

**ACTIONS FOR A SUSTAINABLE**

# **WORLD**

**FROM THEORY TO PRACTICE**



**BOOK OF ABSTRACTS**



**THE 24th INTERNATIONAL  
SUSTAINABLE DEVELOPMENT RESEARCH  
SOCIETY CONFERENCE**

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**BOOK OF ABSTRACTS**

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Department of Economics  
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Conference Chair

Full professor of "Quality and Environmental Management" and "Industrial Ecology" (Commodity Science) and Deputy Director of the Department of Economics - University of Messina (Italy) from 25/01/2016. PhD on "Technology and Economics of Processes and of Products for Environmental Safeguard" University of Catania (Italy). She has been expert for the European Commission (DG Research & Innovation). She is Member of the Board of the Italian LCA Network and member of the Board of Professor of the PhD in "Economics, Management and Statistics" - Universities of Messina and Catania. She participated to various research groups, also as national coordinator and she is, actually, author of more than 130 publications on national and international scientific journals, books and proceedings. Her main areas of specialization are: Quality Management and Environmental Management; Life Cycle Assessment (LCA) and other environmental assessment tools; Industrial Ecology and Industrial Symbiosis; Integrated approaches of environmental management and assessment tools.



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Full professor of Industrial Ecology and related issues at the Department of Economic Studies, University "G. d'Annunzio", Pescara, Italy. For almost 3 decades, he has carried out academic research and teaching. His research perspective includes environmental management systems, life cycle sustainability assessment, industrial ecology. His research is mainly of an interdisciplinary nature, also involving engagement with stakeholders (mainly industry); he has participated in various research projects involving multi- and inter-disciplinary collaborations, both at a national and international level.



## **Giovanni Mondello**

PhD student in Quality, Innovation and Sustainability at the University of Roma Tre (Rome). He completed his studies in Environmental and Natural Science at the University of Messina and afterwards he earned his MSc degree in Ecotoxicology and Environmental Sustainability at the University of Siena. His main research is focused on the improvement of the Life Cycle Sustainability Assessment framework and its application in the context of food waste management, by combining Life Cycle Assessment (LCA), Life Cycle Costing (LCC) and Social LCA (SLCA). He is also working on proposing innovative solutions for food waste treatment as well as on the application of the LCA tool in the agrifood sector.



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Associate Professor in Commodity Science - (Environmental Management) at the University of Messina and previously Assistant Professor in the same University. He has held Visiting Professor positions in Tokyo University (Japan), Tsinghua University (China), USBC (USA) and visiting Researcher at Leiden University (Netherlands). He is co-editor in chief of the journal "Sustainability" (Section on "Economic, Business and Management Aspects of Sustainability"), and member of the Editorial Board of the journal of "Sustainable Development". His main research topics are: sustainability, environmental governance, urban metabolism and environmental resource management tools, implemented in different productive and territorial contexts. Author of about 80 publications in proceedings of National and International Conferences and National and International refereed journals, he is involved, as P.I., currently, in a scientific project on "A novel approach to Urban Metabolism: integration of economic, environmental and social issues for the design of sustainable urban systems".



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Full Professor of Quality and Environmental Management at Department of Economics - University of Messina; his main research topics are quality and environmental management system, integrated management systems (quality, environment, safety, ethics, etc.), environmental assessment tools, and food quality. He is Coordinator Presidium of Quality at the University of Messina and ANVUR evaluator expert.



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# INTRODUCTION

The 24th Conference of the International Sustainable Development Research Society (ISDRS 2018) “*Actions for a Sustainable World: from theory to practice*” has been held in Messina (Italy) at the Department of Economics of the University of Messina from 13<sup>th</sup> to 15<sup>th</sup> June 2018.

The theme of the 24th Conference, “*Actions for a Sustainable World: from theory to practice*”, has been chosen in order to emphasize that we must rethink our social and economic systems in order to make economic and social development more resource-efficient and equitable to all, both across the planet and in future generations. Following this main aim, the Conference brought together about 350 delegates, coming from more than 40 different countries, that discussed about theories, models and applied research and practices in the field of sustainability, with a unique and exciting richness in interdisciplinary approaches. Participants focused on how scientists and researchers are developing sustainable development theory and methods; how theoretical methods are transferred into real practice by policy-makers, private and public organizations and citizens; and whether this research and implementation will ensure the achievement of international goals, such as those set by the United Nations in the 2030 Agenda for Sustainable Development.

The conference objectives were as follows:

- to illustrate the enormous implications of continued unsustainable production and consumption and the economic cost if society fails to act and reverse the unsustainable trend of economic development;
- to bring together the world’s scientific experts and scholars presenting their most recent research findings and the other diverse stakeholders presenting their own successful experiences in the research of sustainable solutions and practices;
- to provide a global platform for strengthening, promoting and enhancing scientific collaborations around the world and develop a conference programme that reflects the diversity of sustainable strategies and solutions research.

The presentations given at the conference clearly contribute to these objectives. The reader can find in the *Book of Abstracts* and in the *Book of Papers* a collection of these contributions; abstracts and papers presented at the conference have been submitted to a complete blind peer review process from international experts.

## The local conference Chair

Roberta Salomone



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## The multidisciplinary approach for Life Cycle Architecture

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*Ms. francesca thiebat (politecnico di torino - DAD), Ms. Grazia Cocina (politecnico di torino - DAD)*

A building should be designed for a planned lifetime, combining the expected perspective of subject involved in the process (planners, designer, users, society, environment, etc). In the early stage of the life cycle design process, decision-making methods can be applied to define the whole life of the building and control the sustainability of solutions that will be adopted at different design levels: strategic level, system level and detail level.

The aim of the study is to introduce the concept of multidisciplinary approach as a main driver for the life cycle design. The research shows the most important tools and theories, internationally recognized, starting from the environmental economic theory, passing through multidisciplinary methods, such as Cradle to Cradle design and Regenerative Design, up to life cycle design tools and methods.

The Life Cycle perspective requires stakeholders to cooperate in new ways. Integrated design allows a holistic approach and the continuous consideration of a large numbers of aspects. The interoperability of design tools is a key factor, providing support to design team for the life cycle assessment of buildings, life cycle cost determination or a combination of the two.

Some case studies illustrate the practical application of life cycle analysis and show how multidisciplinary approach can improve the sustainability of the building, extending the building time horizon to the whole life cycle (including construction, maintenance, renovation and end of life). All the examples considered in the study, taken from scientific literature (e.g. König et al, 2010; Hauke et al. 2016; etc.), have been assessed using tools or systems to perform sustainability, such as Sustainable Building certification scheme (DGNB), Minergie, LEED and Protocollo Itaca, etc.. Among the case studies examined there are: a lower secondary school in Austria (refurbishment and extension), an administration center in Germany (new building), an industrial building in Italy (refurbishment), a residential building in Italy (refurbishment and extension).

As a result, a classification of selected buildings by use type (residential, educational, office and industrial) is presented in order to build a case studies map, which highlights the multidisciplinary approach of the life cycle design. Hence, the investigations and calculations were based on various parameters: construction costs, usage costs, energy requirement and life cycle assessment. The case studies map can be useful, as a reference, to help researchers and designers to compare their design solution with a benchmark option.

El Khouli, et al. (2015) Sustainable Construction Techniques. Detail Green Books

Hauke, B., et al. (eds) (2016) Case studies and life-cycle assessment comparisons, in Sustainable Steel Buildings: A Practical Guide for Structures and Envelopes, John Wiley & Sons, Ltd, Chichester, UK.

König et al. (2010) A life cycle approach to buildings. Detail Green Books

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