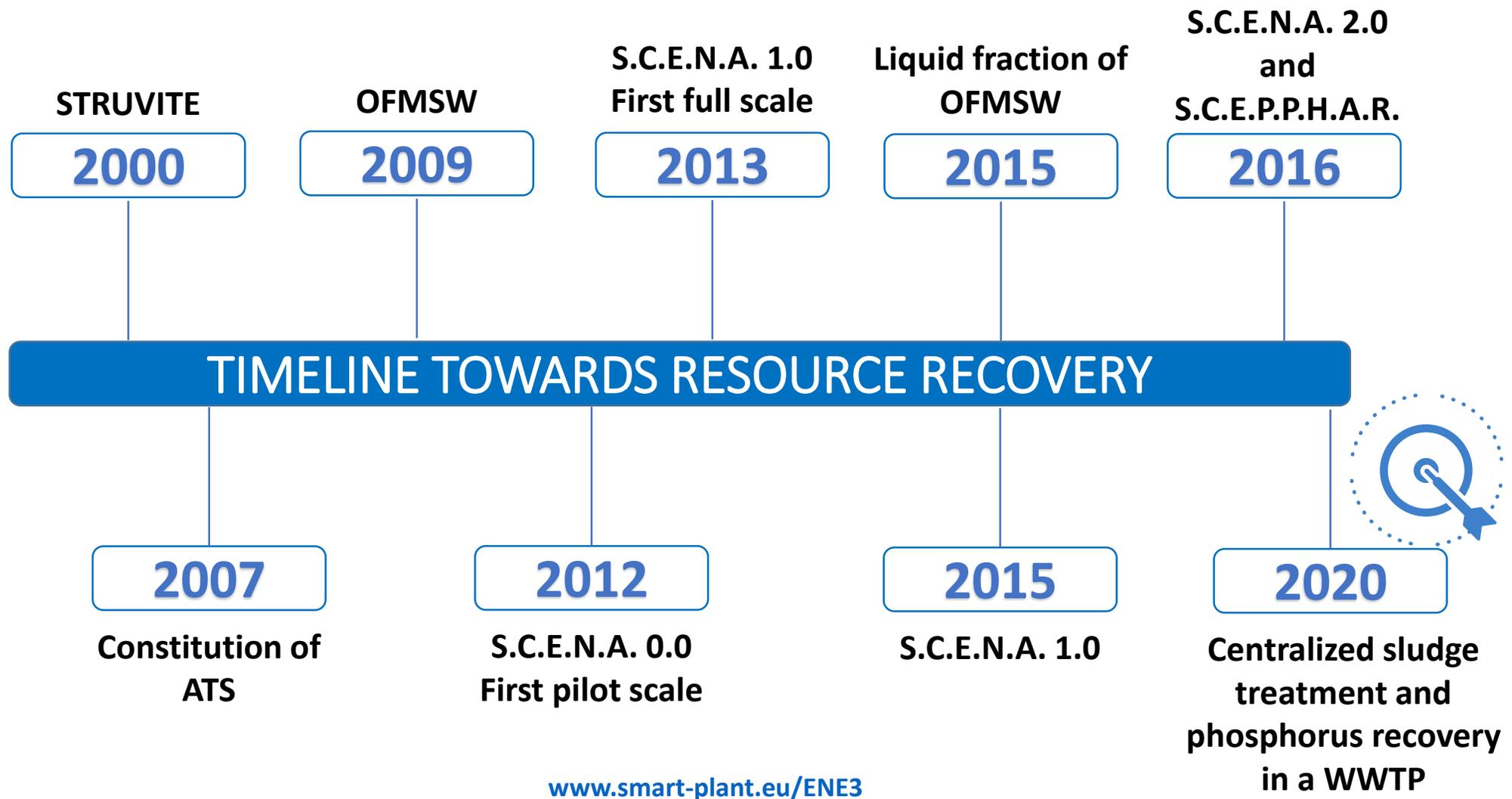


struvite



biopolymers

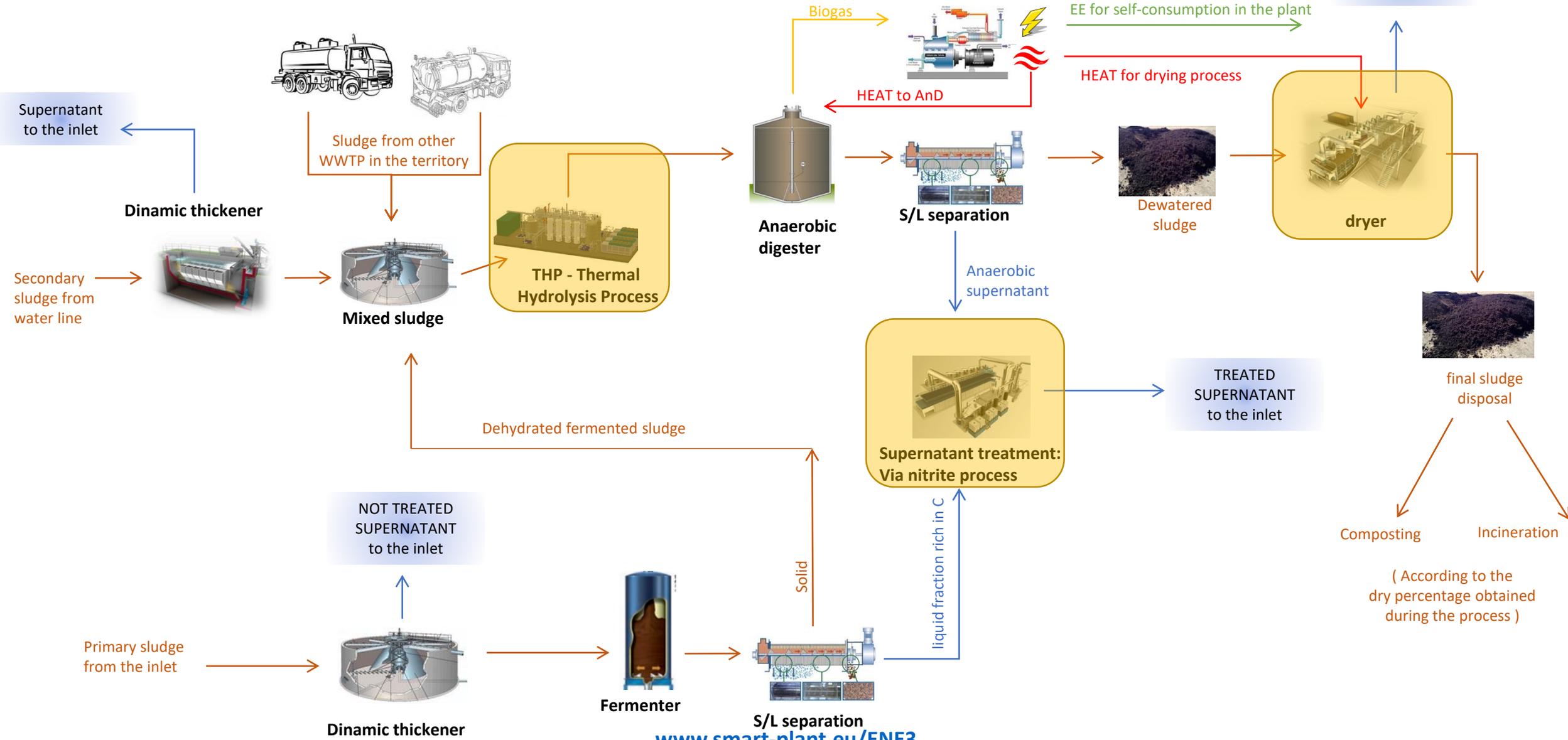
**And the
products...**



Future steps

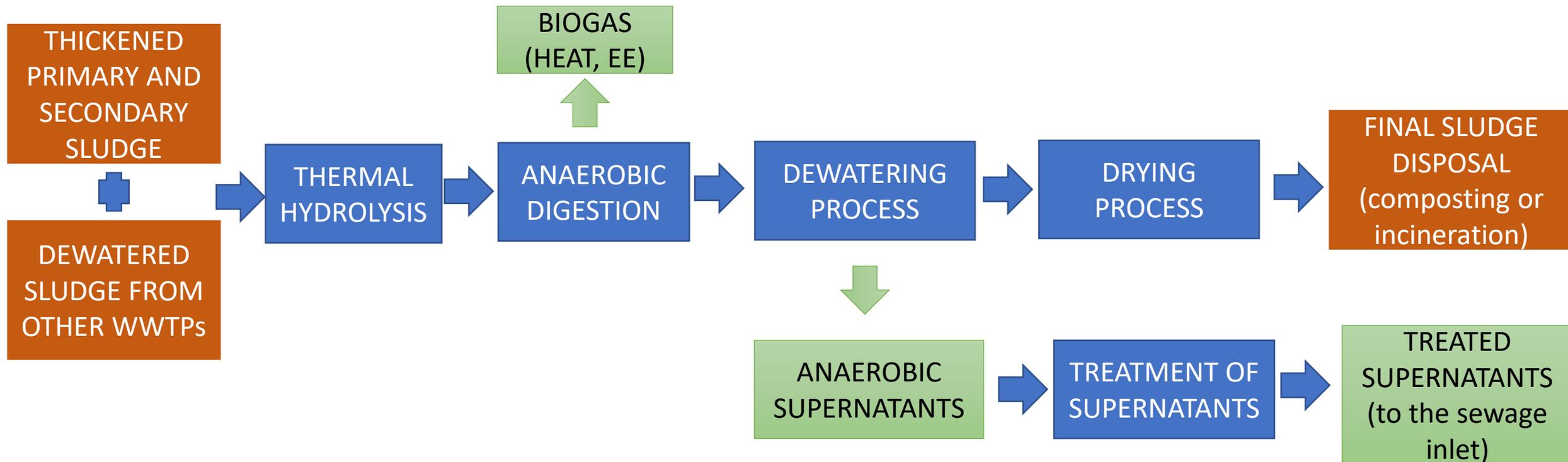
Upgrade of Castelfranco Salvatroda WWTP focused on centralized and smart management of wastewater sludge, minimizing impacts, innovating and valorizing circular economy:

- **Statistical analysis** utilizing data of the last two years of the WWTP (**Sizing of the system** using the maximum real loads);
- **Arrangement of the plant to a smart use and recovery of resources**, combining consolidated solutions and optimization during the next steps of the project;
- **Best impact on the Province of Treviso;**
- **Technical, economic and environmental sustainability.**





Advanced process for the best polluting load's management utilizing smart technologies, energy and resource recovery





Conclusions:

- **The link between scientific research and companies is crucial to obtain funds that could support investments on innovative technologies for phosphorus recovery;**
- **The products obtained need a market to be attractive to the stakeholders (an innovative process must to be solid and sustained from production cycle);**
- **Sustainability of the process (economic, environmental, social);**
- **Social acceptability of technology;**
- **Chosen solutions need to be supported by the legislation;**
- **Economics and business strategies.**



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Thanks



(for further informations: www.altotrevigianoservizi.it)

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