

WASTEENG CONFERENCES SERIES



International Conference on Sustainable Waste
and Biomass Valorisation

wasteeng.org



A bi-annual conference series



Partners



Preface

Since 2005, WasteEng Conference Series addresses the sustainable Engineering for Waste, Biomass and co-Products for Energy and added-value materials production. It gathers the international community working on cutting-edge R&D and addressing barriers related to the Conversion of Biomass, co-products and Waste into Energy to Added-Value Materials. This conference series emphasizes life cycle assessment and technologies/processes/practices that reduce emissions. This conference series has been developed within a global move towards a greener, more resource efficient and climate-resilient economy in synchronization with the natural environment. It intends to play a meaning role for the

Energy and Environmental Transitions towards a Sustainable Development in line with the strong commitment to support the United Nation's Sustainable Development Goals (SDGs) and the targets of the COP21 Paris Agreement.

In this regard Advanced Biofuels, BioHydrogen, Biomethane, Sustainable materials from waste, Energy storage, CO₂ capture, utilisation and storage, Emissions mitigation, Circular Economy initiatives and R&D actions are among the main topics.

Prof Ange Nzihou

Founding chair of the WasteEng Conferences Series

WasteEng Series topics

TOPIC 1

Resources and Feedstock

- Resources and Sustainability
- Feedstock Availability, Characterisation, Composition and Suitability for a Dedicated Process
- Extraction of Critical Materials from Waste (this is different from pre-treatment, this is basically recovery of materials from waste. As an example, recovery of metal from ash)
- Recycling and Reuse

TOPIC 2

Pre-treatments

- Fractionation, Extraction, Drying, Dewatering, Purification, Sorting and Separation

TOPIC 3A

Biomass and Waste to Energy using Biochemical and Chemical routes

- Methane, Ethanol and other bioproducts Production
- Conversion for Heat and Power
- Recovery and Valorisation of Methane from Landfill
- Gas cleaning and Processing
- Design and Industrial (full scale) Application

TOPIC 3B

Biomass and Waste to Energy using Thermochemical route

- Syngas, Methane, Ethanol, Ethylene, Benzene and other Bioproducts Production
- Conversion for Heat and Power
- Gas Cleaning and Processing
- Design and Industrial (full scale) Application

TOPIC 4A

Biomass and Waste to Chemicals, Fuels and Useful Materials using Biochemical and Chemical routes

- New Products, Biofuels, Catalysts, Sorbents, Molecules and Components (New Intermediates, New Raw Materials for Specialty and Fine Chemistry)
- Valorisation of CO₂ - Capture, Storage and Utilisation
- Gas Cleaning and Processing
- Design and Industrial (full scale) Application
- Rare Earth Metals

TOPIC 4B

Biomass and Waste to Chemicals, Fuels and Useful Materials using Thermochemical route

- New Products, Biofuels, Catalysts, Sorbents, Enzymes, Functional Molecules and Components (New Intermediates, New Raw Materials for Specialty and Fine Chemistry)
- Valorisation of CO₂ - Capture, Storage and Utilisation
- Gas Cleaning and Processing
- Design and Industrial (full scale) Application

TOPIC 5

Sustainable Construction Materials from Waste, Industrial and Agricultural by-products

- Production, Characterisation and Quality Control
- Durability
- Environmental Assessment (including leaching tests), Policy and Standardisation

TOPIC 6

Energy Efficiency and Storage

- Materials for Energy
- Energy and Fuel Storage, Batteries, Supercapacitors, Solar and Photovoltaic Energy, CO₂ and other Gases Sequestration
- Use of Renewable Energy Sources (solar, wind, etc...) and their Integration for the Conversion

TOPIC 7

Emissions, Residues Mitigation and Prevention

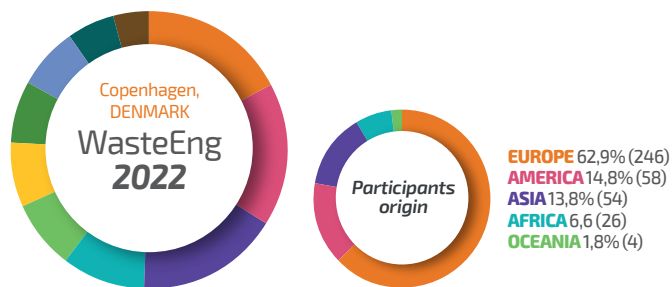
- Waste and Residual Biomass Minimisation and Management
- Pollutant Treatments and Greenhouse Gas Valorisation
- Minimisation and Mitigation of Greenhouse Gas Emissions

TOPIC 8

Circular Economy - Connecting Economic, Environmental and Social gains

- Eco-conception approach
- Life Cycle Assessment, Ecological Footprint and Indicators
- Policies, Regulatory and Social Acceptance
- Health and Risk Assessment
- Education and Teaching
- From Research to Innovation and Industry, Economic and Market

Last WasteEng Series events at-a-glance



TOPIC 4A: 17,3% (62) Biomass and waste to chemicals, fuels and useful materials (biochemical and chemical) - **TOPIC 1:** 16,7% (60) Resources and feedstock - **TOPIC 4B:** 16,7% (60) Biomass and waste to chemicals, fuels and useful materials (thermochemical) - **TOPIC 3A:** 9,7% (35) Biomass and waste to energy (biochemical and chemical) - **TOPIC 8:** 7,8% (28) Circular economy - **TOPIC 3B:** 7,5% (27) Biomass and waste to energy (thermochemical) - **TOPIC 5:** 7,2% (26) Sustainable construction materials from waste - **TOPIC 7:** 7,2% (26) Emissions, residues mitigation and prevention - **TOPIC 2:** 5,8% (21) Pre-treatments - **TOPIC 6:** 3,9% (14) Energy efficiency and storage

445 PAPERS FROM 61 COUNTRIES

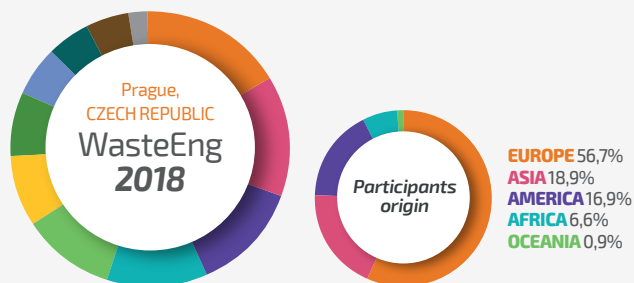
AROUND 1,550 CO-AUTHORS - 4 PLENARY LECTURES 17 KEYNOTES - 201 PRESENTATIONS - 4 SPONSORS



TOPIC 4B: 19,1% (77) Biomass and waste to chemicals, fuels and useful materials (biochemical and chemical) - **TOPIC 3A:** 14,4% (58) Biomass and waste to energy (biochemical and chemical) - **TOPIC 4A:** 12,2% (49) Biomass and waste to chemicals, fuels and useful materials (biochemical and chemical) - **TOPIC 3B:** 11,4% (46) Biomass and waste to energy (thermochemical) - **TOPIC 1:** 9,9% (40) Resources and feedstock - **TOPIC 8:** 9,7% (39) Circular economy - **TOPIC 2:** 8,9% (36) Pre-treatments - **TOPIC 7:** 7,7% (31) Emissions, residues mitigation and prevention - **TOPIC 5:** 6,2% (25) Sustainable construction materials from waste - **TOPIC 6:** 0,5% (2) Energy efficiency and storage

510 PAPERS FROM 60 COUNTRIES

AROUND 1,820 CO-AUTHORS - 3 PLENARY LECTURES 25 KEYNOTES - 263 PRESENTATIONS - 2 SPONSORS



TOPIC 4B: 16,6% (87) Biomass and Waste to Chemicals, Fuels and Useful Materials (Thermochemical) - **TOPIC 4A:** 14,0% (73) Biomass and Waste to Chemicals, Fuels and Useful Materials (Biochemical and Chemical) - **TOPIC 3B:** 13,0% (68) Biomass and Waste to Energy (Thermochemical) - **TOPIC 1:** 11,7% (61) Resources and Feedstock - **TOPIC 3A:** 10,7% (56) Biomass and Waste to Energy (Biochemical and Chemical) - **TOPIC 5:** 8,4% (44) Sustainable Construction Materials from Waste and By-products - **TOPIC 2:** 7,5% (39) Pre-treatments - **TOPIC 7:** 5,9% (31) Emissions, Residues Mitigation and Prevention - **TOPIC 8:** 5,0% (26) Life Cycle Thinking and Eco- Conception - **TOPIC 6:** 4,8% (25) Energy Efficiency and Storage - **TOPIC 9:** 2,5% (13) Economy, Market, Policy and Social Acceptance

525 PAPERS FROM 52 COUNTRIES

AROUND 1,750 CO-AUTHORS - 5 PLENARY LECTURES 17 KEYNOTES - 318 PRESENTATIONS - 6 SPONSORS



TOPIC 3B: 16,0% (67) Biomass and Waste to Energy (Thermochemical) - **TOPIC 4B:** 16,0% (67) Biomass and Waste to Chemicals, Fuels and Useful Materials (Thermochemical) - **TOPIC 4A:** 15,8% (66) Biomass and Waste to Chemicals, Fuels and Useful Materials (Biochemical and Chemical) - **TOPIC 3A:** 12,2% (51) Biomass and Waste to Energy (Biochemical and Chemical) - **TOPIC 5:** 9,5% (40) Sustainable Construction Materials from Waste and By-products - **TOPIC 1:** 9,3% (39) Resources and Feedstock - **TOPIC 2:** 5,7% (24) Pre-treatments - **TOPIC 6:** 4,3% (18) Energy Efficiency and Storage - **TOPIC 7:** 4,3% (18) Emissions, Residues Mitigation and Prevention - **TOPIC 8:** 3,8% (16) Life Cycle Thinking and Eco- Conception - **TOPIC 9:** 3,1% (13) Economy, Market, Policy and Social Acceptance

475 PAPERS FROM 51 COUNTRIES

MORE THAN 40 ABSTRACTS FROM INDUSTRY - AROUND 1,500 CO - AUTHORS - 4 PLENARY LECTURES - 23 KEYNOTES - 299 PRESENTATIONS - 15 SPONSORS



TOPIC 3: 33,2% (122) Waste and Biomass to Energy - **TOPIC 4:** 32,6% (120) Waste and Biomass to Chemicals, Fuels and Useful Materials - **TOPIC 1:** 16,8% (62) Resources and Feedstock - **TOPIC 6:** 4,9% (18) Emissions, Residue Minimisation - **TOPIC 7:** 3,8% (14) Life Cycle Thinking - **TOPIC 2:** 6,0% (22) Pre-treatments - **TOPIC 8:** 1,4% (5) Economy, Market, Policy and Social Acceptance - **TOPIC 5:** 1,4% (5) Energy Storage

400 PAPERS FROM 50 COUNTRIES

MORE THAN 50 ABSTRACTS FROM INDUSTRY - AROUND 1,000 CO - AUTHORS - 2 PLENARY LECTURES - 14 KEYNOTES - 209 PRESENTATIONS - 4 SPONSORS



TOPIC 1: 12,7% (64) Resources and Feedstock **TOPIC 2:** 4,2% (21) Pre-treatments **TOPIC 3:** 47,4% (238) Waste and Biomass to Energy, Chemicals, Fuels and Useful Materials - **TOPIC 4:** 17,9% (90) Emissions, Residue Minimisation - **TOPIC 5:** 1,8% (9) Renewable Energies - **TOPIC 6:** 7,4% (37) Materials for Energy and Storage - **TOPIC 7:** 5,6% (28) Life Cycle Thinking - **TOPIC 8:** 3,0% (15) Economy, Market, Policy and Social Acceptance

480 PAPERS FROM 53 COUNTRIES

MORE THAN 60 ABSTRACTS FROM INDUSTRY - AROUND 1,700 CO - AUTHORS - 3 PLENARY LECTURES - 243 PRESENTATIONS - 9 SPONSORS

WasteEng2005 (Albi, France), WasteEng2008 (Patras, Greece), WasteEng2010 (Beijing, China), WasteEng2012 (Porto, Portugal), WasteEng2014 (Rio de Janeiro, Brazil), WasteEng2016 (Albi, France), WasteEng2018 (Prague, Czech Republic), virtual WasteEng2020 (Guelph, Canada), hybrid WasteEng2022 (Copenhagen, Denmark)

Plenary speakers of the previous issues of the WasteEng Series

WasteEng2022

Challenges and opportunities for moving from the linear to the circular water cycle

Prof William MITCH
Stanford University, USA

Plastic management for circular economy: environmental, social, and governance (ESG) and sustainable packaging

Prof Yong Sik OK
Korea University, South Korea

Waste and biomass valorization by supercritical hydrothermal processing

Prof Tadafumi ADSCHIRI
Tohoku University, Japan

Upgrading waste for food, fuel and chemicals production via metabolic engineering (and good, old bioprocess engineering)

Prof Gregory STEPHANOPOULOS
Massachusetts Institute of Technology, USA

WasteEng2020

Food waste valorisation

Prof Gerasimos LYBERATOS
National Technical University of Athens, Greece

Heterodoxy in fast pyrolysis: air-blown reactors and pyrolytic sugar production

Prof Robert BROWN
Iowa State University, USA

Addressing sustainability challenges using waste as a resource - industry perspective

Dr Ajit SAPRE
Reliance Industries Ltd, India

WasteEng2018

Circular economy: a collaborative approach to waste management

Mr Arnoldas MILUKAS
Head of Unit - H2020 Environment and Resources, EC

Co-gasification as a possible alternative for an efficient Waste-to-Energy conversion

Prof Umberto ARENA
University of Campania Luigi Vanvitelli, Italy

Bioconversion of organic matter to useful chemicals and fuels in a circular bioeconomy approach

Prof Irini ANGELIDAKI
Denmark Technical University, Denmark

Hydrothermal conversion of biomass to fuels and chemicals

Prof Phillip SAVAGE
Penn State University, USA

Health and climate co-benefits of the rural residential energy transition in China

Prof Shu TAO
Peking University, China

WasteEng2016

Environmental opportunities and limits of material recycling and energetic recovery from waste

Prof Stefanie HELLWEG
Swiss Federal Institute of Technology, Switzerland

Production of nanomaterials from biowastes

Prof Sabu Thomas CHATHUKULAM
Mahatma Gandhi University, India

Environmental and economic analysis of the conversion of wastes and energy crops to biofuels: we need to think big

Prof Bruce E. DALE
Michigan State University, USA

Thermochemical conversion of waste plastics to fuels, chemical and materials

Prof Paul T. WILLIAMS
University of Leeds, UK

WasteEng2014

Energy storage – key technology for sustainable development

Dr Rainer TAMME
DLR German Aerospace Center, Germany

Up-to-date waste-to-energy approach

Prof Petr STEHLIK
Brno University, Czech Republic

WasteEng2012

The Global WtERT Council

Prof Nickolas THEMELIS
Columbia University, USA

Synthetic fuels from biomass using concentrated solar energy

Prof Gilles FLAMANT
PROMES-CNRS, France

Utilising waste and biomass: assessing sustainability of different options

Prof Adisa AZAPAGIC
The University of Manchester, UK

WasteEng2010

Valorisation of biomass to energy

Dr Fernando PRETO
Canmet Energy, Canada

Valorisation of minerals and recyclates

Prof Markus REUTER
University of Melbourne, Australia

Destruction and valorisation of CFC compounds

Prof Masaaki YAMABE
AIST, Japan

Resource utilisation of heavy metal containing industrial wastes

Prof Yi ZHANG
IPE, China

Life cycle assessment and waste management lessons for industry and policy makers

Prof Goran FINNVEDEN
Royal Institute of Technology, Sweden

Research and educational requirements for sustainable waste management systems

Prof Hilary INYANG
African University of Science and Technology, Nigeria

WasteEng2008

Life Cycle Thinking and sustainable management of waste

Mr David PENNINGTON
European Commission & Joint Research Centre, Ispra, Italy

Energy production and material substitutes from waste. Beneficial reuse and sustainable development.

Mr Fabrice COPIN
Lafarge Ciments, France

Novel biotech process for waste valorization

Prof Willy VERSTRAETE
University of Ghent, Belgium

Present and future activities at EU level in the framework of Seventh Framework Programme for Research

Mr Michele GALATOLA
General Directorate for Research, EC

WasteEng2005

The Environmental Technology Action Plant (ETAP) for boosting competitiveness and environmental protection in EU

Mr Eric PONTHEIU
General Directorate for Research / I - Environment, EC

How clean should be "Clean" in waste incineration

Mr Ivan MILO
Veolia Environnement - CREED, France

Reaction mechanisms in the geopolymeric conversion of inorganic waste to useful products

Prof Jannie VAN DEVENTER
The University of Melbourne, Australia

New polymer supported ion complexing agents: design, preparation and metal ion affinities of immobilized ligands

Prof Spiro ALEXANDRATOS
Hunter College of the City University of New York, USA

Putting waste into context: Systems approaches to evaluate material recovery, re-use and recycling

Prof Roland CLIFT
University of Surrey, UK

Environment assessment of wastes and waste treatment processes for beneficial use and disposal based on leaching characterisation

Prof David KOSSON
Vanderbilt University, USA

CONTACT

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