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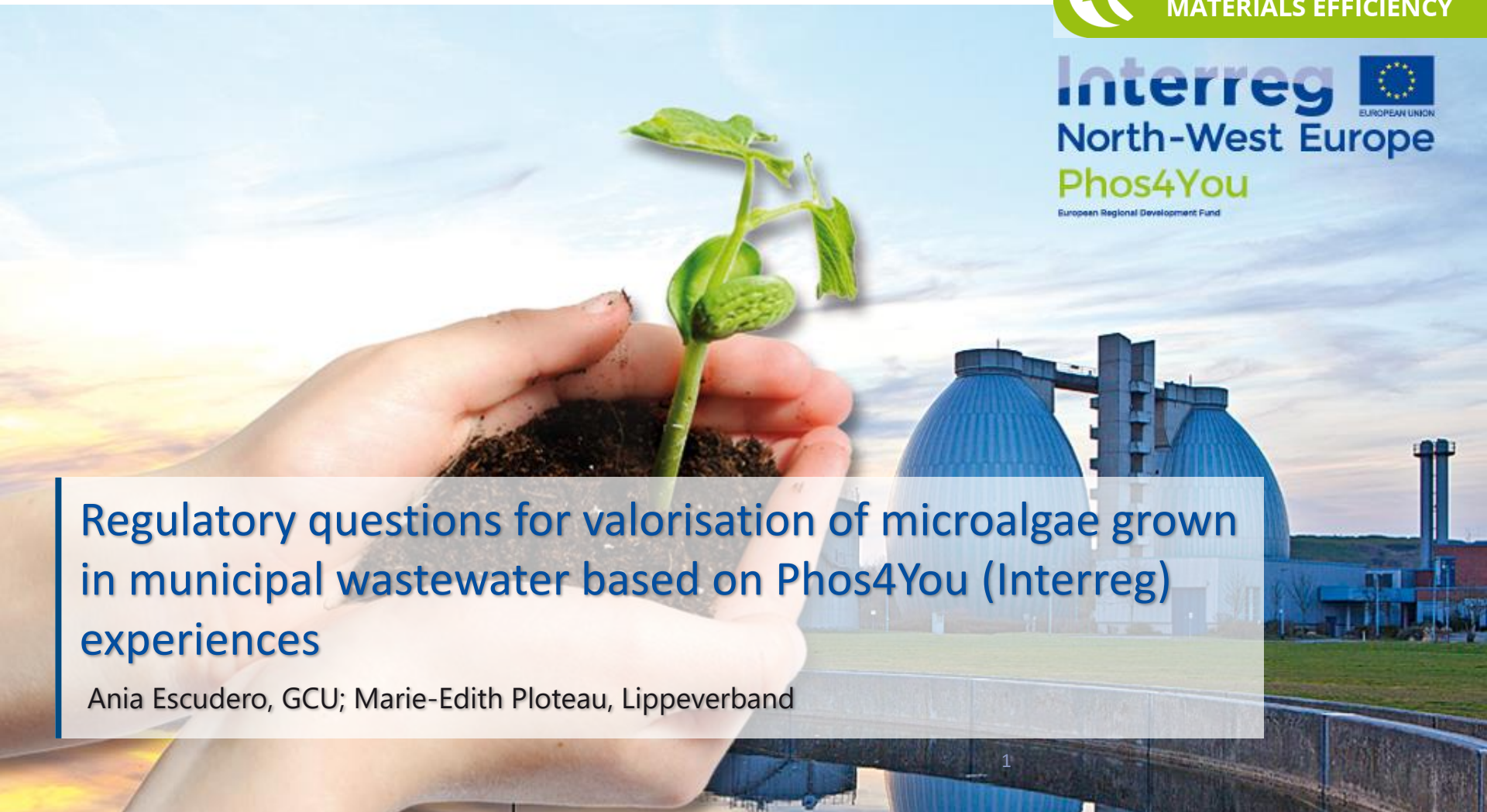
RESOURCE AND MATERIALS EFFICIENCY



Regulatory questions for valorisation of microalgae grown in municipal wastewater based on Phos4You (Interreg) experiences

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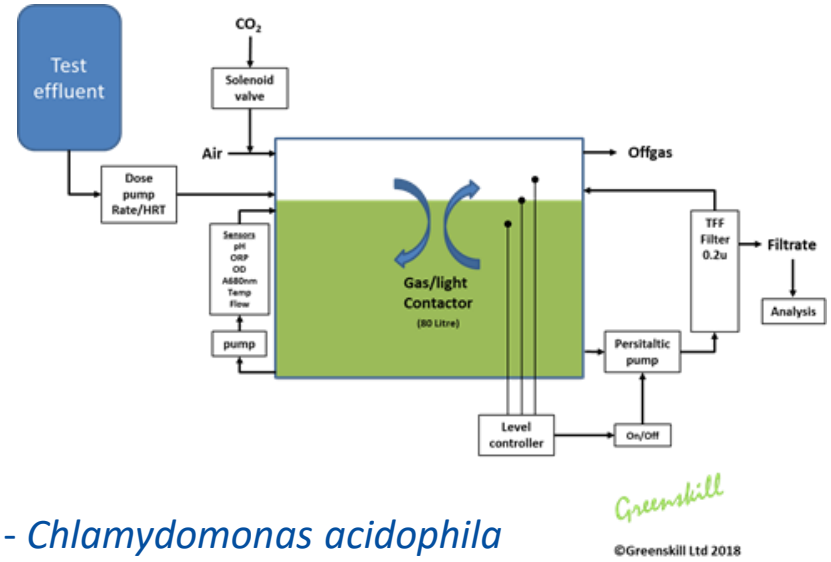
Scottish Water Horizons

Greenskill Environmental

Wastewater Development Centre in Bo'ness



- *Chlamydomonas acidophila*
- 500 L PBR – 6 months
- Treating effluent from primary sedimentation
- Incorporates LED lighting and heat exchanger
- Biomass recovery: filtration

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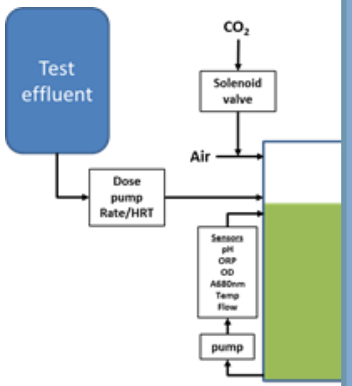

RESULTS

- Recoveries/removals:
  - 50-75% PO_4
  - 75-100% NH_4
  - 50% COD
- ROBUST → maintained long term as mono-algal culture
- Easy to separate using tangential flow filtration → it did not foam or exhibit biofilm formation in the PBR

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Recovered material: microalgae biomass

4 g/L

[µalgae biomass]
in the photobioreactor

+ 0.5 g NaOH/L

Sedimentation

4-6 % TS

Liquid separation

90 % TS

Drying

Recovered material: microalgae biomass

Phos4You preliminary results

Quality assessment team (UGhent, INRAe, ERI, HVC)

- Corg. >15%
- TN = 6.2 %dm
- P_2O_5 = 1.9 %dm
- Secondary macronutrients (MgO, CaO >1.5%) and specifically high Mg: P ratio

- contaminants, pathogens and persistent organic pollutants tested are lower than the limits defined in EU FPR 2019
  - Cu ~ 520 mg kg^{-1}. Limits:
    - PFC1 (A) Org fert: 300 mg kg^{-1}
    - PFC1 (B) Org Min fert: 600 mg kg^{-1}
    - PFC3 (A) Org soil improver: 300 mg kg^{-1}
    - PFC6 (A) Plant stimulant: 600 mg kg^{-1}

- pot trial for testing P availability and pharmaceutical and ecotoxicity analysis are on-going

Barriers for microalgae biomass to find pathway under EU FPR

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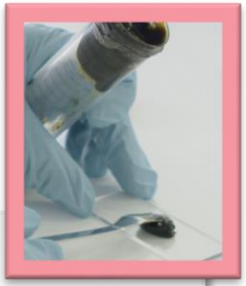
Potential CMC

2 2 7 → Add *Chlamydomonas* to the positive list ?



Potential Product Function Categories

PFC 3 (A)
Organic soil improver (>20% dm)
→ authorise liquid soil improver under PFC 3 (A)?

PFC 1 (A&B)
Solid organic fertiliser
Organo-mineral fertiliser (Co-formulated with inorganics fertilisers)

PFC 6 (A)
Microbial plant biostimulant

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Thank you for your attention

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EGLV
Lippeverband

LIÈGE université

INRAE

LEB aquitaine transfert

MTU
Ollscoil Teicneolaíochta na Mumhan
Munster Technological University

n|w University of Applied Sciences and Arts Northwestern Switzerland
School of Life Sciences

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