

## ***Program***

# ***Life Cycle Assessment and Other Assessment Tools for Waste Management and Resource Optimization***

June 5 -10, 2016

Grand Hotel San Michele, Cetraro (Calabria), ITALY

### **Conference Chairs:**

**Professors Umberto Arena, Paola Lettieri and Thomas Astrup**

### **Honorary Chair:**

**Professor Roland Clift**



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## **Sunday, June 5, 2016**

17:30 – 19:00	Conference Check-in
17:00 – 18:00	Organizing Committee Meeting
19:15 – 20:00	<i>Welcome Reception</i>
20:00 – 21:30	<i>Welcome Dinner (Restaurant of the Hotel)</i>

### **IMPORTANT NOTES**

- *All contributions have ten minutes for oral presentation (and five minutes for questions and discussion) and more time for further discussion at the poster session in the evening. This will allow intensive discussion of the technical materials presented.*
- *Audiotaping, videotaping and photography of presentations are prohibited.*
- *Speakers: Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before), and please leave at least five minutes for questions and discussion.*
- *Posters: Please put your posters on the poster boards in the dedicated area in the morning of the day of your presentation and remove them at the end of the evening discussion session.*
- *Please do not smoke at any conference functions.*
- *Turn your cellular telephones to vibrate or off during technical sessions.*
- *Please write your name in the front of this booklet in case it is misplaced.*
- *Be sure to check the participant list in this booklet to confirm that your listing is correct. If there are changes or updates, please login to the ECI website and update your listing so that the list that ECI will send to all participants after the conference will be correct.*
- *Lunches of Tuesday, Wednesday and Thursday are organized in the restaurant of the Hotel and in that of the Hotel private beach. Please give your choice at the registration desk during the coffee break.*
- *Coffee breaks are organized in the terrace of the Hotel while the afternoon refreshments in the Hotel lobby.*
- *A visit to the beautiful organic farm (44 hectares) of the Grand Hotel San Michele is scheduled on Wednesday afternoon. Guests/accompanying persons may also have the possibility for an excursion by bus to visit interesting sites along the Calabria Tyrrhenian coast.*

## Monday, June 6, 2016

07:30 – 08:30	<i>Breakfast</i>
08:45 – 09:15	Welcome and Conference Overview –Conference Chairs and ECI Liaison
09:15 – 10:00	PLENARY LECTURE (Chairman: <u>Prof. Roland Clift</u> ) <b>Paulo Ferrão</b> (Instituto Superior Técnico, University of Lisbon, Portugal) Industrial ecology and solid waste management planning

### TOPIC 1: Industrial ecology and resource management

	Chairman: <u>Prof. Roland Clift</u>
10:00 – 10:15	Using consequential LCA and optimization to identify the best uses of biomass resources within the energy sector, <b>Davide Tonini</b> , Technical University of Denmark, Denmark
10:15 – 10:30	Systematic evaluation of critical factors for the climate impact of landfill mining, <b>David Laner</b> , Technical University of Wien, Austria
10:30 – 11:15	<i>Coffee Break (Terrace of Grand Hotel San Michele)</i>
	Chairman: <u>Prof. Anders Damgaard</u>
11:15 – 11:30	Decreasing ore grades in global metallic mining, a theoretical issue or a global reality?, <b>Guiomar Calvo</b> , Research Centre for Energy Resources and Consumption (CIRCE), Spain
11:30 – 11:45	Assessment of waste to energy as a resource recovery intervention using system dynamics: A case study of New South Wales, Australia, <b>Ben Madden</b> , University of Technology Sydney, Australia
11:45 – 12:00	Valorization of energetic material from ammunition in civil explosives, <b>Fausto Freire</b> , University of Coimbra, Portugal
12:00 – 12:15	Development of a database of Material Flow Analysis for agro-food processing craft villages in Red River Delta of Vietnam, <b>Nguyet Tran</b> , Leibniz University, Germany
13:00 – 14:00	<i>Lunch (Restaurant of Grand Hotel San Michele)</i>
14:00 – 17:00	Free time / <i>ad hoc</i> sessions
17:00 – 17:30	<i>Afternoon Refreshments (Hotel lobby)</i>

### TOPIC 2: Life Cycle Engineering and Sustainable Manufacturing

	Chairman: <u>Prof. Franco Berruti</u>
17:30 – 17:45	Resource optimization and sustainable manufacturing in the development of a self-chilling beverage can, <b>Noemi Arena</b> , University of Surrey, United Kingdom
17:45 – 18:00	Environmental assessment of light weighting solutions for automotive components: results, trade-off and challenges from real case studies, <b>Silvia Maltese</b> , Magneti Marelli, Italy

## **Monday, June 6, 2016 (continued)**

18:00 – 18:15	Life Cycle Assessment as a tool for resource optimisation of continuous basalt fibre production in Iceland, <b>Kamal Azrague</b> , SINTEF, Norway
18:15 – 18:30	Stock in use in the urban mobility system. An exergy approach, <b>Abel Ortego</b> , Research Centre for Energy Resources and Consumption (CIRCE), Spain
18:30 – 18:45	LCA to start and perform green public procurement for funeral products, <b>Francesco Baldoni</b> , Esalex srl, Italy
20:00 – 21:30	<i>Dinner (Restaurant of the Hotel): Calabrian event</i>
21:30 – 22:30	Poster session with social hour



## Tuesday, June 7, 2016

07:30 – 08:30	<i>Breakfast</i>
08:30 – 09:15	PLENARY LECTURE (Chairman: <u>Prof. Umberto Arena</u> ) <b>Morton Barlaz</b> (North Carolina State University, USA) The Application of Life-Cycle Assessment to Solid Waste Management: Applications, Challenges and Modeling Techniques

### TOPIC 3: LCA and other assessment tools for Waste and Resource Management and Planning

	Chairman: <u>Prof. Umberto Arena</u>
09:15 – 09:30	Choice of sewage sludge thermochemical disposal methods from multi-perspective analysis, <b>Dezhen Chen</b> , Tongji University, China
09:30 – 09:45	Combining MFA, LCA and optimization techniques to improve MSW management in Switzerland, <b>Melanie Haupt</b> , ETH Zurich, Switzerland
09:45 – 10:00	Quality assessment and estimation of substitution ratios for recycled plastic, <b>Marie Kampmann Eriksen</b> , Technical University of Denmark, Denmark
10:00 – 10:15	Complementing LCA with qualitative organisational study for improving waste management governance – illustrated by a comparative case on metal packaging, <b>Mathias Lindkvist</b> , Chalmers University of Technology, Sweden
10:15 – 11:00	<i>Coffee Break (Terrace of Grand Hotel Michele)</i>
	Chairman: <u>Prof. Lidia Lombardi</u>
11:00 – 11:15	Optimizing resource and energy recovery for municipal solid waste Management, <b>Susan Thorneloe</b> , US-EPA, USA
11:15 – 11:30	Optimization of waste disposal method in urban functional zone based on multiple model evaluation: a case study of an urban sub-domain planning, <b>Lijie Yin</b> , Tongji University, China
11:30 – 11:45	Life Cycle Assessment of MSW kerbside separate collection system applied to small communities, <b>Giovanni De Feo</b> , University of Salerno, Italy
11:45 – 12:00	Quantifying waste prevention with LCA to motivate holistic resource management, <b>Petra Hutner</b> , University of Augsburg, Germany
12:00 – 12:15	Life cycle assessment of waste prevention, <b>Line Brogaard</b> , Technical University of Denmark, Denmark
12:15 – 12:30	The effects of changes in consumption composition and growth in recycling on decoupling household consumption from its waste footprint, <b>Antoine Beylot</b> , BRGM, France
13:00 – 14:00	<i>Lunch (Hotel private beach or restaurant of the Hotel)</i>
14:00 – 17:00	Free time / <i>ad hoc</i> sessions
17:00 – 17:30	<i>Afternoon Refreshments (Hotel lobby)</i>

## **Tuesday, June 7, 2016 (continued)**

### **TOPIC 3: LCA and other assessment tools for Waste and Resource Management and Planning**

	Chairman: <u>Ms. Susan Thorneloe</u>
17:30 – 17:45	Optimization of municipal solid waste management using externality costs, <b>Veronica Martinez-Sanchez</b> , Technical University of Denmark, Denmark
17:45 – 18:00	Municipal solid waste collection evaluation tool as basis for LCA of MSW Management, <b>Dirk Weichgrebe</b> , Leibniz Universität Hannover, Germany
18:00 – 18:15	LCA of municipal solid waste incineration in France: from comprehensive site-specific data to Life Cycle Inventory modeling, <b>Antoine Beylot</b> , BRGM, France
18:15 – 18:30	Life Cycle Assessment and economic evaluation of the recovery of materials in an urban waste management system, <b>Giovanni De Feo</b> , University of Salerno, Italy
18:30 – 18:45	Assessing carbon-based materials of Belo Horizonte municipal solid waste management, <b>Maryegli Fuss</b> , KIT-ITAS, Germany
18:45 – 19:00	MSW derived syngas utilization in combination with distributed energy supply system: mode selection and evaluation, <b>Ming Chen</b> , Tongji University, China
20:00 – 21:15	<i>Dinner (Restaurant of the Hotel)</i>
21:15 – 22:30	Poster Session with Social Hour

## Wednesday, June 8, 2016

07:30 – 08:30	<i>Breakfast</i>
08:30 – 09:15	PLENARY LECTURE (Chairman: <u>Prof. Paola Lettieri</u> ) <b>Mary Stewart</b> (Energetics, Sydney, Australia) Energy from Waste in a 2° world: LCA and Australian Carbon Policy

### TOPIC 4 Case studies of LCA for specific waste management options

	Chairman: <u>Prof. Paola Lettieri</u>
09:15 – 09:30	The link between data choices and reality in life cycle assessment modelling of waste management technologies, <b>Anders Damgaard</b> , Technical University of Denmark, Denmark
09:30 – 09:45	Main factors affecting climate change, acidification and eutrophication in MSW management systems, <b>Lidia Lombardi</b> , Cusano University, Italy
09:45 – 10:00	The application of Consequential LCA in WEEE management, <b>Bin Lu</b> , Chinese Academy of Sciences, China
10:00 – 10:15	Evaluation of the environmental sustainability of different waste-to-energy plant configurations, <b>Lidia Lombardi</b> , Cusano University, Italy
10:15 – 11:00	<i>Coffee Break (Terrace of Grand Hotel Michele)</i>
	Chairman: <u>Prof. Dezhen Chen</u>
11:00 – 11:15	An analysis of developing energy systems: an overview, <b>Carla Tagliaferri</b> , University College London, United Kingdom
11:15 – 11:30	Resource recovery and life cycle assessment in co-treatment of organic waste substrates for biogas versus incineration value chains in Poland and Norway, <b>Simon A. Saxegård</b> , Østfoldforskning, Norway
11:30 – 11:45	Environmental impacts of a material recovery facility in a Life Cycle Perspective, <b>Filomena Ardolino</b> , Second University of Naples, Italy
11:45 – 12:00	LCA of mechanical biological treatment of residual MSW in the city of Rome: current practices vs. alternative strategies, <b>Giulia Costa</b> , University of Rome "Tor Vergata", Italy
12:00 – 12:15	Environmental sustainability of two biological treatments for the organic wet fraction of municipal solid waste, <b>Filomena Ardolino</b> , Second University of Naples, Italy
12:15 – 12:30	LCA as a supporting tool for supermarket food waste management - A case study in a Swedish supermarket, <b>Pedro Brancoli</b> , Swedish Centre for Resource Recovery, University of Borås, Sweden
12:30 – 12:45	Integrated environmental analysis of urban waste separate collection in the Sorrento peninsula, in Italy, <b>Giovanni De Feo</b> , University of Salerno, Italy
12:45 – 13:00	Assessment of the environmental sustainability of a treatment aimed at soil reuse in a Brownfield regeneration context, <b>Giulia Costa</b> , University of Rome "Tor Vergata", Italy
13:00 – 14:00	<i>Lunch (Hotel private beach or restaurant of the Hotel)</i>
14:00 – 16:00	Free time / <i>ad hoc</i> sessions

**Wednesday, June 8, 2016 (continued)**

16:00 – 19:30	<i>Visit to the San Michele organic farm, guided by Ms. Ornella Peiser. Degustation of wines and local products.</i>
20:00 – 21:15	<i>Dinner (Restaurant of the Hotel): Pizza event</i>
21:15 – 22:30	Poster Session with Social Hour

## Thursday, June 9, 2016

07:30 – 08:30	<i>Breakfast</i>
08:30 – 09:15	PLENARY LECTURE (Chairman: <u>Prof. Thomas Astrup</u> ) <b>Maria Ljunggren Söderman</b> (Chalmers University, Göteborg, Sweden) Managing material resources: the challenge of complex products

### TOPIC 5 Case studies of LCA in the construction sector and some specific sectors

	Chairman: <u>Prof. Thomas Astrup</u>
09:15 – 09:30	Retrofit design of energy efficient buildings using Life Cycle Assessment case study on research institute building, <b>Feresheteh Aramoun</b> , Sharif University of Technology, Iran
09:30 – 09:45	LCA for a residential Italian multifamily building: a case study, <b>Pierluca Vitale</b> , Second University of Naples, Italy
09:45 – 10:00	Life cycle assessment of low cost retrofit options of educational building considering renewable and non-renewable energies, <b>Feresheteh Aramoun</b> , Sharif University of Technology, Iran
10:00 – 10:15	LCA modelling of cement concrete waste management, <b>Marjan Mousavi</b> , University of Nantes, France
10:15 – 11:00	<i>Coffee Break (Terrace of Grand Hotel Michele)</i>
	Chairman: <u>Dr. David Laner</u>
11:00 – 11:15	Predictive resource planning: coupling construction needs with demolition waste forecasts, <b>Elisabeth Keijzer</b> , TNO, Netherlands
11:15 – 11:30	LCA applied to residual organic fertilizing materials - An overview of substitution methodological options and quantitative substitution rates, <b>Claire Déchaux</b> , Irstea, France
11:30 – 11:45	LCA applied to residual organic fertilizing materials - An overview of emission inventory data at the spreading operation, <b>Claire Déchaux</b> , Irstea, France
11:45 – 12:00	Life-Cycle Assessment of olive oil addressing alternative production systems: how to deal with olive pomace valorization?, <b>Fausto Freire</b> , ADAI/LAETA, University of Coimbra, Portugal
12:00 – 12:15	Life Cycle Assessment problems and prospects in Bangladesh: a case study of healthcare waste management of Chittagong Metropolitan city, <b>Ohidul Alam</b> , Tongji University, China
13:00 – 14:00	<i>Lunch (Hotel private beach or restaurant of the Hotel)</i>
14:00 – 17:00	Free time/ <i>ad hoc</i> sessions
17:00 – 17:30	<i>Afternoon Refreshments (Hotel lobby)</i>

## **Thursday, June 9, 2016 (continued)**

### **TOPIC 5 Case studies of LCA in the construction sector and some specific sectors**

	Chairman: <u>Prof. Giovanni De Feo</u>
17:30 – 17:45	Challenges and framework of life cycle management of small WEEE in China, <b>Jianxin Yang</b> , Chinese Academy of Sciences, China
17:45 – 18:00	The challenges of nuclear waste management from a life cycle perspective, <b>Andrea Paulillo</b> , University College London, United Kingdom
18:00 – 18:15	Scenario estimates of rare earth recycling potentials from NdFeB magnet material, <b>Rita Schulze</b> , Oeko-Institut, Germany
18:15 – 18:30	Life Cycle Assessment of ship recycling: metals recovery, <b>Fabio Magrassi</b> , University of Genoa, Italy
18:30 – 19:30	Poster Session with Social Hour
20:30 – 22:30	<i>Banquet at the Hotel Swimming Pool</i>

## **Friday, June 10, 2016**

08:00 – 09:00	<i>Breakfast on the terrace of Grand Hotel San Michele</i>
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### **TOPIC 6 Design for environment, Environmental Footprint, Industrial Symbiosis**

	Chairman: <u>Prof. Maria Ljunggren Söderman</u>
09:00 – 09:15	Life cycle assessment modelling considering impurities in recyclable materials, <b>Giorgia Faraca</b> , Technical University of Denmark, Denmark
09:15 – 09:30	Assessing energy benefits of operating anaerobic digesters at low temperature with solids pre-ozonation, <b>Zeinab Bakhshi</b> , McGill University, Canada
09:30 – 09:45	Study on an eco-design method of industrial solid waste reused products: a case study of mullite produced from fly ash, <b>Qiang Li</b> , Chinese Academy of Sciences, China
09:45 – 10:00	Mapping the content and fates of scarce metals in discarded cars, <b>Magnus Andersson</b> , Chalmers University of Technology, Sweden
10:00 – 10:15	Technologies for harvesting microalgae for biodiesel production: a comparative LCA study, <b>Pascale Champagne</b> , Queen's University, Canada
10:15 – 11:00	<i>Coffee Break (Terrace of Grand Hotel Michele)</i>
11:00 – 11:15	Analysis on solid waste emission and management in the development of Beijing City, <b>Chenye Wang</b> , Institute of Process Engineering, Chinese Academy of Sciences, China
11:15 – 11:30	Waste management of flame retardant textiles: an alternate end-of-life design for flame retardant textile products, <b>Sohail Yasin</b> , Politecnico di Torino, Italy
11:30 – 12:30	Poster Session
12:30 – 13:00	<b>OVERALL DISCUSSION, FEEDBACK, WHAT IS NEXT?, CONCLUDING REMARKS AND CLOSING OF CONFERENCE</b>
13:00 – 14:00	<i>Lunch at the restaurant of the Hotel and Departure</i>