

22.05.2022-23.05.2022/BORAS UNIVERSITY

FULLRECO4US - Cost Action 20133

Cross Border Transfer and Development of Sustainable Resource Recovery Strategies Towards Zero Waste

MoU and WG-4 tasks

- 1. To coordinate information seeking and collection on waste generation including amount and geographical distribution** (Task-1: To build interactive map/Case studies of WWTP with resource recovery options, sharing experiences, Deliverable-1: Infograph preparation for social media, Webinars with invite experts/stakeholders, Short videos for youtube channel). Planning activities: EURA operators/guidelines (Petros), Istanbul municipality (Derya), Polish society operators from WWTP (Joanna), The preparation of template for contact email (Derya)

T1/To build interactive map/Case studies of industrial and urban/municipal/domestic WWTP with resource recovery options
Task leaders: Petros Samaras-Edlira Shahinasi

- 2. To develop a state-of-art in research approaches aiming at waste pretreatment, maximization of recycling and valorisation, and range of value-added products** (Task2: To determine the valuable materials for resource recovery (Water, N, P, VFA, Carbon, Critical raw material-rare materials/EU guideline, Metals, Hydrogen) based on our research capacity/potential for creating of project proposal (National, EU, Horizon, Marie Curie Doctoral network-15 November, 2022, Erasmus+, Internship program, Training program), We should be also able to contribute to pre-treatment (e.g., by showing which contaminants we can avoid with what pre-treatment) and increasing recycling and valorisation.

Deliverable-2: To submit the collaborative project proposal. Planning activities: Sharing of Critical raw material guideline (We need to check with other Working Groups whether some of these are in their focus. Our focus is water and nutrients. Critical raw materials are not part of any group I think, but hydrogen/biogas could be part of WG1, Pawel), Marie Curie Doctoral Network documents, To determine project topic direction from EU horizon call (water security, critical raw materials, energy, securing future supply through sustainable society), in June: consortium should be formed

Zeynep (KTH researchers): biobased, application of natural, biorefinery, implementation of synthetic microbial community, new species for enhancing, implementation of carbon recovery, energy, phosphorus recovery,

Pawel (Niva)/researchers from Norway: Water quality, water reuse, safe water, emerging contaminants, critical raw materials,

Elzbieta with another research (KTH): recovery methods, carbon/nitrogen/phosphorus recovery, implementation of phosphorus recovery technology, nutrients recovery, discover of recoverable materials, metabolites (design new process), innovating technology,

Petros (IHU): microalgae, valorisation of biobased materials,
Olga with partners from Porto: quality, microalgae reactors, nitrogen,
phosphorus, additive materials'
Joanna+Pawel (gorska): Ecotoxicology experiments/techniques.
Volkan (AU); Simulation methods, modelling. Stella, system dynamics.
Malgorzata Kacprzak (WUT): some specific waste streams - sewage sludge and
poultry manure (resource recovery, biochar , reclamation, mineral-organic
fertilizers, specific compounds recovery).

Ref. https://ec.europa.eu/growth/sectors/raw-materials/areas-specific-interest/critical-raw-materials_en
<https://rmis.jrc.ec.europa.eu/?page=crm-list-2020-e294f6>
<https://ec.europa.eu/docsroom/documents/42849>

Potential Work packages;

+++Phosphorus recovery (WP-1) Elzbieta-Zeynep; KTH
+++Critical raw materials (WP-2); NIVA
+++Algae reactors (WP-3) Olga+Petros (IHU/Porto/NIVA)
+++Ecotoxicology and safety of recovered products (WP-4: Joanna+Pawel+Ariola (SUT/NIVA/AUT)
+++Antioxidants recovery: Polyphenol recovery from oil industry and solid waste and purification (WP-5: AUT/ITU)
+++Hydrogen production (WP-6) Pawel (NIVA)
+++VFA recovery (WP-7) (KTH/ITU)
+++PHA recovery (KTH/SMEs)
+++ Fungi approach (Boras)
+++Humic substances (SUT)
+++ Biobased fertilisers recovery from WW and sludge and compliance with EU regulations (UVIC)
+++ Water reuse (UVIC)
+++Harvesting process with new approaches (IHU/ITU)
+++Simulation and modelling (AU)

Other activities;

Fit the general topics of specific WPs

Ask to another WGs

Should meet with industry in action

Developments of opportunities

Preparation of MSCA Draft

T2/To determine the valuable materials for resource recovery based on our research capacity/potential for creating of project proposal, Task leader: Zeynep Cetecioglu-Gurol

- 3. To identify knowledge gaps, bottlenecks for technology development and implementation, and interdisciplinary and intersectoral synergies (Task-3:**
To indicate main challenges (this is crucial step for the WG4 as we need to decide which of the challenge we will address through our efforts)+Roadmap+Activities, EU Bureaucracy (Policy) and regulations, Public

acceptance, Technology developments, Stakeholders (Enduser) demand, geopolitical issues, economical way, Deliverable-3: To publish review paper with a holistic view)

Review paper: Mapping main challenges based on EU policy and countries. Summarize current situation. Future aspects of situation.

Journal name; Natural Sustainability,
<https://www.scimagojr.com/journalsearch.php?q=21100873499&tip=sid&clean=0>. Perspectives, Point oriented

T3/To indicate main challenges+Roadmap+Activities with scientific way in review paper-1, Task leaders: Volkan Oral

- 4. To design holistic approaches leading to full recycling and valorisation of waste** (Task-4: To assess a safety and ecotoxicology and quality of recovered products (examples of specific contaminants: chemicals (PFAS, micropollutant, nanomaterials, pharmaceuticals, personal care products], heavy metals, microbial contaminants (pathogens, antibiotic resistance bacteria, antimicrobial resistance genes), Deliverable-4; To publish a comprehensive review paper, STSM (STSM mission(s) during which participants could bring their recovered products and analysed them in another partner institution (e.g. NIVA) for different contaminants to generate more data on the topic.), public awareness and acceptance activities)

T4/To assess a safety and ecotoxicology and quality of recovered products, Task leaders: Joanna Surmacz-Gorska, Olga Nunes, Pawel Krzeminski, Ariola Devolli

- 5. To keep a continuous and frequent communication with the MC and other WGs and to create new international, interdisciplinary, and intersectoral collaboration teams** (Task-5: To participate the regular MC and WG group meeting, Deliverable-5: To share our knowledge with other members, Task-6; To highlight the multidisciplinary structures of WG-4, Deliverable-6: To organize regular collaborative communication meeting for specific activities-STSM, information, outputs)

T5/To keep a continuous and frequent communication with the MC and other WGs, Task leader: Derya Imer.

T6/To highlight the multidisciplinary structures of WG-4: Pawel Krzeminski

3 co-leaders candidates: Cristina Calheiros-Pawel Krzeminski-Volkan Oral

Budget (10000 Euro) for a period Nov.2022-Oct.2023; Academic visiting (invited researchers), STSM, physical meeting-September, market report, potential conference registration fee