

SARDINIA

2023

SYMPOSIUM PROGRAMME

Updated on 20/09/2023

## **OPENING SESSION / 9th October 2023 / 9:00 - 12:30**

9:00 – 10:30

### **Welcome addresses**

*Authorities (in progress):*

- Paolo Russo, *Table of Rome (IT)*

*Chairs:*

- Raffaello Cossu, *University of Padova (IT)*
- Jurate Kumpiene, *Luleå University of Technology (SE)*
- Marion Huber Humer, *BOKU University, Vienna (AT)*
- Pinjing He, *Tongji University (CN)*
- Rainer Stegmann, *Hamburg University of Technology (DE)*
- William Clarke, *IWWG President, University of Queensland (AU)*

### **Opening Lecture:**

Dr. Mine Banu Tekman, *Özyeğin University, Istanbul (TR)* - *Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremen (DE)*

Anthropogenic debris in the Arctic: Pollution in a region far, far away...

[Read more about the lecture >>](#)

10:30 – 11:00 Coffee break

11:00 – 12:30

### **Austria "Special Guest Country" Lecture:**

- Johann Fellner, *TU Wien (AT)*: Austria - Country information and contribution to modern strategies in waste management

### **Introductory Lectures:**

- Raffaello Cossu, *University of Padova (IT)*: Waste Management and Circular impact on Health and Environment
- Rainer Stegmann, *Hamburg University of Technology (DE)*: The Necessity for an Ecological Waste Management
- Jurate Kumpiene, *Lulea University of Technology (SE)*: Main controversial / Hot issues in Sardinia 2023 that will be discussed in the Focus Sessions
- Pinjing He, *Tongji University (CN)*: Waste & Emerging contaminants
- Marion Huber-Humer, *BOKU University, Vienna (AT)*: Presentation of IWWG "Waste Vision Award 2100" and 2023 Winner

**SESSION A01 / / 9th October 2023 15:00-16:30**  
**STRATEGIES & POLICIES IN WASTE MANAGEMENT**

Chair / *Presidente*: To be defined

*M. Struk, J. Soukopová, A. Chroustová (CZ)*

Intermunicipal cooperation in waste management provision - Factors causing inefficiencies

*D. Gamble, S. Mason-Jones (AU)*

Challenges in delivering essential waste infrastructure in NSW, Australia

*T. Nigl, J. Scheiblauer, T. Bouvier-Schwarz (AT)*

Energy transition and renewable energies in waste management and circular economy - Potentials and obstacles in reducing energy dependency

*A. Allesch, B. Beigl (AT)*

Development of a deposit system for beverages - Obstacles and challenges

**SESSION A02 / / 9th October 2023 17:00-18:30**

**TEXTILE WASTE: RECYCLING CHALLENGES WITH REGARDS TO COMPOSITION  
& CONTAMINANTS**

Chair / *Presidente*: To be defined

*P. Kählig, W. Ipsmiller, A. Bartl, J. Lederer (AT)*

Composition of textile waste in Vienna

*U. Jenull, I. Duretek, T. Lucyshyn, C. Holzer (AT)*

Material characterisation of industrial textile waste under consideration of various contaminants

*A. Shtukaturova, M. Syc, T. Cajthaml (CZ)*

Assessment of the presence of hazardous components in textile wastes

*H. Logan, V. Rossi, A. Damgaard (DK)*

Collection, sorting and recycling of textiles - It is not only about the fiber types

**SESSION A03 / / 10th October 2023 09:00-10:30**

**CIRCULAR ECONOMY IN EU: HOW FAR FROM RECYCLING TARGETS**

Chair / *Presidente*: To be defined

*A. Reichel, I. Bakas, S. Colgan, E. Dils, T. Duhoux, A. van der Linden, D. Nelen, I. Vanderreydt, A. Winterstetter, M. zu Castell-Rüdenhausen, H. Punkkinen, P. Slotte (DK)*  
Municipal waste management - Is the EU meeting its recycling targets?

*A. Reichel, I. Bakas, B. Vidal, M. Christis, A. Vercajsteren, P. Nuss, R. Marra Campale, S. Steger (DK)*

Is the EU on track to double its circular material use rate?

*W. Ipsmiller, P. Kählig, A. Bartl (AT)*

Textile recycling: Are we halfway through yet?

*S. Hodgson, K. Frenken, L. Piscicelli, I. Williams (NL)*

Circularity failure and opportunities for innovation in services: the case of the hairdressing industry

*S. Salhofer (AT)*

Closing material cycles - The global dimension of plastic recycling

**SESSION A04 / / 10th October 2023 11:00-12:30**  
**CRITICAL ISSUES AND RISKS IN CIRCULAR ECONOMY**

Chair / *Presidente*: To be defined

*R. Moral, J. Sáez-Tovar, F. Salinas, J.P. Barranco, J.A. N. Barbani, S. Verstichel, A. Al-saadi, P. Cinelli, MJ. Lopez (ES)*

RECOVER project: Biotech synergies to solve plastic recycling and contamination challenges

*M. Ferrante, G. Oliveri Conti, P. Rapisarda (IT)*

The plastic wastes: an unresolved problem of management of European wastes

*P. Hennebert, A. Navazas (BE)*

Hazardous waste should be managed by risk in the controlled industrial loops of the modern circular economy, as products

*N. Van Camp, I.S. Lase, S. De Meester, S. Hoozée, K. Ragaert (BE)*

Cost analysis and exploration of plastics mechanical recycling

*T. Nigl, I. Mostböck (AT)*

Fire incidents in waste management and circular economy – The results of long-term monitoring and benefits of improved risk management

**SESSION A05 / / 10th October 2023 15:00-16:30**

**WASTE SORTING PERFORMANCE**

Chair / *Presidente*: To be defined

*H. Mendez (DE)*

The potential of sorting municipal solid waste before landfilling or incineration

*T. Lasch, K. Khodier, C. Feyerer, R. Sarc (AT)*

Development of an assessment method for unambiguous validation of machine performance

*C. Feyerer, K. Khodier, T. Lasch, R. Sarc (AT)*

Possibilities for indirect measurement of throughput performance in solid waste shredding

*J. Aberger, K. Khodier, R. Sarc (AT)*

RecAlcle: supporting manual sorting workers with Artificial Intelligence and Machine Learning - Framework and training data acquisition

**SESSION A06 / / 11th October 2023 09:00-10:30**

**C&D WASTE: QUALITY & CLASSIFICATION**

Chair / *Presidente*: To be defined

*L. Yuan, W. Lu, J. Chen (HK)*

Automatic estimation of recyclable construction waste compositions: A combinatorial computer vision-big data approach

*X. Gao (CN)*

Construction and demolition waste classification based on convolutional neural networks combined with knowledge transfer approach

*K. Nakamura, A. Matsuno, T. L. Nguyen, V. T. Nguyen, H. G. Nguyen, H. Sakanakura, Y. Isobe, K. Kawamoto (JP)*

Evaluation of environmental safety for recycled roadbed aggregates - Leaching characteristics of heavy metals

*A. Abou Jaoude, R. Fernandez, R. Zarrouk, Z. Jaouadi, A. Kraiem, I. Srour, O. Yazoghli-Marzouk (FR)*

Quality and classification of construction and demolition waste in Lebanon and Tunisia

*M. Castro-Diaz, M. Osmani, S. Cavalaro, P. Needham, S. Newport, M. Sands, B. Parker (GB)*

Assessment of plasterboards containing chemically purified gypsum waste



**SESSION A07 / / 11th October 2023 11:00-12:30**

**C&D WASTE: POLICIES & STRATEGIES**

Chair / *Presidente*: To be defined

*E. Bietlot, C. Collart (BE)*

End of waste of recycled aggregates in Wallonia: how to promote circular economy in the construction sector

*J. zum Brock , M. Doostdar, A. Morales Rapallo, K. Kuchta (DE)*

Advancements in pre-demolition audit processes

*W. Lee, W. Lu (HK)*

Public policies on illegal construction waste disposal in Hong Kong: evaluation and enhancement

*F. Karaca, A. Tlueken (KZ)*

Reforming construction waste management in Kazakhstan: a cost-benefit analysis of circular economy strategies for upgrading C&DW recycling centres in urban areas

**SESSION A08 / / 11th October 2023 15:00-16:30**

**C&D WASTE: VALORIZATION**

Chair / *Presidente*: To be defined

*J. Lederer, D. Blasenbauer (AT)*

The role of demolition waste reduction and recycling to reduce energy demand, greenhouse gas emissions and resource consumption: a case study from Vienna

*A. Morales Rapallo, J. zum Brock, M. Doostdar, K. Kuchta (DE)*

Utilization of recycled aggregates in concrete case study

*C. Trois, C. Loggia (ZA)*

The potential of valorisation of construction & demolition waste. Towards circular practices in the built environment in Durban

*R. Idir, M. Villey, Z. Jaouadi, O. Yazoghli-Marzouk (FR)*

Life cycle assessment of the first road constructed in Tunisia including recycled aggregate: focus on recycled aggregates from deconstructed concrete

*J. Fernandes, P. Ferrão (PT)*

Improving building refurbishment strategies to promote Circular Economy

**SESSION A09 / / 12th October 2023 09:00-10:30**

**RECYCLING OF WEEE**

Chair / *Presidente*: To be defined

*C. Zafiu, H. Steiner, A. Jandric, H. Böni, S. Salhofer (AT)*

Definition, classification and mapping of pervasive electronic products

*A. Otsuki (SE)*

Non-destructive characterization of milled printed circuit board particles for their recycling purpose

*E. Schmied, M. Pamperl, G. Obersteiner (AT)*

Analysis of the collection rate of refrigerators and freezers in Austria

*S. Gulshan, H. Shafaghat, H. Yang, W. Yang, P. Evangelopoulos (SE)*

Performance evaluation of ex-situ catalytic pyrolysis of WEEE fraction

*G. Dodbiba (JP)*

Recovery of valuable materials from spent LED light bulbs for recycling: an integrated environmental and economic assessment for identifying the best treatment option

*C. Tzala, E. Kastanaki, C. He, A. Giannis (GR)*

Design of a photovoltaic waste recycling system in Greece

*D. Fontana, F. Forte, C. Marcoaldi, O. Masetti, V. Piergrossi, M. Pietrantonio, S. Pucciarmati, M. Tammaro (IT)*

Materials recovery from end-of-life electrochemical storage systems: preliminary results from the IEMAP project

**SESSION A10 / / 12th October 2023 11:00-12:30**

**PACKAGING WASTE: CHARACTERIZATION**

Chair / *Presidente*: To be defined

*H. Stipanovic, P. Arth, G. Koinig, A. Tischberger-Aldrian (AT)*

Classification of plastic waste packaging multilayer films using handheld near-infrared (NIR) spectrometer

*L. Gritsch, G. Breslmayer, R. Rainer, J. Lederer (AT)*

Analysis of non-beverage hollow plastic packaging from MSW regarding product residues and packaging characteristics

*N. Kuhn, G. Koinig, A. Tischberger-Aldrian (AT)*

Comprehensive characterisation of lightweight packaging waste to improve recycling

*J. Guo, A. Alassali, K. Kuchta (DE)*

Influence from printing ink binder resin on the quality of Low-Density-Polyethylene (LDPE) recycling under extrusion process

*M. Faraldi, S.J. Benitez-Benitez, S. García, F. Leipold, P. Süß, H. Brundiek, R.M. Martínez-Espinosa, E. de Vries, F. Monzó (IT)*

Upcycling of polyethylene terephthalate (PET) wastes to generate biodegradable bioplastics for food and drink packaging

**SESSION A11 / / 12th October 2023 15:00-16:30**  
**INNOVATIVE RECYCLED MATERIALS FROM WASTE**

Chair / *Presidente*: To be defined

*T. Sattler, K. Doschek-Held, A. Krammer, D. Vollprecht (AT)*

Recycling of mineral wool waste into a new mineral wool

*V. Zepic Bogataj, P. Fajs, C. Peñalva, G. Tsatsos (SI)*

Citrus peel waste fibres for natural cosmetic and bioplastic packaging

*C. Olscher, A. Tolentino, D. Peral, F. Part (AT)*

An innovative process for designing safe and sustainable epoxy-based composites for automotive and aerospace

*S. Schmuck, C. Meyer, V. Preyl (DE)*

Agricultural systems of the future: Rural-Urban Nutrientship (RUN)

*H. Wang, D. Yue (CN)*

Can residual of landfill leachate evaporation be used to modify g-C<sub>3</sub>N<sub>4</sub>?

*V. Kaplan, E. Wachtel, I. Lubomirsky (IL)*

Recovery of lithium and heavy non-ferrous metals from spent lithium-ion batteries

*M. Vaccari, D.S. Premathilake, A.B. Botelho Junior, F. Colombi, J. Tenorio, D. Espinosa (IT)*

Exploring the potential of repurposing waste graphite obtained from the recycling of end-of-life lithium-ion batteries for wastewater treatment applications: preliminary results

**SESSION A12 / / 13th October 2023 09:00-10:30**

**HYDROTHERMAL CARBONIZATION OF WASTE**

Chair / *Presidente*: To be defined

*N.D. Berge, A. Sarrion, E. Suarez, J.M.R. Flora , J.R.V. Flora, R. Goel, L. Liu, E. Diaz, A.F. Mohedano (US)*

Developing environmentally beneficial strategies for the hydrothermal carbonization of food waste

*A. Bialowiec, E. Sygula, M. Hejna (PL)*

The evaluation of waste-based biochar potential in Poland

*C. He, A. Giannis (FI)*

Hydrothermal co-carbonization of sewage sludge and food wastes towards sustainable biowaste management and NO<sub>x</sub> emission reduction

*Y. Shao, W. Lu (CN)*

Acid hydrothermal solution recycling enhanced alkaline hydrothermal humification of hydrochar

**SESSION A13 / / 13th October 2023 11:00-12:30**

**PRODUCTS FROM HYDROTHERMAL CARBONIZATION OF WASTE**

Chair / *Presidente*: To be defined

*D. Moloeznik Paniagua, J.A. Libra, S. Rotter (DE)*

Hydrochar from digestate: assessment of its soil amendment feasibility, repeatability and comparison of heavy metals determination

*I. Moukazis, F. Simantiraki, E. Gidakos (GR)*

Microwave hydrothermal carbonization of rabbit manure: characterization and potential phytotoxicity of the products

*M. Hejna, A. Bialowiec (PL)*

Carbonized solid fuel obtained by torrefaction of MSW: emissions of VOCs

*E. Sygula, A. Bialowiec (PL)*

Wooden waste-derived biochar as a source of volatile organic compounds emission

**SESSION B01 / / 9th October 2023 15:00-16:30**

**LCA IN WASTE MANAGEMENT**

Chair / *Presidente*: To be defined

*T.H. Christensen, S. Schmidt, D. Laner, A.S. Varling, V. Bisinella (DK)*

Future challenges in waste LCA

*S. Schmidt, D. Laner (DE)*

Environmental waste utilization: an LCA-based indicator for waste management systems

*A. Nabavi-Pelesaraei, V. Bisinella, A. Damgaard (DK)*

Life cycle assessment of the dominant scenarios of waste management system in the north of Iran

*A.S. Varling, T.H. Christensen, V. Bisinella (DK)*

Life cycle assessment of alternative biogas utilisations, including carbon capture and storage or utilisation

*J. Jacobsen (DK)*

Life cycle assessment of developing recycling technologies of complex plastic products



**SESSION B02 / / 9th October 2023 17:00-18:30**

**WASTE MANAGEMENT AND ECOLOGY**

Chair / *Presidente*: To be defined

*R. Stegmann (DE)*

How ecological is Waste Management?

*L. Schebek, J. Baehr, T. Hagedorn, A. do Carmo Precci Lopes, V. Zeller (DE)*

Waste management in the context of the Green Deal - General framework, policy instruments and ongoing developments

*M. Suchowska-Kisielewicz, A. Jędrzak (PL)*

Analysis of different waste management scenarios for improving nitrogen flows in urban areas

*E. Jung, V. S. Rotter, C. Kirsten, J. Mühlenberg, A. Krause (DE)*

Dry toilets offer a sustainable solution for communal waste management and regional economies by enabling nutrient recycling

**SESSION B03 / / 10th October 2023 09:00-10:30**

**ARTIFICIAL INTELLIGENCE IN WASTE MANAGEMENT**

Chair / *Presidente*: To be defined

*A. Salih (AU)*

Utilising ChatGPT in waste management

*T. Lange, P. Meyer, M. Keppner, T. Tiedemann, M. Wittmaier, S. Wolff, T. Vögele (DE)*

First lessons learned of an Artificial Intelligence robotic system for autonomous coarse waste recycling using multispectral imaging-based methods

*K. Khodier, A.L. Krabichler-Mark, I. Werner, A. Rizvan, Y. Varsh (AT)*

Efficient calibration of discrete-element-method simulations for waste applications using particle sensor data and artificial intelligence

*M. Eriksson, A. Sjölund, E. Svensson, C. Malefors (SE)*

Development of digital know as you throw tools for household food waste reduction

*A.N. David, Y. Sewsynker-Sukai, E.B. Gueguim Kana (ZA)*

Complete valorization of lignocellulosic and industrial wastes for lactic acid production: process optimization, Kinetic assessment and Artificial intelligence modelling

**SESSION B04 / / 10th October 2023 11:00-12:30**

**ARTIFICIAL INTELLIGENCE IN WASTE TREATMENT MONITORING**

Chair / *Presidente*: To be defined

*L. Kandlbauer, R. Sarc (AT)*

Opportunities from sensory retrofitting in mechanical waste treatment plants - Real time quality determination via digital material flow monitoring

*G. Hafner (DE)*

Monitoring and reduction of food waste by using the RMFood-App - Project A2UFood (Heraklion)

*C. Ratti, C. Bax, B.J. Lotesoriere, L. Capelli (IT)*

Towards real-time monitoring of odour emissions from a waste treatment plant: a case study

*W. Peng, L. Fan, H. Zhang, H.Y. Xian, F. Lü, P. J. He (CN)*

Analysis of biochemical composition and detection of physical contaminants in digestate using hyperspectral imaging

**SESSION B05 / / 10th October 2023 15:00-16:30**

**LCA IN WASTE MANAGEMENT**

Chair / *Presidente*: To be defined

*B. Staley, S. Boxman (US)*

Life Cycle Assessment of curbside material recovery

*K. Czerwińska, S. Del Pero, L. Lombardi, A. Polettini, R. Pomi, A. Rossi, S. Shivali, M. Śliz, M. Wilk, T. Zonfa (IT)*

Life Cycle Assessment of two alternative biorefinery processes

*H. Logan, J.L. Hermary, A. Damgaard (DK)*

LCA of recycling of textiles in a circularity context - How much of the textile production value chain impact is avoided?

*M. Doostdar, J. zum Brock, A. Ceraso, A. Morales Rapallo, K. Kuchta (DE)*

Comparative life cycle assessment of different recycled concrete aggregates

**SESSION B06 / / 11th October 2023 09:00-10:30**

**RECOVERY OF MATERIAL FROM PLASTIC WASTE**

Chair / *Presidente*: To be defined

*D. Konkina, H. Flachberger, H. Schwarz (AT)*

Development of recycling production line for PVC from cable scrap

*M. Peer, B. Berninger, T. Fehn, A. Hofmann (DE)*

Chemical recycling of PVC-containing plastic waste for recycling of critical metals

*J. Geier, C. Barretta, M. Bredács, G. Oreski (AT)*

Polypropylene recycling – How to improve the quality of PP recyclates

*C. Barretta, G. Koinig, M. Bredács, J. Geier, E. Grath, L. Meinhart, E. Helfer, G. Oreski (AT)*

Sorting of plastic packaging films, removal of multilayers and effects on properties of recyclates

*F. De Bruijn, F.J. Cañavate, M. Fajardo, X. Colom (ES)*

Viability of Mechanochemical devulcanization process of EPDM elastomeric waste

**SESSION B07 // 11th October 2023 11:00-12:30**

**DECISION TOOLS IN WASTE MANAGEMENT**

Chair / *Presidente*: To be defined

*B. Rutrecht, S. Roskogler, T. Nigl, R. Pomberger (AT)*

Zero Waste - Chances and risks of (not) applying zero waste strategies and the importance of measuring sustainability in the recycling sector.

*T. Hagedorn, A. do Carmo Precci Lopes, L. Schebek, M. Vogelgesang, W. Benner, C. Li, C. Plociennik, Hossein, S. Knetch, B. Kellerer (DE)*

The practical use of a digital product passport - Development of an application-friendly tool for e-waste decision support

*A.M. Domingues, R.G. Souza, S.D. Mancini, F.C.S. M. Padoan, J.R.A. da Silva (BR)*

Life Cycle Assessment of scenarios for end-of-life management of lithium-ion batteries from smartphones and laptops

*Y. G. Abera, C. Trois (ZA)*

The Wrose model's methodological aspects and its four levels of sustainability indicators

*Y. Tan, Z. Wen (CN)*

Historical evolution analysis of China embodied plastics footprint from 2002 to 2017

**SESSION B08 / / 11th October 2023 15:00-16:30**

**PFAS IN LANDFILLS ENVIRONMENT**

Chair / *Presidente*: To be defined

*M. Johansson, M. Pettersson (SE)*

Environmental law issues regarding PFAS pollution in waters around landfills in Sweden

*A. Varma A., G.K. Varghese (IN)*

PFAS (per-and poly-fluoroalkyl substances) detected for the first time in the landfill leachate of Kerala

*A. Salih (AU)*

Case study: containment of PFAS contaminated soil at a landfill site

*M. Saleem, M. Pasquale, G. Tomei, K. Ulucan-Altuntas, M. Roverso, S. Bogialli , E. Marotta, M.C. Lavagnolo (IT)*

Performance evaluation of three atmospheric plasma reactors for the treatment of aged/stabilized landfill leachate containing PFAS

*K. Ulucan-Altuntas, E. Filippetto, M. Saleem, G. Tomei, E. Marotta, C. Paradisi (IT)*

Treatment performance of atmospheric cold plasma enhanced by boron-doped reduced graphene oxide for degradation of perfluorooctanoic acid (PFOA)

**SESSION B09 / / 12th October 2023 09:00-10:30**

**MICROPLASTICS IN SURFACE WATERS**

Chair / *Presidente*: To be defined

*G. Walburn, I. D. Williams (GB)*

Macro-, meso- and micro-plastics around an iconic chalk river: distribution, abundance, types and potential sources

*S. Lenz, R. Ottner, G. Obersteiner (AT)*

Evaluation of different sampling methods for microplastic monitoring in rivers

*R. Ottner, S. Lenz, G. Obersteiner (AT)*

Comparison of different methods for river sample microplastic analysis

*M.C. Lavagnolo, M. Modesti, V. Poli (IT)*

PLA degradation in fresh water according to EN ISO 14851

*T. Gutsa, T. Mani, C. Trois (ZA)*

Using floating GPS drifters to understand the pathways and fate of macroplastic debris  
In South Africa's Umgeni river estuary

*V. Poli, M.C. Lavagnolo, L. Litti (IT)*

Sampling of microplastics in the Atlantic Ocean



**SESSION B10 / / 12th October 2023 11:00-12:30**

**MICROPLASTICS IN COMPOSTING & ANAEROBIC DIGESTION**

Chair / *Presidente*: To be defined

*C. Zafiu, B. Vay, E. Binner, M. Huber-Humer (AT)*

Digestates and composts: macro- and microplastics in biological waste treatment facilities

*S. Dilraj, E. Johnson, T.S. Anantha Singh, G.K. Varghese, C. Zafiu (IN)*

Heavy metal accumulation on microplastics in compost - The role of biofilm

*T. Hu, F. Lü, Z. Yang, H. Zhang, P. He (CN)*

Source tracking microplastics in household biogenic waste digestate

*M. Falzarano, A. Polettini, R. Pomi, A. Rossi, T. Zonfa, M.P. Bracciale, F. Sarasini, J. Tirillò, G. De Gioannis, A. Muntoni (IT)*

Compostable single-use items as a source of micro-bioplastics in digestate

**SESSION B11 // 12th October 2023 15:00-16:30**

**MICROPLASTICS IN DIFFERENT ENVIRONMENTS**

Chair / *Presidente*: To be defined

*F. Wei, Q. Tan, Y. Chen, J. Li (CN)*

Mechanical recycling of plastic waste: a neglected source of microplastic

*F. Lou, J. Wang, Q. Huang (CN)*

Mass concentration and distribution characteristics of microplastics in landfill mineralized refuse

*T.P. Vo, J. Rintala, C. He (FI)*

The mitigation of typical microplastics in sewage sludge via hydrothermal process

*J. Yoo, M. Nomura, S. Oleszek, R. Homma, K. Oshita, M. Takaoka (JP)*

Heavy metals and microplastics interactions: insights from batch experiments

*A. Jančauskas, R. Skvorčinskienė, I. Kiminaitė, L. Vorotinskienė, R. Paulauskas (LT)*

Bioplastic degradation under real-life conditions: characterization by FTIR-ATR and FTIR-TGA methods

**SESSION B12 / / 13th October 2023 09:00-10:30**  
**MATERIAL FLOW ANALYSIS AND CARBON FOOTPRINT IN WASTE**  
**MANAGEMENT**

Chair / *Presidente*: To be defined

*G. Hafner (DE)*

Method development for the provision of basic data for material and substance flow analyses in waste management

*K.R. Mattson, L. Lindgreen Lauritsen, J. Berg Pettersen (NO)*

Material and embedded GHG emission flows of electronic waste treatment in Norway

*G. De Feo, C. Carotenuto, A. Grosso (IT)*

MSW regional and national mass flow analyses used as tools to verify the integrated waste management strategy: the case study of Italy

*S. Zhang, J. Li, Q. Tan (CN)*

An input-output material flow analysis model for deriving the embedded plastics in China

*L. Zhang, H. Li (CN)*

Carbon footprints of recycling milk carton

*A. Kihl, Y. Cohen (SE)*

Recovery of high-grade salts from Air Pollution Control Residues – First large scale Ash2®Salt plant in Sweden

**SESSION B13 / / 13th October 2023 11:00-12:30**

**ENVIRONMENTAL IMPACT ASSESSMENT IN WASTE MANAGEMENT**

Chair / *Presidente*: To be defined

*J. Zeilinger, M. Huber-Humer (AT)*

Circularity and sustainability of temporary housing facilities - Challenges and opportunities of environmental assessments

*Y. Gu, X. Gao (CN)*

Environmental risk assessment near a typical spent lead-acid battery recycling factory in China

*L. Grabuschnig, J. Fellner, S. Bindreiter (AT)*

Environmental impact assessment of different modifications of the Viennese building stock

*T. Liu, Q. Zhang, J. Cao (CN)*

Environmental impact and cost-benefit analysis of municipal solid waste collection, transportation and treatment system in Beijing, China

**SESSION C01 / / 9th October 2023 15:00-16:30**

**MANAGEMENT OF UNCONVENTIONAL WASTE**

Chair / *Presidente*: To be defined

*P.K. Dagadu, G. Sagoe, M. Oteng-Ababio (GH)*

Household hazardous waste: gauging the knowledge level and its implication for domestic handling and disposal practices

*K. Mphahlele, R.H. Matjie, J.R. Bunt (ZA)*

Chemical, mineralogical, physical and petrographic properties and reactivity of two South African fine coal refuse and their beneficiated fractions

*M. Pettersson, O. Johansson (SE)*

Mining waste as a resource in the green transition: legal conditions for secondary extraction

*T. Gisbert (FR)*

Dealing with unexpected waste during the implementation of civil works: a case study highlighting technical, legal & safety aspects

*K. Manabe, T. Shimaoka, S. Iwashita (JP)*

Disaster waste management in response to disaster scale

**SESSION C02 / / 9th October 2023 17:00-18:30**

**COMPOSTING: STRATEGIES & PRE-TREATMENT**

Chair / *Presidente*: To be defined

*A. García-Rández, V. Blay, J. Andreu, M.D. Pérez-Murcia, C. Alvaro, M.A. Bustamante, E. Martinez-Sabater, L. Orden, S. Sanchez, R. Moral (ES)*

Developing new composting approaches using non-sorted biowaste compost as ingredient to obtain improved EU biofertilizers

*V. Scheff, G. Dürl, D. Laner (DE)*

Composition, characterization and mechanical processing of compost oversize material from biowaste treatment plants

*E. Binner, P. Behnisch, C. Zafiu, M. Huber-Humer (AT)*

Sanitisation of faeces by composting according to Austrian state of the art

*D. Xie, K. Zheng, H. Wang (CN)*

Reusing nitrate-rich wastewater as a moisture conditioning agent during composting increases total nitrogen content of compost product by increasing nitrate

**SESSION C03 / / 10th October 2023 09:00-10:30**

**COMPOSTING: PROCESSES & EMISSIONS**

Chair / *Presidente*: To be defined

*D. Li, M.K. Manu, J.W.C. Wong (HK)*

Synergetic effect of combined biochar and nitrifying inoculum on nitrogen conservation during food waste digestate composting

*A.M. Fredenslund, M. Edjabu., C. Scheutz (DK)*

Methane and nitrous oxide emission factors for windrow composting of garden waste in Denmark based on ground-based remote sensing measurements

*Y. Wang, H. Zhang, F. Lü, P. He (CN)*

Odor characteristics and health risks of gas emissions during solid waste biotreatment and landfilling

*K. Sobieraj, D. Derkacz, A. Krasowska, A. Białowiec (PL)*

Bacillus bacteria as carbon monoxide producers during composting: lab-scale evaluation

**SESSION C04 / / 10th October 2023 11:00-12:30**

**ANAEROBIC DIGESTION: PROCESSES & BIOGAS PRODUCTION**

Chair / *Presidente*: To be defined

*A. Kasinath, W. Artichowicz, H. Byliński, A. Remiszewska-Skwarek, M. Szopińska, E. Zaborowska, A. Luczkiewicz, S. Fudala-Ksiazek (PL)*

Intensified methane content in biogas by low-thermal processing of waste activated sludge

*O. Larsen, M. Spahr, M. Fechter, T.-L. Vu-Han, L. Fechter, V. Rotter (DE)*

The loop fermenter - Demonstration of a novel biogas process for residual lignocellulosic biomass

*A. Folino, A. Randazzo, F. Tassi, F. Tatàno, S. de Rosa, A. Gambioli (IT)*

Lab-scale characterisation of bioenergy potential from green waste through anaerobic digestion: thermophilic versus mesophilic conditions

*L. Luo, J.W.C. Wong (HK)*

New insight into autogenic pressure on solid-state food waste fermentation

*M. Carchesio, M. Di Addario, F. Tatàno, S. de Rosa, A. Gambioli (IT)*

Biochemical methane potential of biostabilised organic waste destined for landfilling: evaluation under mesophilic and thermophilic conditions

*R. Tomczak-Wandzel, B. Szatkowska (NO)*

Bioplastics influence on anaerobic digestion of organic fraction of municipal waste (OFMSW)



**SESSION C05 // 10th October 2023 15:00-16:30**

**BIOREFINERY PROCESSES**

Chair / *Presidente*: To be defined

*G. Farabegoli, A. Marrapodi, F. Minniti, F. Tatti, G. Costa, L. Lombardi, A. Polettoni, R. Pomi, A. Rossi (IT)*

BBCircle - Assessment of a new circularity index

*W. Huo, R. Ye, Y. Shao, M. Bao, R. Stegmann, W. Lu (CN)*

Enhance ethanol-driven carboxylate chain elongation by Pt@C in simulated sequencing batch reactors; process and mechanism

*I. Kontogeorgos, H. Byliński, M. Szopińska, V. Shankar, A. Luczkiewicz, S. Fudala-Ksiazek (PL)*

Low-thermal pretreatment of food waste substrate prior to fermentation for medium chain carboxylic acids production

*F. Lü, Z. Wang, Y. Liu, J. Guo, P. He (CN)*

Recovery of high-value products from liquid digestate beyond biogas and humus

*F. Pasciucco, E. Rossi, I. Pecorini (IT)*

Environmental evaluation of a novel biorefinery configuration for the recovery of biopolymers (PHA): a Life Cycle Assessment

*G. Campo, D. Panepinto, V.A. Riggio, A. Cerutti, M. Ravina, M. Zanetti (IT)*

Coffee roasting byproducts. Two technologies compared: anaerobic digestion and direct combustion. A case study

*M. Materazzi, H. Zhu, M. Babkoo, A. Cavaliere, M.-O. Coppens (GB)*

Waste to Olefins: experimental review of new chemical recycling concepts

**SESSION C06 / / 11th October 2023 09:00-10:30**

**FOOD WASTE GENERATION & MANAGEMENT**

Chair / *Presidente*: To be defined

*L. Preite, G.P.C. Tancredi, A. Paini, G. Vignali (IT)*

Development of a simulation model to carry out technical-economical analysis of a food waste valorisation process

*T. Okayama, K. Watanabe, H. Yamakawa (JP)*

Which food parts are considered edible and should be included in food waste reduction targets

*G. Obersteiner, S. Luck, R. Ottner, E. Schmied (AT)*

Food waste generation in school catering

*G. Obersteiner, S. Luck, L. Ortega Menjivar, E. Schmied (AT)*

Representative study on food waste generation in Austrian households

*K. Watanabe, T. Okayama, H. Yamakawa, M. Nonomura, Y. Seta (JP)*

Development and investigation on an effective intervention method with a 'nudge' factor for reducing avoidable food waste from households

**SESSION C07 // 11th October 2023 11:00-12:30**

**FOOD WASTE MINIMIZATION**

Chair / *Presidente*: To be defined

*N. Sundin, C. Malefors, L. Bartek, M. Eriksson (SE)*

Reducing food waste in Swedish school catering: testing the effectiveness of nudging

*Y. Seta, H. Yamakawa, T. Okayama, K. Watanabe, M. Nonomura (JP)*

Interventions to prevent household food waste with supporting tools: effects on awareness and food waste reduction

*N. Sundin, L. Bartek, C. Malefors, M. Eriksson (SE)*

Unveiling the key success factors for effective surplus food donation – A case study from Sweden

*M. Eriksson, L. Bartek, N. Sundin, C. Malefors (SE)*

Reducing waste of eggs in supermarkets - Evaluating the impact of a policy change

*M. Nonomura, H. Yamakawa, T. Okayama, K. Watanabe, Y. Seta (JP)*

Promotion of "Use-Up Day" by local governments in Japan: influence of waste reduction campaigns on household food waste behavior

**SESSION C08 / / 11th October 2023 15:00-16:30**

**WASTE IN AGRICULTURE**

Chair / *Presidente*: To be defined

*O.A. Lavrichshev, V.E. Messerle, A.L. Mosse, G. Paskalov, M.N. Orynbasar, A.B. Ustimenko (KZ)*

Plasma-chemical processing of agricultural waste: numerical analysis and experiment

*H.N. Abu Tayeh, Y. Gerchman, J. Asscher, J. Venus, R. Schneider, H. Azaizeh (IL)*  
Olive mill solid waste for added value applications

*S. Ochiai, K. Ishii, G. Ham, T. Furuichi (JP)*

Evaluation of the impact of biogas plant introduction on material cycle in dairy farming area in Japan

*T. Hoang, O. Larsen, J. Kurz, V.R. Rotter, L. Fechter (DE)*

Fertilization potential of recovered sulfur from biogas purification

*M. Faraldi, R. Prugger, F. Monzò Sánchez, S. Martinez Lopez (IT)*

The hidden value of agri-food residues, revealed and boosted through a circular approach: Agro2Circular

*M. Miccio, B. Tauleigne, M. Fraganza, P. Brachi, D. Albanese (IT)*

Engineered recovery of bioactive substances from the residues of hazelnut agro-industrial processing

**SESSION C09 / / 12th October 2023 09:00-10:30**

**ANAEROBIC DIGESTION: BIOHYDROGEN & OTHER ADVANCED ASPECTS**

Chair / *Presidente*: To be defined

*S.M. Ng, A. Kosheleva, M. Petersmann, I. Atamaniuk, K. Kuchta (DE)*

Identification of stability indicators for in-situ biomethanation during dry batch fermentation of biowaste: literature review and statistical analysis

*A. Dell'Orto, C. Trois (ZA)*

Potential for bio-hydrogen production from organic waste in a large South African Metropolitan Municipality

*A. Kosheleva, S.M. Ng, M. Petersmann, K. Kuchta (DE)*

In-situ hydrogen biomethanation in dry discontinuous fermentation

*D.D. Zhao, H.R. Yuan, Y. Chen, D.Z. Chen (CN)*

A combinatorial optimization study of food waste anaerobic digestion pre- and post-treatments by using P-graph method

*M. Falzarano, T. Kamperidis, G. Kanellos, G. Lyberatos, A. Polettini, R. Pomi, A. Rossi, A. Tremouli, T. Zonfa (IT)*

Enhancing energy recovery from cheese whey through dark fermentation combined with different bio-electrochemical processes

*M. Kumari, M.K. Chandel (IN)*

Assessing the impact of sewage sludge from different wastewater treatment technologies on biomethane potential in anaerobic co-digestion assay

**SESSION C10 // 12th October 2023 11:00-12:30**  
**GREENHOUSE GASES IN BIOWASTE MANAGEMENT**

Chair / *Presidente*: To be defined

*J.W.C. Wong, M.K. Manu, D. Li (HK)*

Circular economy of food waste digestate composting

*S. Stegenta-Dabrowska, P. Telega, M. Dworniczak, E. Sygula, M. Bednik (PL)*

Effective GHG mitigation from composting with the use of biochar from compost

*G. Ham, N. Shinoda, K. Ishii, S. Ochiai (JP)*

Recovery potential of Nitrogen and Phosphorus from biomass waste management system and their impact on GHG emission in Japan

*B. Batinic, I. Berezni, B. Tot, T. Marinkovic, G. Vujic (RS)*

Estimation of GHG emissions for different food waste categories from restaurants - Case study of Novi Sad (Serbia)

**SESSION C11 / / 12th October 2023 15:00-16:30**

**ADVANCED WASTEWATER TREATMENT**

Chair / *Presidente*: To be defined

*N.O. Sanjeev, E.V. Aswathy (IN)*

Effect of operational parameters on photocatalytic removal of acetaminophen using green synthesized zinc oxide nanoparticle

*A. Abhiram, N.S.B. Virinchi, N. Sai Chandra, S. Saji, Bibin, T.S. Anantha Singh, G.K. Varghese (IN)*

Removal of phenol from waste water using fenton process

*D. Jang, J. Won, S. Kang, A. Jang (KR)*

Effects of different bio-carriers in moving bed biofilm reactors for high-strength nitrogen wastewater treatment

*K.K. Basaira Thamanna, A.K. Anjana, A. Gautam, Anusree, T.S. Anantha Singh, E.V. Aswathy (IN)*

Avocado seed and custard apple seed as natural coagulants for the treatment of grey water

*V. Grossule, M.C. Lavagnolo (IT)*

Wastewater treatment by using Black Soldier Fly larvae: principles & results

*M. Domini, G. Bertanza (IT)*

Waste minimisation in wastewater treatment: the potential of aerobic stabilization in drastic sludge reduction

**SESSION C12 / / 13th October 2023 09:00-10:30**

**SOIL REMEDIATION**

Chair / *Presidente*: To be defined

*M. van Praagh, J. Jennerheim, C. Marburger, M. Hansson, E. Hammer (SE)*

Effects of urban contaminants and reclaimed materials on soil functions

*A. Khandelwal, M. Shrivastava (IN)*

Rice growth and soil enzyme activities in lead contaminated Inceptisol

*L. Priya, G. K. Varghese (IN)*

Source apportionment of heavy metals and organic compounds at a contaminated site using Monte Carlo Analysis

*K. Zheng, H. Wang (CN)*

Pollutant treatment performance of Passive Convergence-Permeable Reactive Barrier (PC-PRB): a case study

*A.G. Bindu, E.V. Aswathy, G.K. Varghese (IN)*

Depositions from air on soil present an efficient forensic tool to establish past air pollution incidents

*T. Ambaye, A. Franzetti, A. Bava, L. Mellere, M. Vaccari (IT)*

Treatment of hydrocarbon-contaminated soil with biosurfactants obtained from agricultural waste

*M. Somani (EE)*

Challenges associated with the remediation of high organic soils



**SESSION C13 // 13th October 2023 11:00-12:30**

**PACKAGING WASTE: RECYCLING**

Chair / *Presidente*: To be defined

*D. Blasenbauer, A-M. Lipp, J. Fellner, J. Lederer (AT)*

Assessment of the recovery potential of recyclables via automated sorting of municipal solid waste – A case study from Austria

*A.-M. Lipp, D. Blasenbauer, J. Lederer (AT)*

Status, lack and increase potentials of recycling rates for packaging waste: a case study from Tyrol, Western Austria

*Z.K. Chong, K. Kuchta (DE)*

Recycling of polyolefin packaging for food applications: requirements and gaps

*A. Painsi, G. Vignali (IT)*

End-of-life modelling and environmental evaluation of paper packaging waste

*G. Calì, F. Parrillo, C. Boccia, F. Ardolino, A. Pettinau, U. Arena (IT)*

Performance characteristics of a pilot-scale plastics waste gasifier using oxygen-enriched air and steam

**SESSION D01 / / 9th October 2023 15:00-16:30**

**WASTE GENERATION & CHARACTERIZATION**

Chair / *Presidente*: To be defined

*L. Izquierdo-Horna, R. Kahhat, I. Vázquez-Rowe (PE)*

Identification of variables related to household solid waste generation forecasting in residential areas

*P. Beigl, A. Happenhofer, R. Ottner, S. Salhofer (AT)*

Modelling commercial waste generation as share of municipal residual waste collection

*G. Ferrari, R. Ferrari, L. Ianelli (IT)*

Technical-analytical procedures for the verification of the quality of waste management services in a metropolitan city: the experience of Rome Capital

*Y. Qi, P. He, D. Lan, H. Xian, F. Lü, H. Zhang (CN)*

New ideas for smart waste management: machine learning assisted rapid identification of characteristics of Municipal Solid Waste (MSW)

*A. Ramos (PT)*

Considerations on waste characterization and the production of energy: how useful can waste be?

*M. Sharkey, D. Drage, W. Stubbings, M. Coggins, H. Berresheim, S. Harrad (IE)*

Persistent organic chemicals in the Irish waste stream

**SESSION D02 / / 9th October 2023 17:00-18:30**

**SEPARATE WASTE COLLECTION**

Chair / *Presidente*: To be defined

*P. Beigl, A. Happenhofer (AT)*

Developing robust KPIs for waste collection and composition: lessons learned from residual, paper and biogenic waste composition analyses

*H. Yamakawa (JP)*

Municipal policies for promoting household plastic recycling in Japan

*P. Rodrigues, R. Rodrigues, F. David, N. Melo, E. Soares (PT)*

Food waste collection versus food waste disposers: the case study of a Portuguese city

*J. Liu, K. Zhou (CN)*

Optimization of MSW management system based on source separation in megacities of China

**SESSION D03 / / 10th October 2023 09:00-10:30**

**COMBUSTION TECHNOLOGIES: STRATEGIES & ADVANCED ISSUES**

Chair / *Presidente*: To be defined

*M.J. Enengel, S.A. Viczek, R. Sarc (AT)*

Reaching EU recycling targets: influence on SRF quality

*D. Panepinto, M. Zanetti (IT)*

Overview on pollution control technologies in waste combustion plants: analysis on the environmental aspects

*V. Scheff, G. Dürl, H. Ali Raza, K. Kätzl, D. Laner (DE)*

Efficient thermal utilization of compost oversize material: processing steps for the improvement of fuel quality and combustion behavior

*T. Rashwan, T. Fournie, M. Zanoni, C. Switzer, J. Torero, G. Grant, J. Gerhard (GB)*

Recent insights into the use of smouldering combustion for waste management

*V. Bisinella, A.S. Varling, T.H. Christensen (DK)*

Scenarios for waste incineration in a regional waste management system for Europe

**SESSION D04 / / 10th October 2023 11:00-12:30**

**PYROLYSIS: PROCESSES & PERFORMANCE**

Chair / *Presidente*: To be defined

*C. Eden, R. Eden (GB)*

Pyrolysis - An Integral Link in the Circular Economy

*M. Wang, X. Song, T. Jia, L. Yin, D. Chen, X. Ma (CN)*

Effect of plastic melting on pyrolysis process of biomass in bubbling bed

*A. Serras Malillos, S.D. Stefanidis, S. Karakoullia, A.A. Lappas, A. Lopez-Urionabarrenechea, E. Acha, B.M. Caballero (ES)*

Ex-situ thermo-catalytic upgrading of pyrolysis volatiles from end-of-life (EoL) fibre reinforced polymer (FRP) waste: catalyst screening study on a fixed bed reactor

*D.Y. Chae, J.K. Kim, K.B. Park, J.S. Kim (KR)*

Pyrolysis and oxidative pyrolysis of palm kernel shells using a continuous two-stage pyrolysis process for the production of phenol-rich oil: The effect of the reaction temperature and the concentration of oxygen in fluidizing medium

*Y. Zang, D. Chen, S. Ge, L. Yin (CN)*

Prediction of MSW pyrolysis products based on deep artificial neural networks

**SESSION D05 / / 10th October 2023 15:00-16:30**  
**WASTE MANAGEMENT IN DEVELOPING COUNTRIES**

Chair / *Presidente*: To be defined

*J. Gutberlet, I. de Carvalho Vallin (CA)*

Waste picker rights and social inclusion: the creation of a university with knowledge democracy

*P.J. Shaw, J.A. Wright, M.L.H. Thomas-Possee, A.G. Hill, J. Okotto-Okotto, L. Okotto, M. Dzodzomenyo (GB)*

Using nationally representative household surveys to estimate waste arisings in developing and low-income countries

*P. Subrata, I.M. Rafizul, M. Alamgir, S.K. Sarkar, E. Kraft, G. Biastoch, S. Setu, J.A. Saju, A.A. Noman (BD)*

Role of SCIP plastics project to mitigate plastic pollution in Khulna region of Bangladesh

*S. Berner, S. Setu, H.M. Nahid, E. Kraft, I.M. Rafizul (DE)*

Quantifying plastic emissions to assess the environmental impact of open landfill sites

*N. Mahdjoub, A. Amrapersad, C. Trois (ZA)*

The state of the waste tyre recycling industry in South Africa, post Covid-19, within a circular economy framework

**SESSION D06 / / 11th October 2023 09:00-10:30**

**EDUCATION & COMMUNICATION**

Chair / *Presidente*: To be defined

*G. De Feo (IT)*

How an innovative environmental education program can help the waste management sector

*J. Zeilinger, G. Ecker (AT)*

Greening humanitarian aid: integrating solid waste management into WASH emergency response trainings - A case study of the Austrian Red Cross training plan

*L. Lombardi (IT)*

LIFE-C: promoting Life Cycle thinking in higher education

*B. Hauge (DK)*

Is it possible to transform citizens' reluctance towards reusing personalized objects?  
The case of discarded bed mattresses

*V. Leppälä, S. Vanhamäki, K. Manskinen (FI)*

Promoting the separate collection of biowaste through citizen engagement

**SESSION D07 / / 11th October 2023 11:00-12:30**

**THERMAL RECYCLING OF PLASTIC WASTE**

Chair / *Presidente*: To be defined

*U. Arena, F. Parrillo, C. Boccia, F. Ardolino (IT)*

Advanced recycling technologies for mixed plastics waste. A review

*A. Veksha, Y. Wang, G. Lisak (SG)*

Hydrogen from plastic waste: effects of feedstock composition on product characteristics

*H.J. Kim, J.W. Kim, J.S. Kim (KR)*

Steam gasification of waste plastic using a two-stage gasifier for producing clean hydrogen-rich syngas with active carbon

*B.B. Perez-Martinez, A. Lopez-Urionabarrenechea, E. Acha, B.M. Caballero, A. Serras-Malillos, J. de la Torre-Bilbao (ES)*

Thermochemical conversion of plastic-rich waste coming from sorting of municipal solid waste (MSW) into oils of interest for the petrochemical industry

*S. Lotfi, M. Beaulne, J.-C. Morais, W. Ma, K. Austin, J. Butler (CA)*

Hydrothermal gasification of plastic: exploratory study for the conversion of waste to hydrogen as a zero-carbon fuel



**SESSION D08 / / 11th October 2023 15:00-16:30**

**FLY ASH: CHARACTERIZATION & TREATMENT**

Chair / *Presidente*: To be defined

*M. Šyc, E. Korotenko, J. Jadrný, T. Baloch, P. Mašín (CZ)*

Material recovery in waste-to-energy fly ash treatment

*J.M.C. Tan, A. Saffarzadeh, T. Shimaoka (JP)*

Behavior of landfilled stabilized fly ash treated by different treatment methods for the past 27 years

*E. Korotenko, M. Syc, J. Jadrny, T. Baloch, P. Masin, L. Gric (CZ)*

Possibilities of fly ash/APCr treatment in waste-to-energy plant: the environmental perspective

*Y. Zhang, D.C.W. Tsang (HK)*

Tailoring low-carbon cementitious materials with high GGBS incorporation for stabilization/solidification of MSWI fly ash

*A. R. Jahangiri, S. Sala, B. Ebin, C. Nilsson, K. Karlfeldt Fedje, J. Rissler (SE)*

Single particle fly ash analysis for improved elemental correlation outcomes in synchrotron-based NanoXRF

*W. Qi, J. Liu (CN)*

Safe reutilization of MSWI fly ash from grate furnace and fluidized bed incinerator via a co-reduction process

**SESSION D09 / / 12th October 2023 09:00-10:30**

**MSWI BOTTOM ASH: CHARACTERIZATION & RECOVERY OPPORTUNITIES**

Chair / *Presidente*: To be defined

*J. Mühl, S. Hofer, D. Blasenbauer, F. Feher, J. Lederer (AT)*

Treatment of MSWI bottom ash from grate incineration and fluidized bed combustion: a comparison

*S. Hofer, J. Mühl, J. Lederer (AT)*

Chemical analysis of the output-flows of an IBA processing plant in Austria – The fate of Pb and Cd

*O. Hjelmar, J. Hyks, J. Kallesøe, S. Dyhr-Jensen (DK)*

Utilisation of MSWI bottom ash in Denmark - A valuable contribution to the circular economy

*H. Muñiz Sierra, M. Syc, F. Meneces Fuertes (CZ)*

Optimization of a selective fragmentation process for the improvement of copper recovery in the incineration bottom ash fine fraction

*M. van Praagh, J. Lundberg, J. Rissler, A. Rundegren, A. Larsson, S. Janhäll (SE)*

Dust emissions and deposition during construction works with recycled MSWI-bottom ash

**SESSION D10 / / 12th October 2023 11:00-12:30**

**BOTTOM ASH IN CONCRETE PRODUCTION: PROCESS & ENVIRONMENTAL BEHAVIOR**

Chair / *Presidente*: To be defined

*D. Laner, I. Vateva, M. Laabs, B. Middendorf (DE)*

Processing routes for municipal waste incineration bottom ash as a substitute for aggregates and binders in concrete

*F. Feher, J. Mühl, J. Hron, O. Zeman, J. Lederer (AT)*

Properties of concretes containing fluidized bed combustion bottom ash as partial substitute for natural aggregate

*J. Hyks, O. Hjelmar (DK)*

Initial screening of leaching of per- and polyfluoroalkyl substances (PFAS) from Danish municipal solid waste incineration bottom ash used as secondary aggregate

*L. Acampora, G. Costa, F. Lombardi, C. Mensi, I. Verginelli (IT)*

Proposal of a tiered risk-based approach for evaluating the utilisation potential of mineral fractions from incineration bottom ash treatment

**SESSION D11 / / 12th October 2023 15:00-16:30**

**CARBON CAPTURE BASED PROCESSES**

Chair / *Presidente*: To be defined

*S. Andersson, M. Biermann (SE)*

Gas pretreatment for CCS in Waste-to-Energy plants

*B. Zach, J. Pluskal, J. Jadrny, R. Somplak, J. Kudela, M. Syc (CZ)*

Energy demands of membrane-based carbon capture at a waste-to-energy plant

*K. Elyasi Gomari, S. Rezaei Gomari, D. Hughes, T. Galadanchi Ahmed (GB)*

Characteristic of CO<sub>2</sub> sequestration in steel slag wastes at elevated temperature and longer contact time

*A. Masi, G. Costa (IT)*

Investigation of carbonation-based processes to obtain products from industrial alkaline residues while storing CO<sub>2</sub> in the framework of the BBCircle project

**SESSION D12 / / 13th October 2023 09:00-10:30**  
**PERFORMANCE OF COVERS VS LANDFILL LIFETIME**

Chair / *Presidente*: To be defined

*K. Berger, E. Mysina, A. Eschenbach (DE)*

Impact of the projected climate change on the water balance of landfill cover systems in Germany - Simulation results of HELP 3.95 D

*F. Molema, H. Geusebroek, R. van Wijhe (NL)*

Assessment of the durability of Dutch landfill covers, a case study of Bavel

*X. Bai , D. Huang, Q. Xu (CN)*

Biochar for methane mitigation in landfill cover: properties and mechanisms

*A.K. Martins Morita, I. K. Sakamoto, M.B.A. Varesche, E. Wendland (UY)*

Capping of old unlined landfills: shifts on microbial populations and contributions to metals precipitation

*G. Viti, A. Randazzo, S. Venturi, F. Tatàno, F. Tassi (IT)*

Attenuation of volatile inorganic and organic compounds in landfill cover soils treated with sewage sludge and landfill leachate

*R.N. Michael, T.D.H. Kim, R. Fernando (AU)*

Plant selection for landfill phytocaps: Australian case studies

**SESSION D13 / / 13th October 2023 11:00-12:30**

**AFTERCARE AND SUSTAINABILITY OF LANDFILLS**

Chair / *Presidente*: To be defined

*N. Ruxton, A. Noviani (AU)*

Sustainable landfill design in a climate of change

*A. De Vocht, T. Smeets, W. De Witte, L. Van Doninck (BE)*

Restoring landfill covers into Natura 2000 habitats and biotope for EU-protected species

*V.R. Chulliparambil, H. Shearer, T. Matthews, J. Cortes Ramirez, R. Michael (AU)*

GIS to identify the value of ecological rehabilitation of landfills

*C. Nieto, E. Vazquez-Suñè, J.J. Velasco (CO)*

Evaluation of groundwater hydrology system associated with a landfill in Colombia

*T. Singh Bisht, D. Kumar, B. J. Alappat (IN)*

Effect of landfill age and rainfall on pollution potential of landfill leachate

**SESSION E01 / / 9th October 2023 15:00-16:30**

**LANDFILL PROCESSES MODELLING & SIMULATION**

Chair / *Presidente*: To be defined

*N. Quist, F. van Raffe, R.N.J. Comans (NL)*

Three landfills, six treatments, sixteen landfill simulation reactors

*C.F. Andrade, A.-C. Dieudonne, J. Gebert, T. Heimovaara (NL)*

Mechanisms governing carbon and nitrogen pathways during enhanced waste degradation in landfill simulator reactors

*K. Knox (GB)*

Simulation of complex leachate generation patterns using an updated empirical method

*K. Ishii, M. Narita, S. Ochiai, G. Ham (JP)*

A three-dimensional numerical model to predict future leachate generation in landfill sites under climate change

*N. Meza, T. Heimovaara, T. Kanen, J. Gebert (NL)*

Comparing modelled, recovered and generated gas in a MSW landfill under leachate recirculation

**SESSION E02 / / 9th October 2023 17:00-18:30**

**LANDFILL GAS EXTRACTION & UTILIZATION**

Chair / *Presidente*: To be defined

*M. Giovannetti, G. Cordaro (IT)*

Automated control system for biogas extraction

*T. Malmir, D. Lagos, M. Héroux, U. Eicker (CA)*

Assessment of landfill gas storage and application regarding energy management: a case study in the province of Quebec, Canada

*S. Jennings (US)*

Using landfill gas as a source of electricity instead of a source of pollution

*G. Barina, T. Denoun, O. Belkacemi, A. Trueba, M. Venturini, E. Trottini (FR)*

The upgrading of a variable quality landfill biogas to biomethane - Feedback from the operation of several upgrading units

*P. Wens, E. Wille (BE)*

H<sub>2</sub> injection in organic landfills for production of green natural gas



**SESSION E03 / / 10th October 2023 09:00-10:30**

**LANDFILL METHANE OXIDATION SYSTEMS**

Chair / *Presidente*: To be defined

*C. Scheutz, Z. Duan, P. Kjeldsen (DK)*

The Danish Biocover Initiative - Background, monitoring and status

*C. Scheutz, Z. Duan, P. Kjeldsen (DK)*

The Danish Biocover Initiative - Case studies

*J.L. Almeida, J. Dumouchel, J.J. das Neves Santos, R. Sellen, Y. Dulac, A. Cabral (CA)*

Large-scale pilot biofilter to abate methane emissions from a depleted landfill gas

*Z.L. Kanmacher, R.G. Zytner, E. Short, A. Yochim, R. Vaillancourt, D. Lake, B.R. Nelson., Y. Dulac, A. Cabral (CA)*

Resilience of a methane oxidation biosystem treating residual methane emissions from a closed landfill

*Y. Dulac, Z.L. Kanmacher, R.G. Zytner, A. Yochim, R. Vaillancourt, D. Lake, B.R. Nelson, A. Cabral (CA)*

Validation of a methane oxidation biosystem design method

**SESSION E04 / / 10th October 2023 11:00-12:30**

**SEMI-AEROBIC LANDFILL AND AERATION**

Chair / *Presidente*: To be defined

*P. Bonilla Prado, C. Scheutz, N.S. Jensen, L. Fjelsted, J.E. Larsen, A.G. Christensen, R.R. Møller, P. Kjeldsen (DK)*

Landfill aeration as a technology to reduce the length of the aftercare period at AV Miljø Landfill, Denmark – Results of an initial pilot-scale aeration test

*C.R. Cruz, H. Lammen (NL)*

Landfill stabilisation by enhanced aeration lessons learned and optimisation of the aeration

*S. Toyohisa, N. Fujiwara, A. Morioka, S. Nagano, S. Higuchi, K. Sato (JP)*

Effectiveness of sheet capping on semi-aerobic functioning at a landfill site in Japan

*H. Yoshida, A. Ito (JP)*

Simulation of landfill gas flow around a gas monitoring well in a closed landfill

*P.V. Queiroz Sousa, P. Cardoso (MZ)*

The impact of “Fukuoka Method” based semi-aerobic landfill technology on existing dumpsites: the case of Hulene landfill in Maputo, Mozambique

**SESSION E05 / / 10th October 2023 15:00-16:30**

**LANDFILL AERATION SPECIFIC ASPECTS**

Chair / *Presidente*: To be defined

*J. Gebert, N. Meza, C. Cruz, H. Lammen (NL)*

Assessing the efficiency of landfill aeration with a carbon mass balance approach

*S.C. Yi, N. Meza, H. Oonk, J. Gebert (NL)*

Understanding nitrogen transformation using the ratio of nitrogen to argon in landfills under in-situ stabilisation

*L. Duarte Campos, T. Rees-White, R. Beaven, C. Cruz, H. Lammen, J. Gebert (NL)*

Pressure field tests to infer permeability of waste bodies under in situ aeration

*W. Yu, P. Jin, S. Bian, J. Yang (CN)*

Insights into leachate reduction in landfill with different ventilation rates: balance of water, waste physicochemical properties and microbial community

**SESSION E06 / / 11th October 2023 09:00-10:30**  
**ASSESSMENT AND PREDICTION OF LANDFILL GAS**

Chair / *Presidente*: To be defined

*E. Allegrini, M. Lozano, P. Kumar, A. Shah, O. Laurent, G. Broquet, P. Ciais, M. Kerkar, G. Mauguen, M. Nibart, V. David, D. Buty, O. Oberti (FR)*

Assessing biogas emissions from 5 landfills: measurements and predictive gas models comparison and lessons learned

*S. Setu, I.M. Rafizul, S. Berner, M. Alamgir, E. Kraft (BD)*

Analysis of methane gas emission by LandGEM model from open dump landfill in Khulna of Bangladesh

*K. Kissas, A. Ibrom, P. Kjeldsen, C. Scheutz (DK)*

Changes in the methane oxidation efficiency of a passive biocover system due to barometric pressure

*S. Herzet, C. Collart, E. Bietlot (BE)*

Biogas monitoring at the end of aftercare phase on a landfill site in Wallonia

**SESSION E07 / / 11th October 2023 11:00-12:30**

**AERIAL BASED LANDFILL MONITORING**

Chair / *Presidente*: To be defined

*C. Scheutz, N.T. Vechi, J. Knudsen (DK)*

Validation and application of a drone-based method for fugitive emissions quantification

*N. Proietti, T. Thorbjornsson (IS)*

UAV-based whole-site methane emissions quantification at Reykjavik landfill site

*D. Risk, E. Bournalon, R. Martino, J. Stuart, D. Ghasemi, A. Khaleghi, C. Fougère, L. Coyle, A. Kennedy, M. Boyd, G. Perrine, M. Lavoie, J. Vogt, S. Kennedy, E. Copp, M. Hammer, C. Hall, L. Gillespie, F. Vogel, S. Ars, S. Fraser, E. Gilbertson (CA)*

Large-scale Canadian landfill methane quantification survey

*V. Baiocchi, A. Bosman, F. Cianfanelli, V. Marzaioli, Q. Napoleoni (IT)*

UAV settlement monitoring on a sanitary landfill

**SESSION E08 / / 11th October 2023 15:00-16:30**

**LEACHATE RECIRCULATION**

Chair / *Presidente*: To be defined

*A. Stringfellow, R. Beaven, T. Rees-White, J. Smethurst, W. Powrie, T. Kanen (GB)*

Installation of a vadose zone monitoring system for tracer testing in a municipal solid waste landfill subject to leachate recirculation

*N. Quist, F. van Raffe, T.C. Rees-White, R.N.J. Comans (NL)*

Vertical heterogeneity of organic matter in the pore water of a municipal solid waste landfill subject to leachate recirculation

*F. van Raffe, N. Quist, T.C. Rees-White, R.N.J. Comans (NL)*

Vertical heterogeneity of contaminants in the pore water of a municipal solid waste landfill subject to leachate recirculation

*T. Rees-White, M. Feenstra, T. Kanen, R. Beaven, J. Gebert (GB)*

Borehole dilution tests to measure leachate flow at a recirculation landfill

**SESSION E09 / / 12th October 2023 09:00-10:30**

**WASTE LANDFILLING: CASE STUDIES**

Chair / *Presidente*: To be defined

*M. Coldesina, R. Casazza (IT)*

Flexible and convenient solution to monitor and model landfills with real application

*C.K. Vidanaarachchi, B. Dearman (AU)*

Landfill gas lateral migration management: case study

*R. Gregory (GB)*

Hydrogen sulphide generation and emission in landfills: new wastes, new challenges

*A. Salih (AU)*

Discovering old mine shafts under a new landfill cell

*T. Sperling, A. Abedini, T. Thalhammer (CA)*

New science in landfill fire control - Extinguishing the Caton landfill fire

**SESSION E10 // 12th October 2023 11:00-12:30**

**WASTE MANAGEMENT CASE STUDIES**

Chair / *Presidente*: To be defined

*M. Nenkovic-Riznic (RS)*

Micro-location analysis in municipal solid waste management - Comprehensive use of GIS in the Serbian villages

*S. Kissoon, C. Trois (ZA)*

An assessment of the impact of policy interventions for organic waste in the City of Cape Town

*P. Kafasis, K. Tsiptsias, P. Papagoras (GR)*

The integrated Waste Management System of Western Macedonia (IWMS), Greece

*A. do Carmo Precci Lopes, T. Hagedorn, A. Schlüte, B. Boeddinghaus, B. Völker, E. Ionescu, L. Wenzel, M. Cornelli, S. Mehmood, C. Binnig, L. Schebek (DE)*

Closing material loops through optimized communication among stakeholders of the circular economy: an example from the chemical industry



**SESSION E11 / / 12th October 2023 15:00-16:30**

**LANDFILL MINING**

Chair / *Presidente*: To be defined

*C. Camolesi Guimarães, A. Muselli Barbosa, E. dos Santos Rosa Bezerra, G. Paulino Pereira, L. Guireli Netto (BR)*

Assessment of the landfill mining potential in inactive landfills in the State of São Paulo, Brazil

*P. Tan, W. Giacetti, R. Raga, E. Villani (IT)*

Landfill remediation by landfill mining - Case study of the Villadose landfill

*S. D'Haene, S. Pensaert, D. Mosca (BE)*

Remediation by landfill mining of the Slettebakken landfill in Bergen, Norway

*M. Zari, R. Smith, R. Ferrari (GB)*

Evaluation of dust emission rate from landfill mining activities

**SESSION E12 // 13th October 2023 09:00-10:30**

**WORKSHOP: TOOLS FOR EVALUATING THE REAL CONVENIENCE OF RECYCLED MATERIALS**

Chair / *Presidente*: Maria Cristina Lavagnolo, Giovanni Beggio (IT)

Organised by: WE-Waste End project, MICS (Made in Italy - Circular and Sustainable) Extended Partnership

Received funding from Next-GenerationEU (Italian PNRR - M4 C2, Invest 1.3 - D.D.1551.11-10-2022, PE00000004)

Despite being promoted as a key tool to ease the transition to a circular economy, the definition of unique and centralised EU End-of-waste criteria was not as successful as planned. First, the process is currently decentralised and left to the local authorities, which lack the capacity to identify the qualitative and quantitative information needed for its definition and assessment. Further, no data are always available to base decision on the real convenience of recycled products when compared to the life cycle of nonrecycled ones. To tackle these challenges, a research project started under the MICS (Made in Italy - Circular and Sustainable) Extended Partnership and received funding from Next-GenerationEU (Italian PNRR) trying to: identify the body of fundamental knowledge that should be generated to support the proposition of realistic End-of-Waste criteria; discuss on how the results of life cycle thinking (LCT) analysis could play a role in dispelling the fog on the convenience of recycled products.

Introductory lectures:

*Maria Cristina Lavagnolo - University of Padova (IT)*

MICS and the "Waste End Project"

*Chiara Castiglioni - Polytechnic University of Milan (IT)*

The importance of generating data about "extensive material characterization" during different life stages of the materials. Chemical composition and modifications, molecular structure and material morphology by means of spectroscopies (IR, Raman, NIR, UV-visible, etc.) microscopies, thermal and mechanical tests

*Giovanni Beggio - University of Padova (IT)*

The proposition of scientifically-sound approaches useful to understand, define and assess the "environmental impacts" of recycled materials according to their scope of application

*Paola Gallo Stampino - Polytechnic University of Milan (IT)*

The need to expand the scope of LCT tools (LCA, S-LCA, LCC) by including the impacts derived from the "second life" of recycled materials (e.g., production, usage and after-usage fate) to make use of LCA results

*Giorgio Bertanza - University of Brescia (IT)*

How industrial symbiosis analysis can highlight the role of reliable and convenient End-of-Waste criteria in the promotion of local circular economy frameworks

*Patrick Dzoh Fonkou, Emidio Giansante - University of Padova (IT)*

Case studies: plastics and metals

*Nicola Aversano - Thales Alenia Space (IT)*

Approach to sustainability in Space products

**SESSION E13 // 13th October 2023 11:00-12:30**

**WORKSHOP: OPEN ISSUES IN EU REGULATIONS ON END OF WASTE**

Chair / *Presidente*: To be defined

*O. Johansson (SE)*

Must the discourse change? - A review of CJEU Waste Case Law 2012-2023

*M. Zanetti, D. Panepinto (IT)*

Analysis of the End of Waste (EoW) criteria

*K. Kenk, M. Kriipsalu, K. Kerge (EE)*

By-product and end-of-waste technologies', policy implications and management decision triggers for sustainable and circular use of bioresources across agriculture, forestry, and aquacultur

**SESSION F01 / / 9th October 2023 15:00-16:30**  
**STRATEGIE E PRASSI NELLA GESTIONE DEI RIFIUTI**

Chair / *Presidente*: To be defined

*G. De Feo, C. Carotenuto, A. Grosso (IT)*

Analisi dei flussi di massa dei rifiuti urbani nelle regioni italiane

*C. Ratti, B.J. Lotesoriere, C. Bax, L. Capelli (IT)*

Verso il monitoraggio in tempo reale delle emissioni odorigene dagli impianti di trattamento rifiuti: un caso studio

*G. De Feo (IT)*

Come un innovativo programma di educazione ambientale può aiutare il settore della gestione dei rifiuti

*F. Girardi, G. Ferrari (IT)*

La gestione della frazione organica dei rifiuti urbani tra riduzione e recupero di materia: l'esperienza dell'ASA di Tivoli

**SESSION F02 / / 9th October 2023 17:00-18:30**

**RIFIUTI ORGANICI E TRATTAMENTI BIOLOGICI**

Chair / *Presidente*: To be defined

*L. Preite, G.P.C. Tancredi, A. Pains, G. Vignali (IT)*

Sviluppo di un modello di simulazione per condurre uno studio di fattibilità di un processo di valorizzazione di scarti alimentari

*M. Miccio (IT)*

Recupero di sostanze bioattive dai residui agroindustriali della nocciola seguendo un approccio ingegneristico

*G. Campo, D. Panepinto, V.A. Riggio, A. Cerutti, M. Ravina, M.C. Zanetti (IT)*

Scarti della tostatura del caffè, due tecnologie a confronto: digestione anaerobica e combustione diretta. Un caso studio

*A. Folino, A. Randazzo, F. Tassi, F. Tatàno, S. de Rosa, A. Gambioli (IT)*

Bioenergia da frazione organica verde mediante digestione anaerobica a scala di laboratorio: caratterizzazione in condizioni termofile e mesofile

*G. Barulli, G. Ferrari (IT)*

Proseguimento dello studio sull'utilizzo in agricoltura biologica del compost di qualità nella Repubblica di San Marino

**SESSION F03 / / 10th October 2023 09:00-10:30**  
**RECUPERO DI MATERIALI ED ENERGIA DAI RIFIUTI**

Chair / *Presidente*: To be defined

*L. Moreschi, M. Gallo, A. Del Borghi, G. Perotto, E. Gagliano (IT)*

Valorizzazione dei rifiuti organici nella produzione di imballaggi in plastica in una prospettiva di economia circolare: valutazione dell'impatto ambientale nel ciclo di vita

*M. Tammaro, L. M. Cafiero, L. Tuccinardi, R. Tuffi (IT)*

Impianto prototipale per il riciclo di rifiuti costituiti da pannelli fotovoltaici a fine vita, basato su un processo brevettato a basso impatto ambientale

*O. Yazoghli-Marzouk , Z. Jaouadi , G. Di Mino , I. Srour , A. Kraiem (FR)*

L'approccio del progetto RE-MED all'implementazione dell'economia circolare nel settore delle costruzioni stradali riciclando i rifiuti di costruzione e demolizione e l'asfalto rigenerato.

*L. Acampora, G. Costa, F. Lombardi, C. Mensi, I. Verginelli (IT)*

Proposta di una procedura multilivello basata sull'analisi di rischio per valutare la compatibilità ambientale dell'utilizzo di frazioni minerali dal trattamento di ceneri di fondo da termovalorizzazione di rifiuti

*A. Di Biase, A. Quarta, P. Corvaglia, M. Malavasi, G. Di Salvia (IT)*

Tecnologia Flameless Pressurized Oxy-combustion (FPO): si avvicina alla fase di industrializzazione la nuova frontiera per la chiusura sostenibile del ciclo dei rifiuti

**SESSION F04 / / 10th October 2023 11:00-12:30**

**DISCARICHE E SINK SOSTENIBILI PER I RIFIUTI RESIDUI**

Chair / *Presidente*: To be defined

*M. Carchesio, M. Di Addario, F. Tatàno, S. de Rosa, A. Gambioli (IT)*

Potenziale di biometanazione del rifiuto organico biostabilizzato da destinare in discarica: valutazione in condizioni mesofile e termofile

*M. Giovannetti, M. Cordaro (IT)*

Sistema di controllo automatizzato per la captazione del biogas di discarica

*M. Coldesina, R. Casazza (IT)*

Soluzione flessibile ed economica, con applicazione reale, per il monitoraggio di una discarica

*G. Preda, F. Crociati, M. Neri, L. Savigni, E. Bosi (IT)*

Il ruolo della evoluzione normativa sulla riduzione della produzione di percolato nelle discariche in post-gestione

*G. Viti, A. Randazzo, S. Venturi, F. Tatàno, F. Tassi (IT)*

Attenuazione di composti inorganici e organici volatili da suoli di copertura di discarica trattati con fanghi di depurazione e percolato di discarica



**SESSION F05 / / 10th October 2023 15:00-16:30**

**WORKSHOP: WASTE AND HEALTH**

Chair / *Presidente*: To be defined

*N. Fraeyman, S. Malfait, V. Duprez , L. Hens, E. Mortier (BE)*

On the complexity of the relation between the environment and human health

*A.N. Suh Nkwekeu, M.C. Lavagnolo, V. Grossule (IT)*

One Health approach in Waste Management

**SESSION F06 / / 11th October 2023 09:00-10:30**

**WORKSHOP: ADVANCED ISSUES IN WASTE GASIFICATION**

Chair / *Presidente*: To be defined

*F. Parrillo, C. Boccia, G. Ruoppolo, V. Arconati, F. Ardolino, U. Arena (IT)*

Steam reforming of tars in hot syngas cleaning: removal efficiency of different waste-derived catalysts

*X. Fu, W.P. Chan, Y.Z. Boon, V.M.P. Chin, Y. Zhao, A. Veksha, L.Y. Ge, Y. Zhou, S.A Snyder, G. Lisak (SG)*

Waste reduction and NEWSand generation by co-gasification of sludge and municipal solid waste in Singapore

**SESSION F07 // 11th October 2023 11:00-12:30**

**WORKSHOP: RECENT DEVELOPMENT IN LANDFILL AERATION**

Chair / *Presidente*: Marco Ritzkowski (DE)

The aim of the workshop is to recap the development (and adaptations made during the past two decades) of the in situ aeration technology and its application.

Nowadays, landfill aeration is often recognized as a methodology for the controlled avoidance of GHG emissions from landfills. However, initially the approach was to enhance the environmental behavior of landfills, both by the reduction of LFG and leachate emissions (during and particularly after the aeration process). We will discuss latest findings of ongoing and completed projects and identify the potentials and limitations of this methodology. Introductory lectures:

*M. Ritzkowski (DE)*

Introduction into the development of the in situ aeration technology and its application

*R. Stegmann (DE)*

Examples of aeration projects in Germany

**SESSION F08 / / 11th October 2023 15:00-16:30**

**WORKSHOP: ECOTOXICOLOGY FOR WASTE MANAGEMENT**

Chair / *Presidente*: Roberta Pedrazzani (IT)

The potential of ecotoxicology in assessing the compatibility of waste for reuse or disposal is now acknowledged. The literature describes use on many matrices, including sewage sludge, compost, marine sediments, and inorganic waste. On the one hand, the application of such assays is already found in end-of-waste procedures. On the other hand, the knowledge gap is very wide, as there is opportunity for improvement with regard to, for example: certain waste types; recovery areas; biological assays to be used (specific endpoints; modes of action; protocol implementation; uncertainty assessment; interpretation and standardization of results; etc.). The workshop aims to assess the current state of the art and is structured with the following invited talks:

*R. Pedrazzani (IT)*

Conventional, standardized and innovative ecotoxicity tools

*A. Pivato, G. Beggio (IT)*

End-of-waste and waste classification: the role of ecotoxicology

*C. Alias (IT)*

Bioassays as a support for end-of-waste definition: case studies

*L. Gomez, E. Porcel Rodriguez, I. Sanseverino, D. Marinov, R. Carafa, P. Sciuto, M. Carere, D. ten Hulscher, T. Lettieri ()*

Effect-based methods and their implementation in the monitoring program: From Science to Policies

*G. Bertanza, M. Menghini (IT)*

Integrated data processing of ecotoxicological analyses

**SESSION F09 / / 12th October 2023 09:00-10:30**

**WORKSHOP: WASTE MANAGEMENT IN SOUTH-EASTERN COUNTRIES**

Chair / *Presidente*: Kerstin Kuchta (DE)

The scope of this workshop is to show the results obtained from the SWAP (Sustainable solid WASTE management and Policies) project, which aim is to support capacity building in higher education in the field of solid waste management as well as technical and vocational training of waste practitioners in Vietnam, Thailand and Cambodia. In this context, an overview of the current waste management status of these countries and the outcomes from the SWAP project will be presented. In particular, the case of the teaching materials provided by the HOOU platform is an actual example. Finally, some technical examples will be shown to estimate the effectiveness of how an upgrade in the waste management system can generate benefit to the system. Introductory lectures:

*M. Kitzberger, K. Kuchta (DE)*

Capacity building in municipal solid waste management in Asian countries of Vietnam, Cambodia and Thailand: the state of the art and the case of the Erasmus+ “SWAP” project

*C. Muzzi, L. Boetti (IT)*

Achieving sustainability in capacity building projects: sharing educational products and tools in the SWAP project

*S. De Gisi, G. Gadalet, M. Notarnicola, M.K. Pholchan, P. Sok, P. Tara, P. Pholchan, K. Soben, Y. Nida, T.T. Anh Tuyet, K. Kutchta (IT)*

Discussing the possibility of extending the European vision of solid waste management to the Asian countries of Vietnam, Cambodia and Thailand

**SESSION F10 // 12th October 2023 11:00-12:30**

**WORKSHOP: CIRCULAR CONSTRUCTION IN REGENERATIVE CITIES**

Chair / *Presidente*: K. Kuchta, J. zum Brock (DE)

The development of large and attractive metropolitan regions needs to be supported by the sustainable growth of their built environment. The workshop aims to explore the latest developments in creating circular and regenerative cities and to present the progress achieved so far in the H2020 funded project CIRCuIT. Presentations will cover topics such as circular construction, the current development in the use of recycled concrete in Hamburg, the current development in respect of pre-demolition audits. As well as the environmental challenges arising of Recycled Concrete. The aim of this workshop is to discuss the advancements in the development of circular and regenerative cities and to present the progresses achieved so far in CIRCuIT.

Introductory lectures:

*K. Kuchta, J. zum Brock (DE)*

Introduction to the workshop

*M. Doostdar (DE)*

CIRCuIT – Circular construction in Regenerative Cities

*J. zum Brock (DE)*

Introduction to the process of pre-demolition audits

*A. Morales Rapallo (DE)*

Recycled concrete - Challenges and Opportunities

*M. Doostdar (DE)*

Environmental impact of recycled aggregates in Hamburg

**SESSION F11 / / 12th October 2023 15:00-16:30**

**WORKSHOP: FROM BIOWASTE COLLECTION TO HIGH QUALITY COMPOST**

Chair / *Presidente*: Christian Zafiu (AT)

Biogenic waste represents the largest fraction of municipal solid waste that should be separately collected and used to produce biogas or compost. Composts can be used as a sustainable fertilizer and soil conditioner respectively. However, impurities reduce the quality of composts and must be avoided as much as possible. In particular, plastic pollution that enters the biogenic waste treatment process will be fragmented and will generate microplastics that cannot be removed from the composts anymore and thus are transferred to soil and the environment. However, even if impurities can be reduced at any stage of the collection and treatment process the initial collection and avoidance remains the best option to reduce impurities. For the avoidance of impurities it is important to know, which impurities – down to the waste item – were inappropriately disposed of in the separately collected biowaste. In the compost plant, impurities can be removed only partly during pretreatment by different technical solutions, as well as after the composting process. Introductory lectures:

*P. Beigl (AT)*

Gamechanger biogenic waste? A guideline for representative sampling with consideration of impurities, biodegradables and food waste

*E. Binner (AT)*

Austrian regulations about impurities in feedstock material and composts

*C. Zafiu (AT)*

Macro- and microplastic pollution in composts and the transfer to agriculture and environment

**SESSION F12 / / 13th October 2023 09:00-10:30**

**WORKSHOP: EVALUATION OF FOOD WASTE PREVENTION**

Chair / *Presidente*: Gudrun Obersteiner (AT)

Food waste prevention measures at different stages of the food value chain have been implemented for many years in different countries. The evaluation of these measures should be part of every activity in order to be able to represent the actual success. Especially in the area of consumers, who are responsible for about 50% of all food waste produced, and in view of SDG 12.3, which among other things envisages a halving of food waste at consumer level (as well as retail level) by 2030, an actual quantification of the prevention activities carried out is essential. The aim of the workshop is therefore to present evaluated activities for the prevention of food waste and to discuss the criteria that constitute successful, measurable prevention of food waste. Introductory lectures:

*G. Obersteiner (AT)*

Introduction to the workshop – Evaluation criteria

*E. Schmied (AT)*

Evaluation of food waste prevention measures at retail

*K. Watanabe (JP)*

Evaluation of food waste prevention measures at home

*T. Okayama (JP)*

Evaluation of food waste prevention measures out of home

*G. Obersteiner (AT)*

Evaluation of food waste prevention measures in agriculture



**SESSION G01 // 9th October 2023 15:00-16:30**

**WORKSHOP: ORGANIC WASTE FRACTIONS: CALL FOR PARTNERS IN EU  
PROJECTS PROPOSALS**

Chair / *Presidente*: To be defined

*R. Tomczak-Wandzel, B. Szatkowska (NO)*

Safe and sustainable treatment and utilisation of organic waste fractions generated at urban scale in the light of circular economy - SafeWaste2Resource

*R. Tomczak-Wandzel, B. Szatkowska (NO)*

Anaerobic digestion of food waste containing bioplastics as technology for recovering of safe fertilizer

**SESSION G02 / / 9th October 2023 17:00-18:30**

**WORKSHOP: WASTE ARCHITECTURE**

Chair / *Presidente*: To be defined

*S. Ripley, I.D. Williams (GB)*

Critical analysis of processing architectural salvage through reclamation yards

*E.A. Diamantouli, F. Chatzopoulou, L. Stendardo (DE)*

(Techno-) geographies of waste: tools of rising awareness on waste culture and landscape aesthetics

*E. Daskalova, I.D. Williams (GB)*

Architectural salvage vs Modern construction: Investigation into sustainability and aesthetic values

**SESSION G03 // 10th October 2023 09:00-10:30**

**WORKSHOP: WASTE CHARACTERIZATION PRACTICES IN AFFLUENT & DEVELOPING COUNTRIES I**

Chair / *Presidente*: Johann Fellner (AT)

Waste characterization studies (e.g. sorting analysis of waste) in affluent countries are more or less a standardized procedure giving reproducible and representative results. In many emerging and developing countries however, the procedure of waste characterization studies including their planning (sampling) is hardly documented and very often does not following good guidance. Hence, the aim of the workshop is to discuss the current practice of waste characterization studies in different African countries (e.g. Egypt, Zambia, Uganda) and to compare their procedure with the prevailing practice applied in Europe. The first part of the workshop will include the following introductory lectures:

*J. Fellner (AT)*

Introduction into the workshop

*P. Beigl (AT)*

Austrian guideline for analysing the composition of mixed Municipal Solid Waste

*D. Blasenbauer (AT)*

Waste sampling for characterizing sorting processes

**SESSION G04 / / 10th October 2023 11:00-12:30**

**WORKSHOP: WASTE CHARACTERIZATION PRACTICES IN AFFLUENT & DEVELOPING COUNTRIES II**

Chair / *Presidente*: Johann Fellner (AT)

The workshop started in the previous session G03 will be continued in the session G04. The second part will include the following introductory lectures:

*A. Gaber (EG)*

Waste characterization practice in Egypt

*A. Komakech (UG)*

Waste characterization practice in Uganda

*B.G. Mutono-Mwanza, L. Habazoka (ZM)*

Waste characterization practice in Zambia

## **SESSION G05 / / 10th October 2023 15:00-16:30**

### **WORKSHOP: FAST FASHION VS CIRCULAR ECONOMY**

Chair / *Presidente*: Andreas Bartl (AT)

On the one hand the EU has put focus on textiles waste. As such the waste framework directive has been amended (e. g. defining textiles as municipal waste, separate collection by 2025) and the EU textile strategy has been announced as well in 2022. As a result, textile recycling processes must be established and measures taken to reduce the amount of textile waste. Among other things, durability, repairability or reuse of textiles must be fostered by EU member states. On the other hand, the fast-fashion business model has become more and more established in recent years. Fashion collections are brought to market at ever shorter intervals, with the quality and price of the items becoming lower and lower. An increase is now the "super-fast fashion", where a single company in the online trade puts several thousand new clothing items at dumping prices on the market daily. This fuels the sales and profits of the companies. At the same time, this business model causes enormous environmental impacts and is only possible disregarding social standards. This workshop will explore the question of how to reconcile these two controversial developments. Which measures could be suitable to move the apparel industry towards more sustainability? What role can EPR play? Can this problem be solved by means of technology or are ethical approaches necessary? Introductory lectures:

*A. Bartl (AT)*

General introduction to the topic

*W. Ipsmiller (AT)*

From fast fashion to super-fast fashion

*A. Bartl, W. Ipsmiller (AT)*

Fast fashion versus circular economy: an exciting match?

**SESSION G06 / / 11th October 2023 09:00-10:30**

**WORKSHOP: RETHINKING CIRCULAR ECONOMY IN VIEW OF BIODIVERSITY  
REGENERATION**

Chair / *Presidente*: Maria Cristina Lavagnolo, Giovanni Felici (IT)

Organised by: NBFC (National Biodiversity Future Center), University of Padova\*,  
Sant'Anna School of Advanced Studies\*\*

Received funding from Next-GenerationEU (Italian PNRR – M4 C2, Invest 1.4 – D.D.  
1034 del 17/06/2022, CN00000033)

The loss of biodiversity is one of the most dramatic consequences of climate change and human impact. For several years, the importance of biodiversity for our planet has been underestimated, especially for its economic relevance on our extractive economies. Biodiversity provides several ecosystem services essential for human life such as food, materials, clean water, climate regulation, and many others. Therefore, a relationship of impact and/or dependency between biodiversity and economic activities exists. The circular economy, aiming to reduce the exploitation of non-renewable resources and the ever-increasing production of waste, can play a crucial role in reducing negative impacts on the environment and be one of the main drivers for the protection of biodiversity and ecosystems. The workshop will discuss the current practices for evaluating the impacts of business activities on biodiversity and/or ecosystem services and to explore the economic valuation methods for valuing ecosystem services in the framework of waste management.

Introductory lectures:

*Maria Cristina Lavagnolo\**, *Valentina Cucino\*\**, *Andrea Piccaluga\*\* (IT)*

Introduction to biodiversity and circular economy: the NBFC project

*Duccio Tosi\*\**, *Sara Tessitore\*\**, *Francesco Testa\*\* (IT)*

The systemic approach to explore the relationship between business and biodiversity:  
the role of regenerative business models

*Niccolò Braico\*\**, *Lino Cinquini\*\* (IT)*

Measuring companies' impacts on and dependencies from biodiversity

*Giovanni Felici\**, *Alberto Lanzavecchia\* (IT)*

Economic valuation of ecosystem services: an example applied to the solid waste  
management system

## **SESSION G07 / 11 October 2023 / 11:00 - 12:30**

### **WORKSHOP: FUTURE FOR PUBLIC COMMUNICATION ABOUT WASTE**

Chair / *Presidente*: Ian Williams, Peter Shaw (UK)

We all know that our modern society faces many pressing problems, of which the development of a sustainable approach to waste and resource management is just one. Enabling effective resource management requires active public engagement and motivation – alongside appropriate infrastructure and service provision – and this is hugely challenging. Many political, environmental, social, technological, legal and economic approaches have been trialed, but only slow progress has been achieved. Traditional methods of public communication about waste – consultation papers and requests for comments; community information (posters, leaflets, doorstepping, focus groups); meetings (private or public); citizens' juries & parliaments; workshops & seminars; advisory panels, committees and fora; stalls at fairs / events; mass media campaigns (radio / TV / the Internet) – tend to have limited, mainly short-term impacts. Even very high-profile campaigns in the UK – the use of popular children's TV characters The Wombles to highlight the problem of littering and the Waste and Resources Action Programme's highly acclaimed "Love Food Hate Waste" campaign did not stop litter and food waste, respectively, from continuing to rise. This is because these methods tended to assume that the divergence between scientific and public views on such topics are fundamentally caused by incomplete/flawed public knowledge, and so communication efforts focused on public education and awareness raising. In fact, recent studies have highlighted that ideology, not knowledge, best predicts environment-related attitudes and behaviour, leading researchers to move away from investigating cognitive bias towards investigating the effectiveness of emotion-based approaches. The problem is particularly notable in waste management due to the scale and immediacy of the issues at stake. Whilst the public may be aware of general waste management related issues, they may be unaware of new and emerging issues and the collective positive impacts they can cause by changing their behaviour. This is significant, since: i) citizen support is essential for implementation of new and/or ambitious waste-related policies and ii) populism and its rhetoric are currently burgeoning, often influencing the public away from policies based on science-based evidence. Hence, in order to communicate waste-related information in a way that is more accessible to the public, and actually leads to desired behavior change, new methods must be explored. Citizen support is essential for implementation of ambitious waste-related policies/strategies/action plans.

This workshop will address the question "What is the future for public communications about waste?" An initial overview presentation will set the context for the workshop; this will outline typical methods currently used to communicate/consult with the public, with illustrative examples. As an introductory exercise, participants will be asked to provide their views on the topic, and the other questions it generates. Working in small groups, participants will be tasked to:

1. Identify which methods are used to communicate/consult with the public about waste and discuss which methods work best, and why (providing evidence – anecdotes are interesting but they are just anecdotes);
2. Discuss which methods we should use in the years leading up to 2030, and why we should be using these methods;
3. Share the outcomes of small group discussions in a plenary session involving all participants.

## **SESSION G08 / / 11th October 2023 15:00-16:30**

### **WORKSHOP: ELASTANE, THE PEST IN TEXTILE RECYCLING**

Chair / *Presidente*: Andreas Bartl (AT)

Elastane (EL), is a highly flexible synthetic fiber also known as Spandex or Lycra. Even though the EL production volume only accounts for about 1% of the total fiber market the fiber is, in low concentrations, contained in a large portion of garment. Even if the share of EL is sometimes only in the low single-digit percentage range, recycling of such textiles is made considerably more difficult or even impossible. So far, it is not even known exactly how high the proportion of apparel containing elastane is. Furthermore, a rapid and reliable determination of the EL content in textiles (apart from a cumbersome ISO method) has only recently been presented and finally the separation of EL from garments is still in its infancy. The aim of the workshop is to bring together experts and discuss possible solutions. The state of the art will be presented and potential methods that could be implemented as a pre-stage to a recycling process will be evaluated. Ultimately, the apparel industry must move towards a circular economy in accordance with EU requirements. Introductory lectures:

*A. Bartl (AT)*

General introduction to the topic

*P. Kählig (AT)*

Determination of the proportion of garments containing elastane in Viennese textile waste

*E. Boschmeier, V.-M. Archodoulaki, A. Schwaighofer, B. Lendl, A. Bartl (AT)*

A tool for quantification of elastane in textile waste to avoid recycling problems



## **SESSION G09 / / 12th October 2023 09:00-10:30**

### **WORKSHOP: PFAS REMOVAL FROM CONTAMINATED MATRICES**

Chair / *Presidente*: Jurate Kumpiene, Ivan Carabante (SE)

Despite the efforts to ban or restrict the use of per- and polyfluoroalkyl substances (PFAS), they are still found in products, wastewater, waste and landfill leachate. Due to their persistence, PFAS circulation in the environment is expected to last for many decades even after their ceased use. The extent of PFAS contamination and the awareness of their risks have been driving the development of treatment techniques. Most of the technologies that are considered when managing PFAS-containing waste and leachates are based on retardation of PFAS spreading through adsorption on e.g. reactive carbon. This principle is partly effective as not all PFAS molecules have affinity for organic matter and also requires further management of sorbents. Techniques that could cost-effectively destroy PFAS chemicals are highly relevant and sought by owners of waste management facilities, contaminated sites and remediation technology companies and thus urgently need to be developed. Joint efforts of experts of various disciplines are necessary to address this challenge of removing PFAS from circulation. Outcomes have a high value for the society at large and the entire environment. In this workshop, issues related with the management of PFAS contaminated materials and method that are being developed are going to be presented and discussed:

#### *I. Carabante (SE)*

Introduction to the workshop: challenges with managing PFAS-contaminated solid waste

#### *A. Kihl (SE)*

Management of PFAS-contaminated masses at Ragn-Sells waste management facilities

**SESSION G10 // 12th October 2023 11:00-12:30**

**WORKSHOP: POTENTIAL OF CANDIDATE MATERIALS FOR METHANE OXIDATION SYSTEMS**

Chair / *Presidente*: Julia Gebert (NL), Marion Huber-Humer (AT)

During the past years more and more full-scale methane oxidation systems have been implemented on landfills to reduce methane emissions, benchmarking the transition from research and pilot scale to full field application. Successful system design involves the selection of suitable materials (e.g. mineral soils, compost) of a high CH<sub>4</sub> oxidation potential. Also, it can be of interest to assess the potential of materials already in place in operational CH<sub>4</sub> oxidation systems. Research into microbial CH<sub>4</sub> oxidation has seen the application of many different field and laboratory methods to quantify a soil's CH<sub>4</sub> oxidation potential. They vary from small scale batch to meso-scale column tests to gas push pull tests in the field. Boundary conditions vary, for example with regard to feed gas concentrations, moisture content, temperature, compaction state of the material, duration of experiment etc., as does the interpretation of the data. To date, a standardized approach is still missing, which makes comparison difficult. The main purpose of the proposed workshop is therefore to discuss methods for the assessment of the CH<sub>4</sub> oxidation potential of materials intended for use in CH<sub>4</sub> oxidation systems or already in place. As main outcome it is intended to provide an overview of currently applied methods, to identify their limitations and benefits, the variables impacting the result, and to define the possible needs for method harmonization. Introductory pitches:

*A. Cabral (CA)*

The role of methane oxidation capacity in the design of methane oxidation systems and challenges related its determination in a timely basis

*J. Gebert (NL)*

Factors impacting assessment of the methane oxidation capacity – Batch studies

*M. Huber-Humer (AT)*

Challenges and impacting factors during operation of methane oxidation columns

*C. Scheutz (DK)*

Case study for application of batch tests to assess methane oxidation potential for the Danish Biocover Initiative

**SESSION G11 // 12th October 2023 15:00-16:30**

**WORKSHOP: SEMI-AEROBIC LANDFILLING: ONLINE TECHNOLOGY TRANSFER**

Chair / *Presidente*: Yasushi Matsufuji, Ayako Tanaka (JP)

Due to the global warming, large-scale natural disasters have occurred in many countries in recent years, giving rise to major social concerns. The Waste problem have become very serious in the African and the Asian region. The authors received the projects from the United Nations Human Settlements Program (UN-Habitat) Regional Office for Asia the Pacific-Fukuoka related to "technical support regarding landfills using the Semi-aerobic landfill concept (Fukuoka Method)". In this workshop, the authors would like to introduce their experience with these projects for stabilization and rehabilitation of existing landfills and construction of the Semi-aerobic Landfills in African and Asian Regions by sharing the progress photos and the design drawing, and instruction using technical manual and video created by SWAN member in the regular On-Line meeting during Covid-19 pandemic and also would like to discuss as follows:

*Y. Matsufuji, A. Tanaka (JP)*

Toward an appropriate technology transfer of Fukuoka Method

*S. Hoshino, T. Umeki, A. Tanaka, Y. Matsufuji (JP)*

Project for improvement and construction by semi-aerobic landfill concept in Yangon, Myanmar

*M.C. Lavagnolo (IT)*

Effective learning centered education during COVID19 pandemic for the master degree in Environmental Engineering at ENSTP, Yaounde

*A. Tanaka, T. Umeki, Y. Matsufuji (JP)*

Trial of online training for leachate and gas monitoring in oversea support project

*T. Mito, S. Hoshino, A. Tanaka, Y. Matsufuji (JP)*

Current status of future challenges of technology transfer - Case studies in Asia and Africa

**SESSION G12 // 13th October 2023 09:00-10:30**

**WORKSHOP: LANDFILL GAS MANAGEMENT TO MEET METHANE REDUCTION TARGETS FOR 2030**

Chair / *Presidente*: Peter Kjeldsen (DK)

EU has shown little progress over the last twenty years in reducing the overall methane emission from their waste disposal sites, despite straight rules were given in the 1999 Landfill Directive. EU made a Methane Strategy in 2020 in order to boost the reduction of methane emission in the most important sectors; the agricultural, waste and energy sectors. However, reports from the European Environmental Agency show that the overall emission does not changed much over the years. The scope of the workshop/session is to identify why European LFG management not has reach larger improvements, and discuss how we can boost the LFG management in respect to policies, emission measurement implementation and better mitigation technologies. Introductory lecture:

*P. Kjeldsen (DK)*

How to kick start the slow progress of the European LFG Management to reach mitigation goals in the Methane Pledge

**SESSION G13 // 13th October 2023 11:00-12:30**

**WORKSHOP: IMPLEMENTING MODERN WM STRATEGIES IN DEVELOPING COUNTRIES**

Chair / *Presidente*: To be defined

*K.C. Grewan, C. Trois (ZA)*

Navigating a pathway to the insertion of various waste technologies and their applicable institutional drivers and barriers in South Africa

*P.K. Dagadu, G. Sagoe, M. Oteng-Ababio (GH)*

Normative influence on intention to segregate household waste: reflections from a low-middle income city in sub-Saharan Africa

*J.P. Dzoh Fonkou, C.P. Neba, M.C. Lavagnolo (IT)*

Valorisation of plastic waste in the context of circular developing economy

*C. Stander, J. Snyman (ZA)*

Establishing a monitoring and evaluation framework for waste management strategies in South Africa

# **ACTIVE LAB: BLACK SOLDIER FLY LARVAE: A FULL CONFERENCE TEST FOR BIOWASTE TREATMENT**

## **ACTIVE LAB 01 + 02 / Monday 9 October / 15:00 - 18:30**

Part 1: Reactors set up and starting operation

## **ACTIVE LAB 12 + 13 / Friday 13 October / 9:00 - 12:30**

Part 2: Larvae separation and performance assessment

*Organised by:*

Marco Meneguz - BEF Biosystem (IT)

Valentina Grossule - University of Padova (IT)

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In the context of the Circular Economy, the use of Black Soldiers Fly (BSF) for biowaste treatment represents a promising alternative to conventional biological processes, for either managing the waste and providing high value resources in term of materials and energy. Indeed, in the larval stage BSF are capable of metabolising and stabilising huge amounts of putrescible waste, transforming it into valuable biomass rich of proteins and fats, suitable for the direct use as animal food or for production of biorefinery products, such as proteins and, biodiesel, lubricants, chitin and chitosan, antimicrobial peptides.

The active lab aims at providing basics knowledge of the BSF larvae and on their use for biowaste treatment, including designing, feed quality, control parameters etc.

Practical activities will be divided into two parts:

- PART 1: set up of small-scale reactors for treatment of different biowaste, at the beginning of the conference. The reactors will be kept in operation and can be visited throughout the whole conference (Monday 9 October, 15:00 - 18:30)
- PART2: closure of the test at the end of the conference with larvae separation and performance assessment (Friday 13 October, 9:00 - 12:30)



### **BEF Biosystems**

Via Tancredi Canonico 18C, Torino (IT)

tel. +39011 2733210 / <https://bef.bio>

# ACTIVE LAB: PLASMA APPLICATION FOR THE REMOVAL OF EMERGING CONTAMINANTS AND MICROPOLLUTANTS FROM WATER

**ACTIVE LAB 03 + 04 / Tuesday 10 October / 9:00 - 12:30**

*Organised by:*

Mubbshir Saleem - University of Padova (IT)

Kubra Altuntas - Istanbul Technical University (TR)

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## **Theoretical approach**

### 1. Diagnostics

Plasma typologies

Equipment needed (power supplies, high voltage and current probes, oscilloscope)

Power determination

### 2. Treatment

Introduction to plasma reactors

Selection of the type of plasma based on the type contaminants; the case of surfactant and non-surfactant contaminants

### 3. Analysis

Equipment needed for chemical analyses and challenges; the case of PFAS

Determination of process kinetics

Calculation of energy efficiency of plasma treatment and comparison with Advanced Oxidation Processes (AOPs)

## **Practical activities**

Practical demonstrations of types of plasma discharges (Corona, Streamer, Radial discharge and DBD Barriers), using different types of power supplies, by means of small-scale prototypes.

Treatment of artificial wastewaters will be tested shown, selecting appropriate plasma typology according to the target contaminant (e.g. industrial dye, surfactants).

*Safety details:*

Plasma reactors will be constructed keeping in view the safety of the user and the participants. Similarly lower input power will be utilized to operate the plasma devices as low as 5 W.

Chemicals including household detergent to represent surfactants and methylene blue to represent a non-surfactant industrial dye will be used to show the efficiency of plasma treatment.

The disappearance of foam in the case of detergent and color in the case of industrial dye will demonstrate the robustness of the plasma application for micropollutant removal.

# **ACTIVE LAB: WRITING AND PUBLISHING A SCIENTIFIC PAPER**

**ACTIVE LAB 05 / Tuesday 10 October / 15:00 - 16:30**

**ACTIVE LAB 08 / Wednesday 11 October / 15:00 - 16:30**

*Organised by:*

Alexandre Cabral – University of Sherbrooke (CA)

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Writing is an art. To communicate effectively, you need to write well. The publication of scientific articles is a cornerstone of a research career. The main objective of this lab is to present to the attendees the main topics of the writing and publishing process. The formula adopted is unique and has helped PhD students, postdocs fellows and young professors from several countries in developing a simple and effective writing method to structure their thinking, communicate research results, organize discussions with co-authors (including their supervisors), and instruct future students. The actual course follows several formats, from semester-long to intensive two-week long. Over the course of the workshops, attendees learn how to deal with writer's block, how to write the main sections of an article and the letter to the editor, how to improve your English writing skills, and more. They also learn more about the peer review process. Together, these skills help them to write better scientific papers and increase the chances of having their papers published. The aim of this active lab is to present the main topics of the course, the idea behind the teaching methodology and the various formats this course can follow.

## **TOPICS**

- Understanding the importance of writing and publishing quality articles
- Developing a publishing strategy
- Clearly explaining the originality of your work
- Structuring your thinking and explain in clear writing the key messages
- Adopting a scientific style
- Understanding the particularities of the English language
- Developing the ability to recognize shifts in register
- Developing the ability to distinguish between function words and content words
- Preparing and writing the main sections of an article and the letter to the editor
- Providing appropriate figures and graphs
- Respecting ethical guidelines
- Understanding the submission and publication process.

## ***Complementary Objectives***

- Structure the relationship between student and supervisor
- Improve the quality of meetings with supervisor



# **ACTIVE LAB: MONITORING TECHNIQUES OF ODOURS IN WASTE MANAGEMENT**

**ACTIVE LAB 06 + 07 / Wednesday 11 October / 9:00 - 12:30**

*Organised by:*

Tiziano Bonato - SESA S.p.A, Analysis laboratory - Este, Padova (IT)

Nicolò Quagliato, SESA S.p.A, Analysis laboratory - Este, Padova (IT)

Alberto Pivato - University of Padova (IT)

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Waste management has always been closely linked to the odours issue. Recent attention to this issue has led regulators and standardization bodies to introduce specific regulations and special standards for confinement and monitoring. The contents of the most recent European and International standards will be described during the Active Lab. Among them, instructions to determine odour in ambient air using field inspection according to EN 16841 and to determine odour concentration in dynamic olfactometry according to EN 13725 will be discussed in depth. In addition, the performance of the odour monitoring through instrumental monitoring systems will be demonstrated and tested in practice, such as “electronic nose” and active and passive samplers for the detection of ‘tracer’ compounds.

The active lab will last four hours including theory and practical exercitation with instruments.

- European and international standards on the issue of odor measuring and monitoring: an overview
- Electronic nose: operating principles and practical testing
- Odor monitoring via “tracer” compounds determination: passive and active sampling, chemical analysis dye will demonstrate the robustness of the plasma application for micropollutant removal.

# **ACTIVE LAB: WASTE MANAGEMENT STRATEGIES IN VIEW OF MATERIAL AND ENERGY SYSTEM TRANSITION: structured discussion with group works for identifying environmentally robust strategies**

**ACTIVE LAB 09 / Thursday 12 October / 09:00 - 10:30**

*Organised by:*

David Laner - Center for Resource Management and Solid Waste Engineering, University of Kassel (DE)

Valentina Bisinella - Department of Environmental and Resource Engineering, Technical University of Denmark (DK)

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Current global environmental challenges, such as climate change, clean energy provision and responsible consumption and production, require society to urgently transition to more sustainable solutions across all sectors with fundamental, transformative, and cross-cutting changes. This is true for the waste management sector as well as for other sectors such as energy and material production, which are heavily linked to waste management and subject to particularly drastic changes. These changes need to be reflected in environmental decision support tools, most prominently in LCA, in order to identify and implement environmentally sound waste management schemes, optimal for the time when they are design and robust in view of future conditions in which they will operate. However, despite the need for comprehensive studies on the effect of system changes on environmentally preferable waste management solutions, so far there is hardly any research on the specific challenges for prospective LCAs on future waste management systems. The aim of the workshop is to address challenges and uncertainty related to future transformations of energy and material systems and how they can be reflected in prospective LCA on waste management. The workshop will initiate talks in order to identify research and framework-creation opportunities in this area.

*1<sup>st</sup> half of the workshop - Presentations:*

- *Identifying environmentally robust waste system configurations* - David Laner  
Short introductory presentation introducing the workshop topic and highlighting the issue that robust configurations may be preferable to extremely good performances, if the latter are dependent on specific boundary conditions which may vary in view of future development and uncertainty.
- *Waste LCA and the future* - Valentina Bisinella  
Synthesis of challenges LCAs of future waste management systems will have to

address and, to the extent possible, of approaches and recommendations on how to deal with these challenges. The focus of the talk will be on methodological aspects of modelling future waste systems in LCA.

- *Current and future key factors for the environmental performance of plastic packaging waste management* - Sarah Schmidt

Case study on the environmental performance of plastic packaging waste management in Germany. Expected transformations of material and energy systems were considered in the LCA by adjusting life cycle inventories using results from the integrated assessment models IMAGE and REMIND for a pathway to limit global warming to 1.5 °C. The focus will be on the future development of the environmental performance of plastic packaging waste management and its key factors.

- *The future challenges of waste management* - Thomas Christensen

Systematic review of major future challenges of waste management. The aim of the talk is to address some of the key transformations and changes in the foreground and background systems of waste management activities.

- *Emerging technologies in waste management systems: carbon capture, storage and utilization applied to incineration and anaerobic digestion* - Anna Sofie Varling

The presentation will highlight key aspects of emerging technologies with respect to their potential to affect the environmental performance of waste management.

### 2<sup>nd</sup> half of the workshop - Structured discussion (potentially with group work):

#### Guiding questions

- In which waste management contexts have the participants experienced these challenges?
- What actions have the participants taken to solve these challenges?
- Are the actions taken case-specific or could they be generalized to a wider framework?
- What general advice can we give to other practitioners?
- Can we develop guidance on the identified issues, which can be shared with others?

# **ACTIVE LAB: METHODS AND APPROACHES TO QUANTIFYING REUSE AND AVOIDANCE OF WASTE**

**ACTIVE LAB 10 / Thursday 12 October / 11:00 - 12:30**

*Organised by:*

Peter Shaw - University of Southampton (UK)

Ian D. Williams - University of Southampton (UK)

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The aspirations of waste management are well known and clearly expressed, notably in the form of the Waste Hierarchy and Circular Economy. Determining the rate of progress made towards waste hierarchy and circular economy goals varies in terms of the established methods and approaches. Quantities of materials in waste streams that are destined for landfill, incineration or recycling are routinely recorded; the means to achieve this are in general established and simple. Data acquired via weighbridges, for example, provide a simple and robust record of tonnages of materials received by waste management facilities. Likewise, data appertaining to sales of sorted materials from materials recycling facilities are easily recorded and provide mostly accurate and reliable data relating to recycling.

But how do we assess achievements and success in relation to other ambitions in waste management? How do we determine if and how our efforts are leading to increased levels of reuse? How do we measure the impacts of our efforts to prevent or avoid waste? How do we assess progress towards circular economy ambitions? These challenges will be addressed through a participatory workshop in which delegates will be challenged to identify, develop, or create ways to achieve these critical objectives and ambitions.

# **ACTIVE LAB: ESCAPE - ENVIRONMENTAL SITES CH4 (METHANE) ASSESSMENT PLATFORM EUROPE**

**ACTIVE LAB 11 / 12 October 2023 / 15:00 - 16:30**

*Organised by:*

Yuri Ponzani - Cleannovation (UK)

Laura Capelli - Politecnico di Milano (IT)

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The ESCAPE project aims to develop a new service, a cloud-based online platform, combining space-based and ground datasets, including meteorological data, with AI-based solutions and algorithms for spotting emissions and pollution from landfill and brownfield sites. ESCAPE builds on the:

- Creation of analysis models of Earth Observation (EO) products that allow the identification of features and/or anomalies in the areas of interest
- Development of a new gas-sensing device (Sensors Toolbox) to screen pollutant gasses concentrations in ambient air during walkover surveys (reconnaissance surveys)
- Development of a new digital platform available as a Software as a Service solution combining multiple data sources.

## **AGENDA**

*Y. Ponzani (UK)*

Remote Sensing over Landfill and Brownfield Sites

*L. Capelli (IT)*

Ground Sensing model analysis

*Y. Ponzani (UK)*

Objectives of the ESCAPE Project

Q&A

## **FOCUS SESSION I / 10 October 2023 / 17:00 - 18:30**

### **Definition of waste and products. How far are we with the End of Waste procedure?**

#### **Moderator:**

Rainer Stegmann - *Hamburg University of Technology (DE)*

#### **Panelists:**

Pierre Hennebert - *Former INERIS (FR)*

Maria Cristina Lavagnolo - *University of Padova (IT)*

Alejandro Navazas - *EuRIC-European Recycling Industries' Confederation (BE)*

Maria Pettersson - *Luleå University of Technology (SE)*

The great challenges of today are reducing/avoiding the emissions of climate gases and pollutants in the gaseous, liquid and solid form, saving natural and transformed resources, restoring biodiversity and remediation of contaminated sites. All these aspects are related to waste in its wider sense and have to be considered in the waste management area; they shall be implemented in accordance with the planetary boundary concept.

Using the today practised procedures of Circular Economy (CE) how far away are we from an end of waste society? What are the realistic potentials and limits to reach - or better - approach this goal? How realistic our recycling statistics or is there also green washing. Do we need new technologies, new regulations, more money, more efficient administration and citizen inclusion, more private or public WM companies, a broader education? How can we achieve more waste avoidance?

In how far do we have to include waste avoidance rates, produced emissions and energy consumption to evaluate CE procedures? Under which conditions is thermal treatment with energy recovery e.g., for paper, textiles and plastic an alternative to material recycling?

Products usually become waste if one wants to get rid of it; no matter in which condition the product is. What about bringing used products which are still in an acceptable condition back to the producer for refurbishing or recycling. In this way used products do not become waste in the first place, it is a kind of leasing concept with no financial revenues for the user. But there is an end of life of these refurbished/recycled products and they become waste for disposal. Is such a procedure realistic e.g., for washing machines, computer, etc.? What are potential hurdles? Can such a procedure be mandatory under the producer responsibility act?

These and may be other aspects of waste reduction and material saving are the themes for the discussion in this Focus Session.

## **FOCUS SESSION II / 11 October 2023 / 17:00 - 18:30**

### **Do we need new definition and regulations for landfilling in Circular Economy?**

#### **Moderator:**

Raffaello Cossu - *University of Padova (IT)*

#### **Panelists:**

Kerstin Kuchta - *Hamburg University of Technology (DE)*

Robert Gregory - *Gregory Environmental Consulting Ltd (UK) (to be confirmed)*

Representation of Circular Economy as a perfect cycle is not realistic. For many reasons:

- not all materials are recyclable, and those that are cannot be recycled ad infinitum;
- hazardous and persistent chemical substances present in the products forwarded to recycling tend to accumulate in the recycled materials and residues;
- the material cycle in Circular Economy should necessarily be closed in line with the principle of Back to Earth to control the global diffusion of contaminants; accordingly, if what is taken from the land is not returned to the land in an uncontaminated form, it will linger perilously in the environment (Grossule, 2020);
- in closing the material loop, the strategically important role as a sink played by landfill should be not taken into account.

Landfilling in order to act as a sink should undergo a profound revision either in terminology (to make clearly the difference between traditional landfills where contaminants are present in a mobile form and sustainable landfill where waste is pretreated in order to stabilize/immobilize contaminants) either in the regulation.

The Focus Session will discuss if a landfill is necessary for closing the material loops in Circular Economy and conversely if alternative sink could substitute it.

## **FOCUS SESSION III / 12 October 2023 / 17:00 - 18:30**

### **Reuse, upcycling, downcycling, sidecycling, bicycling: where to go?**

#### **Moderator:**

Jurate Kumpiene - *Luleå University of Technology (SE)*

#### ***Panelists to be confirmed.***

What sets upcycling, downcycling, and recycling apart? While upcycling and downcycling fall under the umbrella of recycling, they do not all hold the same value.

When we transform discarded items into something of higher or comparable value, we "upcycle." Conversely, when a material or product is converted into something of lesser value, it is "downcycled". For example, surplus materials can be upcycled to create a product with greater value than the original components. In contrast, downcycling comes into play when waste materials are repurposed into something of reduced value. Plastic recycling often falls into the downcycling category as the end product tends to be of lower quality.

Preferably, upcycling outperforms downcycling due to its ability to extend the lifespan of materials. The creation of new materials necessitates substantial resources such as water and energy. By prolonging the use of existing materials, the requirement for new material production is postponed or even avoided. As a result, valuable resources are preserved.

Both upcycling and downcycling are integral to a "closed-loop" manufacturing system. Nonetheless, the extent to which various industries operate within such a system remains a pertinent question.

What is needed to facilitate the true "closed-loop" development? What good examples are already there?



## **FOCUS SESSION IV / 13 October 2023 / 15:00 - 17:00**

### **ROUND TABLE - Role of Waste Management in meeting SDGs**

#### **Moderator:**

Marion Huber-Humer - *BOKU University of Natural Resources and Life Sciences, Vienna (AT)*

#### **Considered Sustainable Developing Goals:**

- Food / Hunger (n. 2)
- Health / Wellbeing (n. 3)
- Sustainable Cities (n. 11)
- Responsible consumption and production (n. 12)

Already in the year 2016, the 17 Sustainable Development Goals (SDGs) of the United Nations' 2030 Agenda for Sustainable Development officially came into force. Till the year 2030, countries worldwide shall mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change and other environmental challenges, while ensuring that no one is left behind. Big tasks, big responsibility, big challenges.

A global effort is needed that involves all diverse stakeholders and sectors to achieve these ambitious goals. This also applies to the waste management sector, which is explicitly addressed in some SDGs, and indirectly in others, but must make a no less important contribution.

The role of the waste management community in the challenges posed by the goals of the SDGs will be discussed with experts from different disciplines in this focused closing session. Future approaches to tackle these tasks and possible solutions are reflected in the context of waste management. Special focus will be put on SDG2 (Zero Hunger), SDG3 (Good Health and Well-Being), SDG11 (Sustainable Cities and Communities) and SDG12 (Responsible Consumption and Production).

## POSTER SESSION

Posters will be continuously accessible in a dedicated hall and discussed in the presence of authors on Monday, Tuesday, Wednesday and Thursday afternoon from 16:30 to 17:00.

*R. de Almeida, M. C. Lavagnolo, J. C. Campos (BR)*

A cradle-to-gate life cycle analysis of membrane concentrate management from landfill leachate treatment plants

*M. Spáčilová, P. Dytrych, M. Lexa, L. Wimmerová, P. Mašín, R. Kvaček, O. Šolcová (CZ)*

A newly developed technology for microplastics removal from wastewater

*K. Chamrádová, P. Basinas, J. Rusín (CZ)*

Application of kinetic models for the evaluation of methane generation produced from the anaerobic digestion of pretreated corn silage with various White Rot Fungi and at different conditions

*A. Abdulkadhim Mohsin, K. Rassim Mahmood, A. Sleibi Mustafa, S. Naimi, S. Shatwan Yahya (IQ)*

Applying sewage sludge materials in improvement geotechnical properties of soils: a review

*R. Tomczak-Wandzel, B. Szatkowska (NO)*

Bio-refinery of food waste and fish sludge for valuable multiproduct generation

*S.-J. Lee, K. Kwon, Y. Jeon (KR)*

Design of an optimal municipal waste treatment facilities for a sustainable waste-to-energy management

*E. Bietlot, C. Collart, E. Maron, R. Cuvelier (BE)*

Development of an innovative value chain for land infested by an invasive plant, the Japanese knotweed

*Y. Yang, S. Kalam, J. Lee, Y. Zhang (CN)*

Synchronous of salt and water resources recovery in high salinity wastewater by membrane distillation

*M. Kliukas, D. Vaičiukynienė, J. Mockienė, A. Kantautas, R. Bistrickaitė, D. Nizevičienė, V. Vaičiukynas, G. Stelmokaitis (LT)*

Development of sustainable Portland cement and reed composites

*H. El Amri, P. Drogui (CA)*

Electrooxidation treatment and dewatering of septic tank sludge

*A. Messineo, A. Picone, C. Corrado, D. Ticali, M. Volpe (IT)*

Hydrothermal carbonization of waste biomass as a sustainable technology for the recovery of energy and valuable carbonaceous materials

*P. Basinas, K. Chamrádová, O. Vosnaki, J. Rusín (CZ)*

Improvement of biogas production from the anaerobic digestion of waste biomass using raw and modified with nitric acid biochar derived from the pyrolysis of biomass and digestate

*S. Hoshino, T. Umeki, A. Tanaka, Y. Matsufuji (JP)*

Improvement progress by Fukuoka Method at Thien Binh dump site in Yangon City, Myanmar

*L. Morávková, H. Šnajdaufová, Z. Petrusová, F. Kaštánek, O. Šolcová (CZ)*

Keeping good separation properties of spiral wound membrane module for carbon dioxide separation from raw biogas

*F. Pasciucco, I. Pecorini, D. Gonzalez, O.J. Prado, D. Gabriel (IT)*

Life cycle assessment of an innovative biological treatment train for sulfur recovery from flue gases containing SO<sub>x</sub>

*N. Fraeyman, S. Malfait, V. Duprez, H. De Coninck, E. De Meester, E. Mortier (BE)*

Pathogens in solid medical waste and risk assessment for human disease

*H. Šnajdaufová, L. Morávková, F. Kaštánek, M. Čárský, K. Soukup, O. Šolcová (CZ)*

Pellets from sewage and paper mill sludge

*M. Tammaro, L.M. Cafiero, L. Tuccinardi, R. Tuffi (IT)*

Realization of a prototype of an experimental apparatus for End-of-Life photovoltaic panels recycling

*L.S. Macedo, C.C. Guimarães, F.P. Manéo, C.E. Teixeira (BR)*

Regional integrated solid waste management planning in Brazil, main challenges and opportunities: case of the Metropolitan Region of Baixada Santista, São Paulo, Brazil

*F. Kaštánek, M. Dlasková, J. Bureš, O. Šolcová (CZ)*

Removal of heavy metals and arsenic from contaminated industrial soils by leaching with animal hydrolysates under the synergistic effect of chelation and biostimulation

*A. Estoková, R. Figmig (SK)*

Study on hydration of cement composite with various industrial waste

*L. Acampora, S. Grilletta, G. Costa (IT)*

Application of Carbon Capture Utilization and Storage (CCUS) to waste to energy plants: a review

*F. van Raffe, N. Quist, T. Canen, R.N.J. Comans (NL)*

Sustainable landfill management in the Netherlands: long term changes in landfill leachate quality during (an)aerobic in-situ stabilization

*M. Sharkey, W. Stubbings, M. Healy, S. Harrad, M. Coggins (IE)*

Synthetic organic chemicals in the Irish environment

*M. Holosová, A. Estoková, A. Sičáková (SK)*

Technological parameters of the cement composite with non-traditional waste

*A. Hofmann, S. Löhn, I. Atamaniuk, K. Kuchta (DE)*

Utilizing bioactive molecules from microalgae microbiomes for sustainable health management in aquaculture

*L. Moreschi, M. Gallo, A. Del Borghi, G. Perotto, E. Gagliano (IT)*

Valorisation of biowaste in the production of plastic trays in a circular economy perspective: environmental assessment through a life cycle approach

*R. Michael (AU)*

The observer effect and the limitations of lysimeters for evaluating landfill phytocap performance

*G. Breslmayer (AT)*

Characterization of non-packaging plastics in municipal solid waste in Austria

*A. Shestavetska, A. Augonis, A. Grinys, V. Vaitkevičius, A. Kantautas, I. Sapeha (LT)*

Utilization of MSWI bottom slag in the production of artificial aggregates by granulation technology

*D. Lee, B. Sang, T. Ohm (KR)*

Numerical study on the design of solid refuse fuel for power plant and its combustion characteristics

*J.E. DeVoy (US)*

Environmental and gendered health effects of post-consumer textile waste

*N. Junakova, M. Balintova, J. Junak (SK)*

Reuse of reservoir sediments as a waste in the preparation of sustainable building mixtures

*L. B. Alves, B. B. Monteiro, R. de Almeida, J. C. Campos (BR)*

Humic substance recovery from reverse osmosis concentrate of solid waste landfill leachate treatment

*C.C. Guimarães, M. Iocca Jr, F.M.R. Almeida (BR)*

Strategies for selective collection of recyclables and environmental education in small cities: a case study in Brazil

*B. Amante, A. Puig, JLL. Zamora, J. Moreno (ES)*

Robots in waste management

*A. Nabavi-Pelesaraei, A. Damgaard, V. Bisinella (DK)*

Mini review on life cycle assessment of chemical recycling for polyethylene terephthalate packaging: a background for UPLIFT project

*D.Hernández, C. Zambra C., J. Diaz (CL)*

Evolution of physical-chemical parameters, microbial diversity, and VOCs emissions of tomato pomace exposed to ambient conditions in open reservoirs

*E. Binner, C. Pfeifer, J. Lackner, C. Zafiu (AT)*

Challenges in the treatment of wood products in the context with circular economic

*F. Xu (CN)*

CO<sub>2</sub> and oxidants method for in situ regeneration of permeable reactive barriers for leachate-contaminated groundwater

*A. Fernandez, I. Ferreira, X. Franco, J. Riaza, X. Serantes, V. Toca, S. Gómez-Cuervo, P. Villar, C. Ávila, L. Herrero (ES)*

Climate change vulnerability risk assessment methodology for waste management infrastructure from public and private perspectives

*R. Ballestar de las Heras, S. Fernandez Ayala, F. Carrillo, F.J. Cañavate, X. Colom (ES)*

Storage degradation process of a biodegradable multilayer films

*M. Balintova, N. Junakova, Y. Chernysh, P. Pavlikova (SK)*

Removal of sulphates from acidic solutions using ion exchange

*L. Yin, F. Han, M. Wang, D. Chen, Y. Hu (CN)*

Heat transfer characteristics of large-scale biomass particles during pyrolysis process

*N. Sundin, L. Bartek, C. Malefors, M. Eriksson (SE)*

Metabolic food waste - Hidden waste with a significant climate cost

*L.S. dos Muchangos (JP)*

Estimating the emissions from implementing a semi-aerobic landfill in a massive open dump site in Mozambique

*I. Bianco, D. Panepinto, M. Zanetti (IT)*

Life Cycle Assessment of plastic wastes from the automotive sector

*G. Farabegoli, A. Rebelo (IT)*

EU IMPEL project Wastewater in Natural Environment (WiNE)

*E. Trottini, G. Barina, T. Denoun, A. Baldini, M. Venturini (FR)*

The Waga 4 World project: the biggest landfill green gas project in Europe financed by a Biomethane Purchase Agreement and the European Union

*M. Dlasková, M. Spáčilová, F. Kaštánek, O. Šolcová (CZ)*

Utilization of biomass and plant waste to remove pollutants from water and soil

*K.G. Sakellariou, M. Mendiola, I. Barasoain-Echepare, A. Lopez Contreras, E. Maron, N. Ntavos, S. Ros, M. Uyttebroek, M.M. Obermeier, X. Franco, T. Fernández-Arévalo (GR)*

MODEL2BIO. Modelling tool for giving value to agri-food residual streams in bio-based industries

*J. Kim, S. Kim, X. Zhao, J. Lee, J.Y. Kim (KR)*

Effects of thermal hydrolysis temperature on lignocellulose structure and hydrogen production of food waste

*M. Kemal Ak, A. Steffens, C. Lara, V. Preyl, J. Huang, C. Maurer (DE)*

Transforming biowaste to valuable products: the hydrocyclone process and waste characterization in a sustainable biorefinery system

*M. Kemal Ak, A. Steffens, C. Lara, V. Preyl, J. Huang, C. Maurer (DE)*

Fiber recovery from municipal biowaste for the production of compostable plant pots: a step towards sustainable bioeconomy

*J. Eimontas, N. Striūgas, K. Zakarauskas, A. Jančiauskas, L. Vorotinskienė (LT)*

The investigation of catalytic decomposition of waste fishing nets for energy products recovery

*X. Zhao, J.Y. Kim (KR)*

Impacts of CR-39 resin micro-plastics on the anaerobic digestion of seaweed in CSTR reactors

*B. Silva, I. Costa, P. Santana, M.E. Zacarias, B. Machado, P. Silva, S. Carvalho, C. Basto-Silva (PT)*

Environmental impact assessment of water bottles with different compositions: vPET, rPET flake, and rPET pellet

*D. Fontana, F. Forte, C. Marcoaldi, O. Masetti, V. Piergrossi, M. Pietrantonio, S. Pucciarmati, M. Tammaro (IT)*

Materials recovery from end-of-life electrochemical storage systems: preliminary results from the IEMAP project