DAY 1 / MONDAY
MAY 21

SYMPOSIUM STRUCTURE / STRUTTURA DEL SIMPOSIO

Oral session | NEWS - Networking Session

Monday 21st May morning	OPENING SESSION					
	A1. Strategies & Policies I	**B1.** China meets Italy	**C1.** Biorefinery	**D1.** Construction & Demolition Waste	italian session	**E1.** Caratterizzazione e ricircolo dei materiali
Monday 21st May afternoon	**A2.** Strategies & Policies II	**B2.** Education	**C2.** Sewage Sludge	**D2.** Migliorare l'uso delle risorse nella filiera delle costruzioni con la circular economy		**E2.** Specifiche problematiche tecniche e case studies
	A3. Country report - Challenges & performance of recycling strategies	**B3.** Plastic recycling	**C3.** Food & organic waste	**D3.** Circular economy readyness		**E3.** Circular Economy e società
Tuesday 22nd May morning	**A4.** Country report	**B4.** Industrial Waste	**C4.** CircE - The perspective of European regions on Circular Economy	**D4.** Waste Architecture		**E4.** La tariffa puntuale: strumento per lo sviluppo della circular economy
	A5. Paper recycling	**B5.** WEEE management strategies	**C5.** The Urban Wins Project	**D5.** Material reuse and education I		**E5.** Waste Architecture e gestione sostenibile dei rifiuti nello spazio urbano
Tuesday 22nd May afternoon	**A6.** Combustion residues	**B6.** Recovery of metals	**C6.** Anaerobic digestion of bio-waste in the perspective of the circular economy	**D6.** Material reuse and education II		**E6.** Strategie di Urban Mining e Circular Economy
	A7. Landfill Mining	**B7.** Recovery of WEEE - Case studies from different countries	**C7.** Management and recovery of digestate from anaerobic digestion	**D7.** Material reuse and education III		
Wednesday 23rd May	TECHNICAL TOURS					

MONDAY MAY 21
MORNING

OPENING SESSION / 9:00-10:40 / OGGIONI ROOM

Chair / *Presidente:* Raffaello Cossu (IT)

WELCOME ADDRESSES / *SALUTI DI BENVENUTO*

9:00-10:00 *Raffaello Cossu, University of Padova (IT)*
Paolo Russo, Italian Parliament (IT)
Daniele Belotti, Italian Parliament (IT)
Raffaele Cattaneo, Regional Governament of Lombardia (IT)
Hongtao Wang, Tsinghua University (CN)

INTRODUCTORY LECTURES / *RELAZIONI INTRODUTTIVE*

10:00-10:20 *Marco Frey (IT)*
Agenda 2030 and circular economy: the role of firms

10:20-10:40 *Floriana La Marca (IT)*
EIT RawMaterials: an European initiative driving challenges in the raw material sector

10:40-11:20 Coffee Break

SESSION A1 / 11:20-13:00 / ALABASTRO A ROOM (2nd floor)

STRATEGIES & POLICIES I

Chair / *Presidente:* Ian D. Williams (UK)

C. Battistoni, S. Barbero (IT)
The holistic diagnosis as a method to support urban mining actions: the case study of the European project retrace for Piedmont region (Italy)

S. Daskal, O. Ayalon, M. Shechter (IL)
The role of regulation in closing the municipal solid waste loop

L. Fraccascia, I. Giannoccaro, V. Albino (IT)
Business models for industrial symbiosis: a taxonomy

S. Petters, K. Mauthner (AT)
How to build a World in Carbon Balance

13:00 - 15:00 Lunch break

MONDAY MAY 21
MORNING

SESSION B1 / 11:20-13:00 / ALABASTRO B ROOM (2nd floor)

CHINA MEETS ITALY

Chairs / *Presidenti*: Dongbei Yue (CN), Raffaello Cossu (IT)

D. Yue, M.C. Lavagnolo (CN)
Application of Circular Economy in Italy and China

L. Zhang, D. Yue, W. Zhang, H. Bai, Y. Ji (CN)
Life cycle assessment of water recycling based on alternative leachate treatment systems

D. Yue (CN)
Technical and economical comparison between two landfill gas power generators

X. Fan (CN)
Overview of landfill remediation and storage waste treatment technology in China

H. Bai (CN)
Recovery of recyclable materials from leachate

L. Dong (CN)
Cooperation on industrial promotion in China

J. Zhang (CN)
Eco treatment and energy utilization of Municipal Solid Waste: practice and exploration of non-incineration treatment technology

SESSION C1 / 11:20-13:00 / BIANCA ROOM (1st floor)

BIOREFINERY

Chair / *Presidente:* Alberto Pivato (IT)

M. Cruz, E. Costa, M.F. Almeida, M. Alvim-Ferraz, J.M. Dias
Recovery of by-products from the olive oil production and the vegetable oil refining for biodiesel production

S. Pardilhó, R. Duarte, A. Costa, R.C. Alves, M.F. Almeida, A. Nunes, M. Beatriz, P.P. Oliveira, J.M. Dias (PT)
Characterization of Marine Macroalgae Waste Aiming the Production of Biofuels and Value Added Products – Preliminary Studies

F. Demichelis, E. Vasini, S. Fiore (IT)
Design and sustainability assessment of biorefinery systems

Z. Tang, T. Huhe, H. Guo, H. Yin, M. Liu, Y. Chen (CN)
Agricultural Residues to Energy in Guangdong Province: Generation, Spatial Distribution and Energy Potential

13:00 - 15:00 Lunch break

SESSION D1 / 11:20-13:00 / STAMPA ROOM (2nd floor)

CONSTRUCTION & DEMOLITION WASTE

Chair / *Presidente:* Giuseppe Bonifazi (IT)

R. Malesani, M.C. Lavagnolo, F. Faleschini, A. Pivato, C. Pellegrino (IT)
C&D waste: Characteristics and recovery

G. Bonifazi, R. Palmieri, S. Serranti, G.Hermant, H. Bréquel (IT)
Automatic recognition of different materials from construction and demolition waste by hyperspectral imaging

G. Bedeković, B. Kovačević Zelić, I. Sobota (HR)
Construction and demolition (C&D) waste management in Croatia with recycling overview

M. Ojan (DE)
Valorization of materials and resources: a concrete approach

SESSIONE E1 / 11:20-13:00 / NOVELLI ROOM (2nd floor)

CARATTERIZZAZIONE E RICIRCOLO DEI MATERIALI

ITALIAN SESSION

Chair / *Presidente:* Giovanni Dolci (IT)

G. Bonifazi, R. Palmieri, S. Serranti, G.Hermant, H. Bréquel (IT)
Caratterizzazione dei prodotti risultanti dal recupero di scarti da demolizione mediante tecniche di analisi di immagine iperspettrale

G. Bonifazi, G. Capobianco, R. Palmieri, S. Serranti (IT)
La caratterizzazione delle schede elettroniche degli smartphone mediante micro-fluorescenza ai raggi X

C. Ferrara, L. Rapido, G. De Feo (IT)
Applicazione della LCA ad un impianto di riciclo della carta: l'effetto della fonte di approvvigionamento energetico

G. Dolci, F. Poma, A. Catenacci, M. Grosso, F. Malpei (IT)
Valutazione dell'utilizzo di sacchetti in carta per la raccolta del rifiuto organico

A. Lazzari, A. Martina (IT)
Eurosintex, la plastica seconda vita come esempio di economia circolare

13:00 - 15:00 Lunch break

MONDAY MAY 21
AFTERNOON

SESSION A2 / 15:00-16:40 / ALABASTRO A ROOM (2nd floor)
STRATEGIES & POLICIES II

Chair / *Presidente:* Peter J. Shaw (UK)

B. Kovačević Zelić, G. Bedeković (HR)
Harmonization of mineral raw materials and waste management policies at a national level

J. Gutberlet, S. Carenzo (CA)
Waste pickers at the heart of the circular economy: a perspective from the global south

G. Grause (JP)
Resource control by introducing an environmental currency

E. Malavasi, B. Toniolo (IT)
The recent regulatory evolution on by-products

16:40 - 17:20 Coffee break and Poster discussion

SESSION A3 / 17:20-19:00 / ALABASTRO A ROOM (2nd floor)
COUNTRY REPORT - CHALLENGES & PERFORMANCE OF RECYCLING STRATEGIES

Chair / *Presidente:* Jutta Gutberlet (CA)

J. Margeta (HR)
Circular economy and septage management on the islands in Croatia

A. Asthana, S. Mukherjee, G.P. Misra, P. Babbar (UK)
Challenges in establishing waste-to-energy projects in developing countries with a case study from India

A. Lewandowska, D. Szymańska (PL)
Selective collection and municipal waste recycling in Poland in the context of city ecologization

S. Lee (UK)
A Comparison of the Recycling Performance of English Local Authorities

R. Lopes, R. Santos, N. Videira, P. Antunes (PT)
Collaborative vision for a circular economy in packaging and food & beverages sectors: a roadmap for Portugal

SESSION B2 / 15:00-16:40 / ALABASTRO B ROOM (2nd floor)

EDUCATION

Chair / *Presidente:* Giovanni De Feo (IT)

P.C. Berardi, M.L. Lopes, J.M. Dias (PT)
Circular economy in higher education: fundamental contents towards effective training

L.S. dos Muchangos, P. Vaughter (JP)
Are gender perspectives included in waste education programs? A systematic literature review

F. Bernocchi, M. Mucci (IT)
An educational virtual reality project applied to the Circular Economy for primary schools "Waste travel 360°2.0"

I. De Benedictis, M. Musella (IT)
The perception of reuse: how to educate at the circular economy?

16:40 - 17:20 Coffee break and Poster discussion

SESSION B3 / 17:20-19:00 / ALABASTRO B ROOM (2nd floor)

PLASTIC RECYCLING

Chair / *Presidente:* Salvatore Masi (IT)

M. Calero, M-Á. Martín-Lara, V. Godoy, L. Quesada, D. Martínez, F. Peula, J.M. Soto (ES)
Characterization of plastic materials presented in mixed municipal solid waste. Preliminar study for their mechanical recycling

A. Özkan, K. Cebeci Topbaş, Z. Günkaya, E. Yapıcı, H. Akgün, M. Banar (TR)
Waste plastic type selection to produce carbon nanotube by using electre III methodology

Z. Günkaya, M. Taş, A. Özkan, M. Banar (TR)
Thermal insulation material production from waste LDPE packages

A. Özkan, E. Yapıcı, Z. Günkaya, H. Akgün, K.C. Topbaş, M. Banar (TR)
Pyrolysis of waste C/LDPE in the presence of waste clay and zeolite

A. Özkan, H. Akgün, Z. Günkaya, E. Yapıcı, K.C. Topbaş, M. Banar (TR)
Effect of different additive materials on waste LDPE pyrolysis

MONDAY MAY 21
AFTERNOON

SESSION C2 / 15:00-16:40 / BIANCA ROOM (1st floor)

SEWAGE SLUDGE

Chair / *Presidente:* Dongbei Yue (CN)

K. Shih, H. Yan, L. Kong (HK)
Quantitative x-ray diffraction analysis for assisting phosphorus recovery from urban waste stream

Š. Václavková, M. Šyc, M. Pohořelý, J. Moško, K. Svoboda, M. Punčochář (CZ)
Municipal sewage sludge as a locally important nutrient mine

V. Singh, H.C. Phuleria, M.K. Chandel (IN)
Characterization of sewage sludge from moving bed biofilm reactor (MBBR) sewage treatment plant for it's agricultural application

A. Hornung, N. Jäger, J. Neumann, A. Apfelbacher, R. Daschner (DE)
Sustainable utilization of municipal sewage sludge into synthetic fuels

16:40 - 17:20 Coffee break and Poster discussion

SESSION C3 / 17:20-19:00 / BIANCA ROOM (1st floor)

FOOD & ORGANIC WASTE

Chair / *Presidente:* Kaimin Shih (HK)

F. Girotto, M.C. Lavagnolo, R. Cossu (IT)
Bio-energy and bio-materials production through a sustainable food waste management

F. Di Maria, O. Ayalon, S. Daskal (IL)
Different approaches for bio-waste management by anaerobic digestion: an Italian and Israeli comparison

J. Kannengiesser, C. Kuhn, T. Mrukwia, D. Stanojkovski, J. Jager, L. Schebek (DE)
Extraction of carboxylic acids from liquid waste phase as platform for different bio-based products

M.C. Lavagnolo, F. Ruggero, A. Chiumenti (IT)
Bioplastic bags composting

SESSION D2 / NeWs / 15:00-16:40 / STAMPA ROOM (2nd floor)

MIGLIORARE L'USO DELLE RISORSE NELLA FILIERA DELLE COSTRUZIONI ATTRAVERSO LA CIRCULAR ECONOMY

ITALIAN SESSION

Chairs / *Presidenti:* Laura Cutaia, Maria Cristina Lavagnolo, Stefano Cicerani (IT)

Il settore delle costruzioni e l'intera filiera ad esso correlata, che rappresenta un motore trainante per l'economia Italiana, è responsabile di un consumo massiccio di risorse, notevoli emissioni di CO_2 e della produzione di ingenti quantitativi di rifiuti lungo l'intero ciclo di vita dei prodotti. Ad oggi i tassi di riciclo e sostituzione delle materie prime vergini con prodotti riciclati sono ancora molto bassi e la gran parte della domanda interna di aggregati viene soddisfatta quasi esclusivamente con aggregati naturali. Ampi dunque sono i margini di miglioramento e i benefici attesi da un uso più efficiente delle risorse e dalla transizione verso l'economia circolare con il conseguente riposizionamento competitivo dell'intero settore e delle imprese della filiera. I rifiuti da Costruzione e Demolizione, dati gli elevati quantitativi prodotti e gli stringenti obiettivi fissati dalle direttive europee, rappresentano un flusso prioritario su cui indirizzare azioni volte a valorizzarne il recupero e le interconnessioni con le filiere di utilizzo delle risorse secondarie. Obiettivo della sessione è affrontare le problematiche ancora aperte, le opportunità per le imprese e gli operatori del settore, il ruolo della comunità scientifica e della pubblica amministrazione nell'avviare e sostenere politiche ed approcci per la transizione verso l'economia circolare.

Relazioni Introduttive:

F. Peres (IT)
End of Waste: lo stop del Consiglio di Stato

A. Luciano (ENEA)
Analisi dei flussi di risorse e potenzialità di recupero dei materiali nella filiera

S. Cicerani (CTS RemTech Expo-Inertia)
I provvedimenti di Roma Capitale per la promozione della filiera del recupero dei rifiuti inerti

V. Correggia (MISE)
I lavori del "Laboratorio Materie Prime" per una strategia mineraria nazionale

S. Saporetti (MATTM) - intervento in videoconferenza
Il GPP come strumento per l'economia circolare

D. Vignani (ISTAT)
Fabbisogni informativi nel framework delle policy internazionali, nazionali e locali

A. Bonoli (Università di Bologna)
Caratterizzazione e qualificazione dei materiali recuperati da rifiuti da C&D

F. Cioffi (Contento Trade)
Il sistema delle norme di qualificazione degli aggregati riciclati

P. Tininini (NAD)
La demolizione selettiva per il recupero dei rifiuti da C&D

MONDAY MAY 21
AFTERNOON

SESSION D3 / NeWs / 17:20-19:00 / STAMPA ROOM (2nd floor)
CIRCULAR ECONOMY READINESS

Chairs / *Presidenti:* Rachel M. Dunk, Carly Fletcher (UK)

The linear economy, which follows a take-make-use-dispose model, has been the dominant paradigm underpinning continued economic growth. While it has delivered, for many, huge improvements to living standards and wealth, it has also caused deep social inequality, depletion of natural resources and environmental degradation. The circular economy has been positioned as a promising alternative. Central to the vision of the circular economy is the ambition to tackle two of the main negative effects of a linear model: waste and excessive extraction of primary resources. It is here, where the waste industry can play an integral part, for example by following the waste hierarchy to recirculate materials into society and advancing urban mining to reclaim previously lost materials. While momentum is building towards the adoption of circular economy models, it is estimated that the current global economy is still only 9% circular, with previous schemes to include circular thinking into waste management having varied success. Barriers that have been identified by these attempts include reluctance to invest in untested technology, lock-in of ineffective processes, poor data availability and competing local priorities. Going forward, it is therefore important to overcome these barriers and learn from the mistakes of the past.
This workshop will introduce and explore the concept of "Circular Economy Readiness". Circular Economy Readiness is based on a similar concept within the power sector, Carbon Capture Readiness, which aims to prepare the energy sector for the future implementation of Carbon Capture and Storage (CCS). For example, it is a legal requirement within the EU for new combustion plants to conduct feasibility assessments and make provisions such that CCS technology can be retrofitted and utilised in the future. This allows the immediate need for additional capacity to be met whilst addressing the risks of lock-in. This is comparable to barriers that affect progressive waste management, where the immediate need for increased sanitary disposal may be viewed as more pressing than the need for fully circular waste management practices. This workshop explores how the concept of 'Readiness' could be adapted to help the waste management industry contribute to the transition towards a fully circular economy. It will also create a forum for ideas on how it can be interpreted and implemented in different waste management systems taking into account local priorities, infrastructure and customs.

Introductory lectures:

R.M. Dunk, C. Fletcher (UK)
Introducing the concept of Circular Economy Readiness

Agenda:

Introductory presentation / Interactive workshop: activities to scope out the concept of "Circular Economy Readiness" / Activity feedback and discussion / Conclusion

SESSION E2 / 15:00-16:40 / NOVELLI ROOM (2nd floor)

SPECIFICHE PROBLEMATICHE TECNICHE E CASE STUDIES / ITALIAN SESSION

Chair / *Presidente:* Giuseppe Mancini (IT)

B. Orrico (IT)
La questione ecoballe in Campania

L. Campadello, A. Accili, N. Vincenti (IT)
Aumentare il recupero di materiali critici dai RAEE. La sperimentazione italiana di ECODOM: dalla raccolta al trattamento innovativo

G. Mancini, R. Cossu, A. Luciano, P. Viotti, D. Fino (IT)
Caratterizzazione del percolato da discarica di fluff attraverso test lisimetrici a grande scala

16:40 - 17:20 Pausa caffè e discussione Poster

SESSION E3 / 17:20-19:00 / NOVELLI ROOM (2nd floor)

CIRCULAR ECONOMY E SOCIETA'

ITALIAN SESSION

Chairs / *Presidenti:* Raffaello Cossu, Alessandra Bonoli (IT)

F. Rossi (IT)
Progettazione circolare per la sostenibilità

A. Bonoli (IT)
L'impegno dell'Università di Bologna nella promozione dell'Economia Circolare

E. Perotto, D. Prandstraller (IT)
La gestione rifiuti presso gli Atenei aderenti alla Rete delle Università per lo Sviluppo Sostenibile: insieme verso l'Economia circolare

I. De Benedictis, M. Musella (IT)
La propensione al riciclo: come sensibilizzare i giovani verso un'economia circolare?

F. Bernocchi, M. Mucci (IT)
Waste Travel 360 un progetto di educazione ambientale per le scuole con l'utilizzo della tecnologia vr per accompagnare le giovani generazione nel mondo dell'economia circolare

L. Fraccascia, I. Giannoccaro, V. Albino (IT)
Modelli di business per la simbiosi industriale: una tassonomia

DAY 2 / TUESDAY MAY 22

TUESDAY MAY 22
MORNING

SESSION A4 / 9:00-10:40 / ALABASTRO A ROOM (2nd floor)
COUNTRY REPORT
Chair / *Presidente:* Abhishek Asthana (UK)

A. Cesaro, A. Marra, F.P. Buonocore, R. Manzi, M. Bruno, V. Belgiorno (IT)
The recovery of Campania waste bales in a circular perspective

S.W. Hermanowicz, Y. Xiang, S. Xia (US)
Life Cycle Assessment of a municipal solid waste power plant in China

C. Maione, N. Aliakbarshirazi (US)
Power dynamics and conflict of interests in the waste sector: the case of Nairobi, Kenya

G. Ulloa, R. Cayumil, M. Sanchez (CL)
Urban mining in Chile: State of the art

10:40 - 11:20 Coffee break and Poster discussion

SESSION A5 / 11:20-13:00 / ALABASTRO A ROOM (2nd floor)
PAPER RECYCLING
Chair / *Presidente:* Sheryl Lee (UK)

C. Geng, T. Ma, J. Liu (CN)
Material and substance flow analysis for NewYield® calcium carbonate filler from pulp mill lime mud

C. Ferrara, L. Rapido, G. De Feo (IT)
LCA application to a paper recycling plant: the effects of energy supply source

G. De Feo, F. D'Argenio, C. Ferrara, A. Grosso (IT)
Assessment of environmental, social and economic benefits wasted in the unsorted residual msw in terms of paper and cardboard

13:00 - 15:00 Lunch break

SESSION B4 / 9:00-10:40 / ALABASTRO B ROOM (2nd floor)

INDUSTRIAL WASTE

Chair / *Presidente:* Roberto Raga (IT)

M. Hache, F. Bilek (DE)
Sequential Extraction - Determination of element mobility in process materials and mining residue

L. Biganzoli, L. Rigamonti, M. Grosso (IT)
Steel drums re-use in the circular economy: an LCA evaluation

R. Warrings (AT)
Iron and steel stock in Austria - Bottom up analysis

F. Gallo, D. Previtali (IT)
Viscolube - Mineral used oil re-refining: open technology platform for circular economy.

G. Mancini, R. Cossu, A. Luciano, P. Viotti, D. Fino (IT)
ASR landfill leachate characterization through batch and lysimetric tests

J. Bachér, J. Laatikainen-Luntama, H. Punkkinen, M. Nieminen, J. Laine-Ylijoki (FI)
Holistic approach for shredder residue treatment

10:40 - 11:10 Coffee break and Poster discussion

SESSION B5 / 11:20-13:00 / ALABASTRO B ROOM (2nd floor)

WEEE MANAGEMENT STRATEGIES

Chair / *Presidente:* Rainer Warrings (AT)

G. Bonifazi, G. Capobianco, R. Palmieri, S. Serranti (IT)
A methodological approach for the characterization of printed circuit boards from smartphones by micro X-ray fluorescence

R. Brüning, J. Wolf (DE)
Lessons learned from the project RUN (ReUse Notebook)

R.Z. Saludes, M.K. Galang, F.Jr. Ballesteros (PH)
Estimating WEEE generation using Artificial Neural Network (ANN) and Adaptive Neuro-Fuzzy Inference System (ANFIS): a quantitative comparison

M.A. de Carvalho, K.E. Gomes, J.A. Soares Tenório, D.C. Romano Espinosa (BR)
Characterization of lead free printed circuit boards from obsolete computers through SEM-EDS

13:00 - 15:00 Lunch break

TUESDAY MAY 22
MORNING

SESSION C4 / NeWs / 9:00-10:40 / BIANCA ROOM (1st floor)
THE PERSPECTIVE OF EUROPEAN REGIONS ON CIRCULAR ECONOMY

Chair / *Presidente:* Dario Sciunnach (IT)

Since the release of the Circular Economy Pack 1.0 'Closing the Loop' (December 2015) much work has been done by the European regions to analyze both the circular potential of the current economic dynamics, and the emerging barriers (social, regulatory, technical or financial) that hamper a broader or a fuller development of such potential.
In the session, some of the most relevant recent results obtained by the CircE project, in the framework of the Interreg Europe Program, will be presented by Regione Lombardia (Lead Partner in the project) and by its stakeholders.

Introductory lectures:

M.G. Pedrana (IT)
Policy integration to boost Circular Economy in Lombardy Region

D. Sciunnach (IT)
The CircE project within the Interreg Europe Program

M. Colledani (IT)
The CircE tool: a methodology for the identification of cross-regional Circular Economy value chains and opportunities

A. Brescianini (IT)
Dispensa sociale - The challenge to connect food waste reduction and social commitment

B. Ferrari (IT)
Innovation strategies in the WEEE recycling sector through a multiregional cooperation

O. Maschi (IT)
Identification and characterization of recycled textile materials

10:40 - 11:20 Coffee break and Poster discussion

SESSION C5 / NeWs / 11:20-13:00 / BIANCA ROOM (1st floor)

THE URBAN WINS PROJECT: A NEW WAY OF THINKING THE WASTE MANAGEMENT AND PREVENTION SYSTEMS

Chair / *Presidente:* Giulia Lucertini (IT)

The EU Waste Framework Directive has two key objectives: to prevent and reduce the negative impacts caused by the generation and management of waste and to improve resource efficiency. Talking about waste and resource efficiency, Circular Economy and Urban Metabolism are two terms that have been widely used in recent years. However, their links with cities strategy and management it is not so obvious.
UrbanWINS project aims overcame this gap through the development of planning processes and strategies able to link waste prevention and management with the policies of the cities and citizens perceptions. The project, through an innovative and collaborative process, implements in 8 European Pilot Cities several dimostrative actions.

Introductory lectures:

G. Lucertini (IT)
Urban metabolism and urban planning: Urban Wins Project

F. Clarens (ES)
DPSIR and LCA as tools for assessing the WMS

D. Jimenez Encarnacion (SE)
Applying the urban metabolism analyst model to Leiria municipality, Portugal

J. Prummel (NL)
Lead by example - Procurement as your own strategic instrument to implement circular economy

M. Pesaro, C. Vuoto, Martina Macconi (IT)
Urban wins and the pilot action

13:00 - 15:00 Lunch break

TUESDAY MAY 22
MORNING

SESSION D4 / 9:00-10:40 / STAMPA ROOM (2nd floor)

WASTE ARCHITECTURE

Chairs / *Presidenti:* Elena Cossu, Anna Artuso (IT)

F. Zambetti, A. Baldacchini, R. Ranghetti (IT)
Reuse[3] - The reuse desk in Franciacorta: a new model towards circularity, sharing and solidarity

K. Rogatka, A. Lewandowska (PL)
Upcycling of urban space - Case study from Poland

S. Antoniadis, L. Stendardo (IT)
From dross-scape to spore-scape

S. Giorgi, M. Lavagna, A. Campioli (IT)
Circular economy and regeneration of building stock. Assessement tool for sustainable end-of-life scenario

J.R. Carreón (NL)
The circularity in the built environment

10:40 - 11:20 Coffee break and Poster discussion

SESSION D5 / NeWs / 11:20-13:00 / STAMPA ROOM (2nd floor)
MATERIAL REUSE AND EDUCATION I

Chair / *Presidente:* Ian D. Williams (UK)

There are many benefits when we reuse items – political, commercial, social, environmental and economic. But even though reuse is a highly preferred process within the waste hierarchy, barriers and questions remain. Reuse is dependent on goods being collected and made available to the next user; sufficiently high quality and durable goods need to be put onto the primary market initially. In-built obsolescence and price competitiveness can lead to products of lower quality and reduced lifespan, with lower potential for their eventual reuse. The variety of products on the market means that the diversion and preparation of products and components for re-use will remain a labour-intensive activity for the foreseeable future. Societal preferences, peer-pressure and the desire for image-orientated products can, in practice, inhibit reuse of some potentially reusable items (e.g. clothing, furniture, e-goods). Economic barriers impede reuse of technically reusable items – notably the low price of new goods, and a lack of developed markets for some used goods. There is debate concerning the relative potential benefits of purchasing a new, more efficient appliance and the benefits of reuse. Critics insist that reuse is just delaying time to disposal via landfill or incineration. But times are changing. In our private lives, reuse for economic and/or "feel-good" benefit is thriving. Businesses are recognizing that the benefits of reuse are real and realizable. The contribution of TSOs to the social economy is clearly massive and their contribution to reuse is huge and probably under-estimated. The political impetus for reuse is growing. The global population is rapidly increasing and key resources are becoming scarcer and more expensive to secure, prompting decision-makers to embrace circular economy concepts. We are starting to quantify the benefits of reuse in new ways that capture the attention of society. The Internet and novel, rapid delivery systems are transforming our ability to sell used goods easily and quickly. The barriers to reuse are coming down and the impetus to reuse more and better is increasing. This Conference will discuss all of these issues – and more – as we aim to make a significant contribution to the debate about how reuse can fit better into our social fabric and the global economy.

Introductory lectures:

R. Osterley, I.D. Williams (UK)
The benefits of reuse via charity shops

I.D. Williams, P.J. Shaw (UK)
Key principles for reuse

P.J. Shaw, I.D. Williams (UK)
Reuse in practice

I.D. Williams, L. Powell (UK)
Sustainable resource management in higher education institutions: shift your stuff

13:00 - 15:00 Lunch break

TUESDAY MAY 22
MORNING

SESSION E4 / NeWs / 9:00-10:40 / NOVELLI ROOM (2nd floor)
LA TARIFFA PUNTUALE: STRUMENTO PER LO SVILUPPO DELLA CIRCULAR ECONOMY
ITALIAN SESSION

Chair / *Presidente:* Giovanni Montresori (IT)

La sessione affronterà il quadro legislativo e regolamentare, le modalità applicative, le nuove modalità di raccolta e misurazione dei servizi. In particolare verranno discussi i seguenti argomenti:

- Il nuovo regolamento Ministeriale per la misurazione puntuale dei rifiuti: l'evoluzione del concetto PAYT dagli indirizzi europei alle legislazioni regionali
- Configurazione della Tariffa puntuale all'interno del metodo normalizzato in TARI e in Corrispettivo, nuovi aspetti Legislativi ed evoluzioni della normativa
- L'assimilazione dei rifiuti: tra giurisprudenza e nuovi indirizzi legislativi
- La misurazione puntuale dei rifiuti: le modalità applicative e il modello di regolamento Comunale per la gestione della Tariffa puntuale in ambito Tributo e Corrispettivo
- La determinazione del Piano Economico Finanziario tra normativa
- Benchmarking tecnico-economico in attesa della nuova Autorità di Regolazione
- La Gestione informatica della filiera del rifiuto: gli strumenti di gestione operativa, rilevazione e strumenti di iterazione con l'utenza
- Modelli applicativi di raccolta e tariffa puntuale nelle città italiane e nei comuni: gli effetti di riduzione dei rifiuti e di crescita della Raccolta Differenziata

Relazioni introduttive:

G. Montresori (IT) / Labelab, Ravenna

A. Valentini (IT) / OPERATE, Osservatorio Nazionale Ambiente Misurazione e Tariffa Rifiuti

M. Sanzani (IT) / OPERATE, Osservatorio Nazionale Ambiente Misurazione e Tariffa Rifiuti

10:40 - 11:20 Pausa caffè e discussione poster

SESSION E5 / NeWs / 11:20-13:00 / NOVELLI ROOM (2nd floor)

WASTE ARCHITECTURE E GESTIONE SOSTENIBILE DEI RIFIUTI NELLO SPAZIO URBANO

ITALIAN SESSION

Chairs / *Presidenti:* Anna Artuso, Elena Cossu (IT)

La sessione è dedicata agli aspetti architettonici e progettuali dei nuovi modelli di gestione rifiuti nello spazio urbano concepiti nell'ottica di superare definitivamente la criticità del sistema e trasformarlo in una reale opportunità per il territorio, sia sotto il profilo della riduzione delle tariffe (applicate dai gestori degli impianti e dei servizi) sia sotto l'aspetto della creazione di valore (sociale e ambientale) ed indotto.
Partendo da quelli che sono i principi ispiratori del nuovo approccio al riuso si parlerà di: raccolta pneumatica dei rifiuti come moderna opportunità di gestione sostenibile della raccolta differenziata nei diversi contesti urbani (centri storici, aree residenziali, aree industriali…) / ruolo dell'architettura nel perseguimento degli obiettivi di significativa riduzione dei rifiuti e inserimento programmatico del riuso all'interno dell'urban mining / nuovi modelli di centri del riuso, ecopoints, tip shops: organizzazione di nuovi spazi pubblici dedicati con combinazione delle diverse tipologie di strutture e di centri, possibili sinergie e figure coinvolte.

Relazioni introduttive:

A. Artuso, E. Cossu (IT)
Nuovi modelli di gestione dei rifiuti nello spazio urbano

F. Zambetti, A. Baldacchini, R. Ranghetti (IT)
Riuso^3 - Banco del riuso in Franciacorta: verso un'economia solidale, circolare e di condivisione

A. Schievano, M. Zantedeschi, A. Brugnolli, S. Muraro, C. Marabiso (IT)
Microbioenergy® - Energia e risorse distribuite per un abitare sostenibile.

E. Formato, G. Guida (IT)
Ripartire dai wastescape lungo le infrastrutture della mobilità. Per un progetto di rigenerazione della "Terra dei Fuochi"

S. Antoniadis, L. Stendardo (IT)
"Amabili frammenti": pezzi di architettura rifiutata e aree abbandonate

13:00 - 15:00 Pausa pranzo

TUESDAY MAY 22
AFTERNOON

SESSION A6 / 15:00-16:40 / ALABASTRO A ROOM (2nd floor)
COMBUSTION RESIDUES

Chair / *Presidente:* Anton Zeiner (DE)

J-F. Wagner, T.T.A. Egbe (DE)
Sewage sludge ash as cement replacement in concrete blocks

F. Faleschini, M. da Silva Magalhães, K. Brunelli, C. Pellegrino (IT)
Reuse of industrial ash residues in cement-based materials

F. Huber, J. Fellner (AT)
Quality criteria for the utilisation of MSWI bottom ash in Europe

B. Du, C. Geng, S. Yu, Y. Zhao, L. Xiao, J. Liu (CN)
MSWI fly ash vitrification with heavy metal separation based on chlorination

G. Sappa, P. Viotti, S. Iacurto, F. Tatti (IT)
Ceramic tiles production by addition of MSWI BA: a case history in central Italy

16:40 - 17:20 Coffee break and Poster discussion

SESSION A7 / 17:20-19:00 / ALABASTRO A ROOM (2nd floor)
LANDFILL MINING

Chair / *Presidente:* Florian Huber (AT)

R. Raga, R. Cossu (IT)
Characterization and potential emissions of the excavated waste from an old landfill

S. Masi (IT)
Characterization and recycling of fine fractions from old landfill mining: the Lavello Site (Southern Italy)

A. Zeiner, K. Münnich, K. Fricke (DE)
Landfill mining - Analysis of the resource potential of a bottom ash landfill

C. García López, A. Ni, J.C. Hernández Parrodi, B. Küppers, T. Pretz (DE)
Characterization of landfill mining material after ballistic separation to evaluate material and energy recovery

SESSION B6 / 15:00-16:40 / ALABASTRO B ROOM (2nd floor)

RECOVERY OF METALS

Chair / *Presidente:* Silvia Fiore (IT)

B. Kopacek (AT)
Mobile hydrometallurgy to recover rare and precious metals from WEEE

P. Hennebert, M. Herbelin, N. Kanari, L. Filippov (FR)
Atempt of recovery of antimony from co-incinerated sorted brominated WEEE plastics by simple mineralurgy operations

L. Campadello, A. Accili, N. Vincenti (IT)
Increase the recovery of critical raw materials (CRM) from WEEE. Ecodom italian trial: from innovative collection to innovative treatments

M.A. de Carvalho, L.M. de Andrade, D.C.R. Espinosa, J.A.S. Tenório (BR)
Study of the recovery of copper and silver of printed circuit boards from obsolete computers through one-step acid leaching

V. Innocenzi, I. Birloaga, I. De Michelis, B. Kopacek, F. Vegliò (IT)
Process development and scale up for the implementation of recycling treatments of WEEE: REES recovery from lab to industrial scale

16:40 - 17:20 Coffee break and Poster discussion

SESSION B7 / 17:20-19:00 / ALABASTRO B ROOM (2nd floor)

RECOVERY OF WEEE - CASE STUDIES FROM DIFFERENT COUNTRIES

D. Ibanescu, S. Fiore, C. Teodosiu, D. Cailean (Gavrilescu), A. Ronco (IT)
Sustainability of e-waste management: an Italian case study

P. Nowakowski (PL)
Investigating the reasons for storage of WEEE in households - A potential for exploration in urban mining

S. Sgarioto, P. Cerchier, K. Brunelli, L. Pezzato, M. Dabala, M. Tammaro, A. Attanasio, A. Nisi, J. Szabo, K.L. Juhasz, G. Levai, P. Lenkey, G. Kaptay, R. Deffend, H. Suitner, C. Audoin, J.P. Rakotoniaina (IT)
ReSiELP: Recovery of Silicon and other materials from End-of-Life Photovoltaic Panels

L.H. Xavier, E.C. Giese, F.A. Freitas Lins (BR)
Urban mining and e-waste management in South America

H.F.F. do Nascimento, L.H. Xavier (BR)
Urban mining and circular economy: e-waste management in Rio de Janeiro City, Brazil

TUESDAY MAY 22
AFTERNOON

SESSION C6 / NeWs / 15:00-16:40 / BIANCA ROOM (1st floor)
ANAEROBIC DIGESTION OF BIO-WASTE IN THE PERSPECTIVE OF THE CIRCULAR ECONOMY

Chairs / *Presidenti:* Francesco Di Maria, Maria Cristina Lavagnolo (IT)

The EC indicated the anaerobic digestion (AD) as the most suitable process for the implementation of the circular economy in the treatment of the bio-waste. By the way, for several reasons, its implementation in this sector still remain quite limited. Nowadays the approaching to the end of the economic support period for many existing AD facilities exploiting biomasses could represent an important opportunity for increasing the use of AD in the bio-waste sector. In fact , there is a growing interest of the managers of these plants in finding alternative substrates, as the bio-waste, able to allow the viability of these facilities in the next future.
The goal is to discuss and give an informative description of the different technical, technological, economic, environmental aspect to be faced to grab this opportunity.
Furthermore, also other experiences related to other solutions, as the co-digestion of bio-waste with sludge, acidogenic fermentation of organics to produce renewable materials (e.g. bioplastics) could be presented and discuss.
The workshop context will contribute to deepen the knowledge about the role of AD in sustainable development and circular economy.

Introductory lectures:

F. Di Maria, M.C. Lavagnolo (IT)
Challenges and sustainability of anaerobic digestion plants

M. Lasagni (IT)
Interest of WM company in AD improvements: the case of AISA Impianti of Arezzo

O. Norouzi-Safsari (IR)
Improving AD performances via catalitic reactions

A. Maalouf (LB)
Challenges in DCs: toward a sustainable AD

16:40 - 17:20 Coffee break and Poster discussion

SESSION C7 / NeWs / 17:20-19:00 / BIANCA ROOM (1st floor)

MANAGEMENT AND RECOVERY OF DIGESTATE FROM ANAEROBIC DIGESTION

Chair / *Presidente:* Alberto Pivato (IT)

The session is aimed at investigating the most sustainable techniques in order to valorize digestates from anaerobic digestion of both agro-industrial substrates and organic fraction of municipal solid waste. In particular, the land application of digestate as "organic fertilizer" and its potential role as substitute for marketable inorganic fertilizers, despite the origin of input substrates (waste or by-products) will be discussed.

When promoting the sustainability of digestate, its environmental quality should be addressed. Current law framework defines environmental quality requirements in terms of input substrates, chemical characterization and total loads. Chemical characterization alone, mainly associated with heavy metals concentrations, seems nowadays insufficient to justify a safe use of land applied digestate (especially when supporting the land use of digestate from the organic fraction of municipal solid waste). Therefore, also emerging contaminants concentrations should be considered.

In particular, it is important to provide insights about any combined effects of the chemicals occurring in the land-spread digestate, and to assess their effective bioavailability and/or environmental persistence within the various ecological compartments of application. This evaluation can involve the use of risk assessment procedures applied to the soil-plant system.

In the workshop, other management options could be presented and investigated: new technologies to extract concentrated nutrients streams, to be used as base for organic-mineral fertilizers production; influence of biochar addition on digestate quality; digestate use in landscape restoration; remediation of contaminated soils by digestate application.

The workshop context will contribute to establish a network of experts able to deepen the knowledge about the sustainability of digestate management alternatives and consequently foster the social acceptance of these techniques.

Introductory lectures:

A. Pivato (IT): Digestate management options within EU regulatory framework

G. Beggio (IT): Statistical analysis of quality characterizations of digestates derived from separately collected OFMSW and agro-industrial feedstocks. Should the input feedstocks to Anaerobic Digestion determine the legal status of digestate?

T. Bonato (IT): Considerations on the "COM(2016) 157 CO (CE)" amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009: relevant aspects related to chemical and physical characterization of digestate

A. Schievano (IT): Nutrient recovery from digestate liquid fraction

13:00 - 15:00 Lunch break

TUESDAY MAY 22
AFTERNOON

SESSION D6 / NeWs / 15:00-16:40 / STAMPA ROOM (2nd floor)
MATERIAL REUSE AND EDUCATION II

Chair / *Presidente:* Ian D. Williams (UK)

Introductory lectures:

C. Cole, A. Gnanapragasam, T. Cooper (UK)
Closing the loop: insights into the role of partnerships in facilitating reuse in the UK

P.J. Shaw (UK)
Reuse in context: Shirt

16:40 - 17:20 Coffee break and Poster discussion

SESSION D7 / NeWs / 17:20-19:00 / STAMPA ROOM (2nd floor)
MATERIAL REUSE AND EDUCATION III

Chair / *Presidente:* Ian D. Williams (UK)

Introductory lecture:

I. Williams, P. Shaw (UK)
Reuse in context: delivering the waste hierarchy

SESSION E6 / 15:00-16:40 / NOVELLI ROOM (2nd floor)

STRATEGIE DI URBAN MINING E CIRCULAR ECONOMY

ITALIAN SESSION

Chair / *Presidente:* Lucia Rigamonti (IT)

L. Rigamonti, M. Giurato, S. Pantini (IT)
Rifiuti a base di gesso: valutazione LCA del sistema di gestione della Regione Lombardia

S. Giorgi, M. Lavagna, A. Campioli (IT)
Economia circolare e rigenerazione del patrimonio immobiliare. Strumenti di valutazione per scenari di fine vita sostenibili

C. Battistoni, S. Barbero (IT)
Il rilievo olistico come metodo per favorire azioni legate a Urban Mining: il caso studio del progetto europeo RETRACE per la Regione Piemonte (Italia)

A. Ambrogio, L. Ardito, L. Bosio, M. Blengetti (IT)
EATALY Obiettivo Rifiuti Zero

G. De Feo, F. D'Argenio, C. Ferrara, A. Grosso (IT)
Valutazione dei benefici ambientali, sociali ed economici persi nei rifiuti urbani indifferenziati in termini di carta e cartone

R. Cavallo, E. Rosio, L. Bosio, A. Pavan, F. Rasero, P. Marengo, L. Ardito, G. Fenocchio (IT)
La gestione sostenibile di grandi eventi sportivi

16:40 - 17:20 Pausa caffè e discussione poster

TUESDAY MAY 22
SOCIAL EVENT

DINNER AND STAGE SHOW / *CENA E SPETTACOLO TEATRALE*
TTB - Monastero del Carmine via Colleoni 21, Città Alta, Bergamo
H. 20:30

On Tuesday evening May 22nd, to celebrate the closure of the conference all delegates are invited to a special evening at Monastero del Carmine.
An unbalanced Arlecchino, looking for his uncertain and confused origins, will act as leading character within the different "rooms" of the Monastero del Carmine where invisible musicians and monk jokers, noble dancers on stilts and popular clowns, Indian dancers and bailaoras flamencas give life and energy, voices and sounds, sometimes ironic and at other irreverent to the interior spaces of the Monastero. At the end of his journey an inaugural toast as a prelude to the dinner with a surprise ending, inside the old refectory of the Monastero.
The cost of the dinner is included in the registration fee for Symposium participants. Please reserve your place at the registration desk as soon as possibile.
Tickets for non-delegates should be purchased from the Secretariat.
The show will be performed by Teatro Tascabile di Bergamo. For more info please visit www.teatrotascabile.org.

La sera del 22 maggio, tutti i partecipanti sono invitati al monastero del Carmine per celebrare la chiusura del convegno con una serata speciale.
Un Arlecchino dissociato, in cerca delle sue oscure e improbabili origini, fungerà da guida nelle differenti "stanze" del monastero dove musicisti invisibili e monaci burloni, clown popolari e nobili trampolieri, danzatori indiani e bailaoras flamencas ridaranno vita ed energia, voci e suoni, a volte ironici, indipendenti e irriverenti, agli spazi interni del Monastero.
Al termine del suo viaggio un brindisi inaugurale sarà il preludio alla cena con finale a sorpresa, nello spazio dell'antico refettorio del monastero.
Per i partecipanti al Simposio, il costo della cena è compreso nella quota di iscrizione. Si prega di rivolgersi al banco registrazioni per prenotare il proprio posto il prima possibile.
I biglietti per i non partecipanti possono essere acquistati presso la Segreteria.
La serata sarà animata dalla compagnia teatrale Teatro Tascabile di Bergamo.
Per maggiori info visitare il sito www.teatrotascabile.org.

POSTER SESSIONS
SESSIONI POSTER

POSTER SESSIONS
SESSIONI POSTER

Poster presentations will be accessible to Symposium delegates at all times. Poster discussion will take place in the presence of authors on Monday and Tuesday from 10:40 to 11:20 and from 16:40 to 17:20.

Le presentazioni poster saranno sempre accessibili ai partecipanti al Simposio. La discussione dei poster avverrà alla presenza degli autori il lunedì e il martedì dalle 10:40 alle 11:20 e dalle 17:40 alle 18:00.

A01 / *K-Y. Chiang, B-F. Lin, C-H. Lu (TW)*
Characterization of biooil yield by co-pyrolysis of sewage sludge and Fe/Mn sludge derived from water purification process

A02 / *D. Papurello, F. Biasioli, M. Santarelli, S. Silvestri, L. Tomasi (IT)*
Real time monitoring of biogas trace compounds with a biochar reactor using a DIMS technique

A03 / *M. Calero, G. Blázquez, I. Iáñez-Rodríguez, M-A. Martín-Lara, J-A. Moreno-Ortega, A. Pérez, G. Tenorio (ES)*
Combination of hydrothermal treatment and biosorption for the full use of a waste from the olive industry

A04 / *K. Krajewski, M. Świątkowska, S. Łaba , K. Szczepański (PL)*
Losses and waste in meat supply chain, and the needs of product management and market communication

A05 / *O. Yavorovska (UA)*
Prediction of the dynamic of resource position factoration manufacturing of municipal solid wastes

A06 / *M. Calero, E. Rivas, C. Amor, G. Blázquez, A. Péreza, M.Á. Martín-Lara (ES)*
Recovery of interesting compounds from the slag of a IGCC plant

A07 / *A. do Nascimento Sousaa, J.F. Thomé Jucáb, B.L.M. de Oliveirac (BR)*
Estimate of the valuation of urban domestic waste deposited in the controlled landfill of the city of Teresina/Pi, Brazil

A08 / *D. Papurello, D. Bona, M. Santarelli, S. Silvestri (IT)*
Sofc exhausts fixation on chlorella vulgaris throuh a photobioreactor: study on affecting parameters

A09 / *E. Foschi, A. S. Pavlova, A. Bonoli (IT)*
Waste management in Italy and Russia: policy challenges and opportunities

A10 / *O. Yavorovska (UA)*
Assessment of the efficiency of solid household waste management system

A11 / *S. Sevastianov, V. Ocheretnyi (UA)*
Actuality of recycling of build waste in Ukraine

A12 / *M.A. Khalvati, A. Erdincler, F.E. Sayin (TR)*
Effect of soil microorganisms interactions and sewage sludge addition on he-

avy metals phytoremediation in mine tailing

A13 / *A.B. Botelho Juniora, D.C.R. Espinosa, D. Dreisinger, J.A.S. Tenório (BR)*
Recovery of cobalt from sulphate medium solution using chelating resins

A14 / *A. Bonoli, E. Foschi, F. Lalli, D. Prandstraller, S. Zanni (IT)*
End of life scenario for universities' informatic equipment: reuse and recycling as educational tool for circular economy and urban mining

A15 / *E. Chiarenza, S. Fiore (IT)*
Assessment of anaerobic digestion of industrial wastes in a large municipal wastewater treatment plant in Italy

A16 / *V. Santucci, L. Sotera, S. Fiore (IT)*
Printed Circuit Boards from WEEE: a strategic source of critical raw materials

A17 / *M. Chiappero, F. Demichelis, S. Fiore, D. Frigon (IT)*
Investigation of pre-treatments for psychrophilic anaerobic digestion of waste activated sludge

A18 / *M. Ragazzi, E.C. Rada, G. Castagna, N. Ferronato, R. Giurea, V. Torretta (IT)*
Which circular economy indicators for MSW management?

TECHNICAL TOURS
VISITE TECNICHE

On Wednesday 23rd May two guided technical tours has been arranged:

- **Montello Spa**, approximately 15 km from Bergamo, a real scale plant leader in sorting, recovery and recycling of post-consumer plastic packaging as well as the treatment, recovery and recycling of organic waste.
- **Viscolube**, a re-refining facility located approximately 70 km from Bergamo. Viscolube Group is active in used lubricant oil regeneration to produce high quality regenerated base oil, group I+ and II+, and in industrial waste solvent recovery & valorization. It is alsothe Italian main player specialized in the industrial hazardous and non hazardous waste collection and treatment.

Places are limited and have been assigned on a first-come first-served basis. Participants who have not yet booked their place but would like to attend the technical tour should contact a member of staff at the Registration Desk as soon as possible.
Coaches provided by the organizers will leave from the Symposium venue at 9.00 and will return at approximately 13:30. A light lunch will be offered by Montello and Viscolube at the end of the visit.

Mercoledì 23 maggio sono previste due visite tecniche guidate ai seguenti impianti:

- ***Montello Spa**, a circa 15 km da Bergamo, industria leader nel trattamento di selezione, recupero e riciclo di imballaggi in plastica post-consumo e nel trattamento, recupero e riciclo di rifiuti organici da raccolta differenziata.*
- ***Viscolube**, una importante raffineria situata a circa 70Km da Bergamo. Viscolube rigenera gli oli usati tramite il processo Revivoil, un processo sviluppato e brevettato da Viscolube in collaborazione con uno dei principali operatori mondiali nello sviluppo dei processi di raffinazione. Il processo Revivoil prevede un trattamento con idrogeno ad alta pressione per produrre oli a basso contenuto di zolfo e di insaturi e un ridotto contenuto di componenti aromatici. Questo processo si sviluppa in tre fasi: preflash, deasfaltazione termica e hydrofinihing.*

I posti sono limitati e sono assegnati strettamente in ordine di prenotazione. I partecipanti che non avessero ancora prenotato il proprio posto ma che volessero partecipare alla visita tecnica sono pregati di contattare lo staff presso il banco di registrazione appena possibile.
I bus forniti dagli organizzatori partiranno dalla sede del Simposio alle ore 9 e rientreranno intorno alle 13:30. Al termine della visita, il pranzo sarà gentilmente offerto da Montello e Viscolube.

SUPPORTERS & ORGANIZERS
SPONSOR E ORGANIZZATORI

SUPPORTERS
SPONSOR

A2A AMBIENTE SPA

A2A Ambiente is part of the A2A Group - Italian multi-utility company with over 100 years of presence on the territory - and is a leader in Italy in the environmental services sector and in recovery of materials and energy through the valorization of waste, with plants equipped with the most innovative technologies. The main data of A2A Ambiente are the following:

- 5 million ton of overall managed waste
- 3,6 million served people
- Waste treatment assets: 8 WtE plants that include also three high efficiency cogeneration units serving district heating in Bergamo, Brescia and Milano, 16 material selection/recovery plants, 8 MBT plants and 3 treatment platforms for industrial waste
- 1.800 GWh/year electric energy
- 1.400 GWh/year thermal energy

From urban street cleansing to integrated waste management, up to recovery of materials and energy, for A2A Ambiente the path is from the end to the beginning with a vision towards circular economy.
A2A Ambiente is therefore leader in the entire waste management value chain up to the transformation into new materials towards production and consumption cycles. A2A Ambiente applies the best technologies and gives the utmost attention to environmental performance.
The 2018-2022 industrial plan includes significant development actions and significant investments to strengthen the assets dedicated to material recovery, increasing the positioning of A2A Ambiente in most of the fundamental nodes of waste circular economy.
A2A Ambiente operates locally through 16 subsidiaries and 8 investee companies with a structure that guarantees the separation of companies operating in urban collection/street cleansing services from those that are active in waste treatment activities, in compliance with current regulations.

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GEOS ENVIRONMENT SRL

Founded in 1987 as an environmental protection services firm, Geos Environment S.r.l. has been continually adapting to the copious changes of this important sector, occurred in our society over the past 25 years; specifically to the more stringent legal and social requirements that have nowadays become the fundamental milestones of our future environmental behaviour. Today, the Company is a truly European operator with excellent human capital, technological capabilities and business references; it states itself as a benchmark in this field, due its capacity to meet clients' needs and develop customized, open-ended solutions to the problems they encounter in the areas of waste management optimizing. Geos Environment Ltd. has the resources and expertise to deal with all of the environmental concerns of Local Authorities and Industrial Companies offering a range of services designed to protect the environment and make our clients much more competitive and self-assured within their areas of influence.

Among the leading National and European operators Geos Environment is capable to provide a complete range of waste management services, covering the entire waste cycle: urban cleaning services, soil and site remediation, collection, sorting, transfer, treatment and recycling-recovery. As priorities the Company is committed to modelling and intensifying its integrated municipal and industrial waste management services, lengthening its lead in waste treatment technology and continuing the industrialization of processes in order to recycle more and more resources. Geos Environment Ltd. is therefore committed to the following goals: reducing the pollutant load of waste in order to mitigate the environmental impact of rising waste production besides, pushing forward with recycling and recovery as prerequisites of its future growth. As global regulations prioritize environmental protection the full value of its mission becomes clear.

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EIT RAW MATERIALS

EIT RawMaterials, initiated and funded by the EIT (European Institute of Innovation and Technology), a body of the European Union, is the largest and strongest consortium in the raw materials sector worldwide. Its vision is to develop raw materials into a major strength for Europe. Its mission is to boost competitiveness, growth and attractiveness of the European raw materials sector via radical innovation, new educational approaches and guided entrepreneurship.
EIT RawMaterials unites more than 120 partners from leading industry, universities and research institutions from more than 20 EU countries. Partners of EIT RawMaterials are active across the entire raw materials value chain; from exploration, mining and mineral processing to substitution, recycling and circular economy. They collaborate on finding new, innovative solutions to secure the supplies and improve the raw materials sector in Europe.
There are six regional Innovation Hubs in Belgium, Finland, France, Italy, Poland and Sweden, called Co-Location Centres (CLCs) that represent different regional ecosystems connecting industry, research and education.
EIT RawMaterials aims to significantly enhance innovation in the raw materials sector by sharing knowledge, facilitating matchmaking activities, developing innovative technologies and supporting business creation.
EIT RawMaterials will generate a significant impact on European competitiveness and employment by driving and fostering innovation and empowering students, entrepreneurs and education partners driving towards the circular economy. This will result in the introduction of innovative and sustainable products, processes and services, as well as talented people that will deliver increased economic, environmental and social sustainability to the European society.

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eit RawMaterials
Connecting matters

EIT RawMaterials is supported by the EIT, a body of the European Union

MONTELLO SPA

Montello Spa is located in an industrial area of approximately 450,000 square meters, of which 120,000 are covered. Up until the end of 1995 it was a steel industry for the production of reinforcing steel bars.
In 1996, after repeated crises in the national steel industry, the decision was to close the steel industry company (Brown Economy), converting the plant into recovery and recycling of packaging waste in post-consumer plastic and organic waste from separate waste collection (Green Economy) which, at that time, began to become popular in Lombardy. And that is how the concept of waste/resource towards a Circular Economy begins.
At the moment, the factory in Montello (BG) recycles 200,000 tons a year of post-consumer plastic packaging from which new products are obtained, and 600,000 tons a year of OFMSW Organic Fraction deriving from the separate collection from which biogas is obtained, used to produce both electric and thermal energy and biomethane, at the same time recovering CO_2 carbon dioxide for industrial technical use and producing a high quality organic fertilizer.

La Montello Spa sorge su un'area industriale di circa 450.000 mq, di cui 120.000 coperti. Fino alla fine del 1995 era un'azienda siderurgica per la produzione di acciaio e tondo per cemento armato.
Nel 1996, dopo ripetute crisi del settore siderurgico nazionale si decide la chiusura dell'attività siderurgica (Brown Economy) riconvertendo lo stabilimento in attività di recupero e riciclo dei rifiuti di imballaggi in plastica post consumo e dei rifiuti organici provenienti dalla raccolta differenziata (Green Economy) che, in quel periodo, cominciava a diffondersi in Lombardia. Inizia in tal modo il concetto di rifiuto/risorsa verso una Economia Circolare.
Attualmente nello stabilimento di Montello (BG) vengono riciclate 200.000 ton/anno di imballaggi in plastica post-consumo, da cui si ricavano nuovi manufatti, e 600.000 ton/anno di Frazione Organica FORSU provenienti dalla raccolta differenziata da cui si ricava biogas utilizzato per produrre sia energia elettrica e termica che biometano, recuperando contestualmente anche l'anidride carbonica CO_2 per uso tecnico industriale e producendo un fertilizzante organico di elevata qualità.

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MONTELLO
Industria del Recupero e Riciclo
Plastica - Fertilizzanti - Energia - Biometano

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RELIGHT SRL

Relight is a private company, part of TREEE Group, a leading industrial player operating in the Italian e-waste ("WEEE") sector with a supply chain covering every segment from the home delivery of household appliances to the collection, treatment and recycling of electrical waste. TREEE is the Italian market leader with more than 90.000 tons of WEEE treated in 2017.
Since its establishment, the main aim of Relight is to 'close the loop' and find solutions for the recycling of different fractions that constitute WEEE, especially for critical materials such as rare earths elements."
The company starts to operate in Rho (MI) in 2001. In 2002 Relight obtains the permission for the treatment of hazardous wastes, in particular for the recovery of cathode ray tube devices (TVs and monitors).
Relight has an advanced system for the storage, recovery and treatment of hazardous and non-hazardous wastes, mainly from electrical and electronic equipment. Relight ensures the collection of wastes by its trucks and third-party transporters present throughout the national territory.

Relight Srl è una società all'avanguardia nella raccolta, recupero e trattamento di Rifiuti da Apparecchiature Elettriche ed Elettroniche (RAEE), in possesso della Registrazione EMAS.
L'elevata competenza nel settore dei rifiuti, l'utilizzo di tecnologie avanzate e la collaborazione con importanti parterns europei permettono l'evoluzione e la crescita continua di Relight, portandola ad essere in Italia uno dei principali e più affermati operatori del settore RAEE.
Relight nasce nel 1999 da un progetto di cooperazione con Philips per la raccolta ed il recupero delle lampade fluorescenti, nell'ambito del quale costruisce un network per garantire la raccolta su tutto il territorio nazionale.
Nel 2001 Relight estende la propria attività ai "beni durevoli" ed inizia a gestire un impianto proprio a Rho (MI), in via Lainate 98/100. Nel 2002 ottiene l'autorizzazione alla gestione dei rifiuti speciali pericolosi e si specializza nel trattamento e nella bonifica delle apparecchiature a tubo catodico (TV e Monitor).
Relight dispone di un impianto all'avanguardia per le attività di stoccaggio, recupero e trattamento di rifiuti speciali, pericolosi e non, prevalentemente appartenenti alla categoria delle apparecchiature elettriche ed elettroniche.
Attraverso il proprio parco automezzi, e grazie ad un network di trasportatori terzi presente su tutto il territorio nazionale, assicura la raccolta ed il ritiro dei rifiuti che vengono successivamente inviati ai processi di recupero e trattamento.

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RELIGHT
Treee
TREATMENT & RECYCLING OF ELECTRICAL & ELECTRONIC EQUIPMENT

VISCOLUBE SRL

Viscolube Group is active in used lubricant oil regeneration, in industrial waste solvent recovery & valorization and in the industrial hazardous and non hazardous waste collection and treatment.
Viscolube produces high quality regenerated base oils, group I+ and II+ which are obtained through a high pressure catalytic hydrogenation process and they present ideal chemical-physical and compositional features. The high quality of re-refined base oils would represent a totally environmentally friendly source, comparable with the virgin stocks.
The used lubricant oil regeneration is a piece of the global answer to the demand of sustainability which is addressed to oil & gas industry and Viscolube is proud to represent a player which combines a long lasting operation experience with strong R&D capabilities which has led its patented process (owned together with Axens) to be the most used throughout the world.
Sustainability, technological innovation and environmental investment are Viscolube key drivers: 190,000 t/y waste oil / 125,000 t/y re-refined base oil / 350,000 t/y special waste treated / 90,000 t/y used solvent / 4 plants in Italy / more than 500 employees

Il Gruppo Viscolube è attivo nel settore della rigenerazione degli oli usati, nel recupero e purificazione di solventi esausti e nella raccolta, gestione e trattamento di rifiuti industriali speciali, pericolosi e non pericolosi.
Viscolube produce basi lubrificanti rigenerate di Gruppo I+ e II+ che si ottengono attraverso un processo di idrogenazione catalitica ad alta pressione e presentano caratteristiche chimico-fisiche e prestazionali ideali. L'alta qualità delle basi rigenerate rappresenta una fonte completamente rispettosa dell'ambiente, paragonabile agli stock di prodotto vergine.
La rigenerazione di olio lubrificante usato è parte della risposta globale alla domanda di sostenibilità a cui si rivolge l'industria petrolifera e del gas e Viscolube è fiera di essere un operatore che combina una lunga esperienza gestionale con un'intensa attività di Ricerca & Sviluppo che ha sviluppato e brevettato (in collaborazione con Axens) il proprio processo, tuttora uno dei più diffusi nel mondo.
Sostenibilità, innovazione tecnologica e investimento ambientale sono elementi chiave per Viscolube: 190,000 t/a olio lubrificante usato / 125,000 t/a basi lubrificanti rigenerate / 350,000 t/a rifiuti speciali trattati / 90,000 t/a solvent esausti / 4 impianti produttivi in Italia / più di 500 dipendenti

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ORGANIZERS
ORGANIZZATORI

IWWG - INTERNATIONAL WASTE WORKING GROUP

Find out more about the IWWG activities and its regional brands and become a member. The International Waste Working Group, founded in 2002 and registered as a no-profit organisation, serves as a forum for the scientific and professional community. The IWWG aims to provide an intellectual platform to encourage and support integrated and sustainable waste management and to promote practical scientific development in the field.
The group was conceived to provide a "home" for professionals and researchers, and give us a voice to be able to beneficially influence waste management and research.
The benefits of IWWG membership are the following:

- Subscription to IWWG official Journal Waste Management at a special discount price, both print subscription or print+electronic subscription. (electronic subscription includes access to back numbers from 1995).
- Access to the members area on the website
- Access to previous editions of IWWG conferences proceedings (Index)
- Access to the IWWG members discussion forum on the website
- Free download of LeachXS - Lite from the members area on the website
- Discount on IWWG Training Course Registration
- Discount on IWWG Seminar Registration
- Discount on the entrance fee of IWWG international waste management symposia (official IWWG conferences)
- Discount on IWWG publications (e.g. textbooks)
- Discount on Elsevier publications
- Participation in all activities of IWWG including task groups

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iwwg
international waste working group

EUROWASTE Srl

Eurowaste Srl was founded to manage communication and educational tools in connection with research activities performed in the field of environmental engineering by the University of Padova. Over time it has become a service agency that works in national and international context in the scientific events organization.
Its activities is addressed to the entire Scientific Community in order to support it in conceiving and organising congress, symposia, meetings, workshops and all kind of events.
For the past 25 years Eurowaste has been organising International Symposia registering the participation of up to 1000 delegates from dozens of different countries worldwide.
Since 2005 Eurowaste has set up a collaboration with IWWG-International Waste Working Group, established in 2002, following a world-wide demand, to serve as a forum for the scientific and professional community.

Eurowaste Srl nasce per gestire gli strumenti di comunicazione e divulgazione scientifica connessi alle attività di ricerca svolte dell'Università di Padova nel campo dell'ingegneria ambientale. Nel tempo è diventata un'agenzia di servizi che opera a livello nazionale ed internazionale nel settore dell'organizzazione di eventi di carattere scientifico.
Da oltre 25 anni Eurowaste organizza simposi internazionali che in alcune edizioni hanno visto la partecipazione di oltre 1000 delegati provenienti da tutto il mondo.
La sua attività si rivolge a tutta la Comunità Scientifica supportandola nell'ideazione, progettazione e realizzazione di congressi, simposi, meeting, workshop ed eventi di ogni genere.
Dal 2005 Eurowaste collabora stabilmente con l'IWWG, un'associazione senza fini di lucro nata nel 2002 con l'obiettivo di costituire un forum internazionale di discussione scientifica sulle tematiche connesse alla gestione dei rifiuti solidi.

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ORGANIZERS
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CISA PUBLISHER

Cisa Publisher is an imprint of Eurowaste Srl. Cisa Publisher represents the Eurowaste section dealing with transfer to the media (books, reports, textbooks, CD, etc) of the wealth of information accumulated throughout activities performed by the University of Padova (in particular in the field of waste management and contaminated site remediation) and by IWWG and member scientists.

CATALOGUE:

IWWG Monograph series:
- Participation in all activities of IWWG including task groups
- Sustainable Landfilling
- Management and Landfilling of Solid Wastes in Developing Countries
- Landfill Aeration

Other Monographs:
- Urban Mining: A global cycle approach to resource recovery from solid waste

Conference Proceedings:
- Venice International Symposium on Energy from Biomass and Waste
- Sardinia International Waste Management and Landfill Symposium
- SUM - Symposium on Urban mining

Publications are available at the registration desk and may be ordered online from the website www.cisapublisher.com.

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STUDIO ARCOPLAN / WASTE ARCHITECTURE PLATFORM

Arcoplan is an architectural and engineering consultancy, located in Padova, active in the fields of architecture, landscape, environment, engineering and technical architecture. Founded in 2009 by Anna Artuso, architect, and Elena Cossu, civil engineer, Arcoplan has developed specific expertise in architectural aspects connected to Waste Management interventions aimed at the development of the concept of Waste Architecture.
Arcoplan also strives to disseminate the above topics by collaborating to the organization of scientific conferences connected to the research activities carried out by the University of Padova in the field of environmental engineering.
Arcoplan has recently given rise to **Waste Architecture Platform**, a complex project conceived as a container of initiatives devoted to environmental architecture in connection with interventions concerning the collection, disposal and management of waste. Waste Architecture is a new and relatively unexplored conceptual and design topic which promises to give rise to a lively debate between environmental professionals, and architecture and urban design experts.

Arcoplan è uno studio che si occupa di progettazione architettonica, paesaggistica ed urbana. Nato nel 2009 dalla collaborazione tra Anna Artuso, architetto, e Elena Cossu, ingegnere civile, lo studio Arcoplan ha maturato una specifica competenza nell'ambito della progettazione architettonica e paesaggistica rivolta alle grandi opere per l'ingegneria ambientale con l'obiettivo di sviluppare il filone della Waste Architecture, l'Architettura per i rifiuti.
Arcoplan svolge attività di progettazione, consulenza e studio con un'articolata esperienza in riqualificazioni funzionali di discariche, piani di ripristino ambientale, reintegrazione di aree degradate, centri del riuso, integrazione dei sistemi di raccolta pneumatica dei rifiuti nel tessuto urbano e architettura degli edifici per la preselezione dei rifiuti e impianti di compostaggio.
Arcoplan si occupa inoltre della divulgazione di queste tematiche collaborando all'organizzazione di convegni scientifici connessi alle attività di ricerca svolte dell'Università di Padova nel campo dell'ingegneria ambientale.
*Nel 2015 lo studio ha ideato **Waste Architecture Platform**, un progetto articolato concepito come un contenitore di varie iniziative che coinvolgono esperti di ambiente, architettura, pianificazione, progettazione urbana e territoriale nell'ambito di seminari, tavoli di lavoro, workshop di progettazione, pubblicazioni etc.*

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ORGANIZERS
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UNIVERSITY OF PADOVA

The University of Padova, founded in 1222, is one of the oldest universities in the world. The most famous among its professors was Galileo Galilei while Nicolaus Copernicus was undoubtedly one of its most brilliant students.
The University of Padova offers a two-year M.Sc.Programme in Environmental Engineering and welcomes applications from international students wishing to study environmental science and engineering at an advanced technical level together with Italian students.
Lectures are in English only.

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La partecipazione al convegno dà diritto a tutti gli ingegneri iscritti ad un Albo provinciale all'acquisizione di un massimo di **6+6 CFP** per la partecipazione alle sessioni orali e **3 CFP** per la visita tecnica.
I crediti vengono attribuiti in base al seguente schema:

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Sessione	data	ore	CFP
A/B/C/D/E	21 maggio 2018	8	**6**
A/B/C/D/E	22 maggio 2018	8	**6**
Visita tecnica	22 maggio 2018	4	**3**
Totale			**15**

All'ingresso di ciascuna sessione saranno disponibili i moduli per la raccolta delle firme in entrata ed uscita.
Gli interessati sono pregati di contattare la segreteria organizzativa per richiedere l'attestato di frequenza e per comunicare il proprio codice fiscale, ordine di appartenenza, sezione e numero di iscrizione all'Albo.

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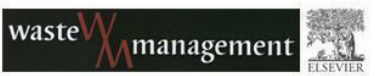
waste management
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DETRITUS
DETRITUS

DETRITUS / MULTIDISCIPLINARY JOURNAL FOR WASTE RESOURCES AND RESIDUES

Detritus, Multidisciplinary Journal for Waste Resources and Residues is a new official journal of IWWG, International Waste Working Group, published by Cisa Publisher. The journal is aimed at extending the "waste" concept by opening up the field to other waste-related disciplines (e.g. earth science, applied microbiology, environmental science, architecture, art, law, etc.) welcoming strategic, review and opinion papers.
Detritus is a double open journal: FREE ACCESS for readers and FREE SUBMISSION for authors in order to promote the transfer of scientific knowledge with no economical constraints.

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Detritus, Multidisciplinary Journal for Waste Resources and Residues è una nuova rivista ufficiale dell'IWWG International Waste Working Group, pubblicata da Cisa Publisher. La rivista ha lo scopo di estendere il concetto di "rifiuto" aprendo il campo ad altre discipline ad esso correlate (medicina, scienze della terra, microbiologia applicata, scienze ambientali, architettura, arte, leggi, ecc.) accogliendo lavori scientifici strategici, di revisione e di opinione. Detritus è una rivista rivoluzionaria per il settore: doppiamente open access! Al fine di promuovere il trasferimento delle conoscenze scientifiche senza alcuna barriera economica, sarà gratuito sia l'accesso per i lettori sia l'invio lavori per gli autori.

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Multidisciplinary Journal for Waste Resources & Residues

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