Designing Sustainable Technologies, Products and Policies

Enrico Benetto · Kilian Gericke
Mélanie Guiton
Editors

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From Science to Innovation

Editors
Enrico Benetto
Department ERIN—Environmental Research and Innovation
Luxembourg Institute of Science and Technology (LIST)
Esch-sur-Alzette
Luxembourg

Kilian Gericke
Department of Engineering
University of Luxembourg, Campus Kirchberg
Kirchberg, Luxembourg
Luxembourg

Mélanie Guiton
Department ERIN—Environmental Research and Innovation
Luxembourg Institute of Science and Technology (LIST)
Esch-sur-Alzette
Luxembourg

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Preface

Life Cycle Management (LCM) can be considered an integrated concept and toolbox of methods and operational approaches aimed at improving the environmental, social and economic sustainability of technologies, products, services, policies and organizations from a life cycle perspective. Businesses and policy-making organizations use LCM frameworks to explicitly identify, document, inform and communicate their strategy and to chart a course from this strategy towards a more sustainable society.

The LCM conference series is the leading Life Cycle Assessment forum worldwide, bringing together 700+ LCM scholars and practitioners from 40+ countries working in industry, academia and public institutions. LCM 2017 has been the 8th time this conference has taken place, following the inaugural conference in 2001 in Copenhagen, and highly successful events in Barcelona (2005), Zurich (2007), Cape Town (2009), Berlin (2011), Gothenburg (2013) and Bordeaux (2015).

LCM 2017 was held from the 3 to 6 September 2017 at the European Convention Centre Luxembourg (ECCL) and was organized by the Luxembourg Institute of Science and Technology (LIST), in collaboration with the University of Luxembourg and ArcelorMittal. LCM 2017 attracted 730 international scientists and practitioners of Life Cycle Management from 46 countries. Top-tier international companies, along with senior representatives of European institutions and national governments, took part in the event, which featured a series of star speakers and visionary leaders of the field, such as Bertrand Piccard and Mathis Wackernagel. Delegates also had the opportunity to meet with His Royal Highness Grand Duke Henri of Luxembourg who, accompanied by his son, His Royal Highness Prince Louis, spontaneously took part in the closing session of the conference.

LCM 2017 was thus an opportunity for the whole community of researchers who believe in the effectiveness of LCM to gather together, but it was more than that. With the rise of the Circular Economy as a new paradigm for market growth, several methods and certification schemes to quantify and communicate the impacts and benefits of circular systems have emerged. The LCM toolbox can indeed

provide a legitimate and scientifically founded, quantitative basis to steer and monitor the transition towards a more sustainable and healthier society. The LCM community must, however, confront important challenges to reach this objective, in particular, in terms of positioning LCM on the political and business agendas, simplifying and standardizing LCM methods without oversimplifying and neglecting complexity, ensuring efficient communication and promoting innovation based on LCM concepts and tools.

LCM 2017 was designed to tackle these challenges and offer to the LCM community the opportunity to take LCM to the next level, to effectively contribute to the journey towards a safer and more sustainable society.

First, the programme of LCM 2017 was designed around new (smart) technologies (and related implementation sectors) which, on the one hand, are likely to disrupt the LCM practice in the coming years (e.g. smart sensors making data collection much easier) and, on the other hand, for which the LCM toolbox has great development potential. In over more than 35 sessions, there were sessions on smart agricultural, smart manufacturing and smart mobility systems, including urban infrastructures and energy for the built environment, sessions specifically targeting the role of LCM for Circular Economies and *vice versa*, sessions on sectors which are historically under-represented in the LCM series (like pharmaceutical industry or textiles). New technologies such as Blockchain, Building Information Management (BIM), Nature-based Solutions for Cities, and Artificial Intelligence were discussed. The focus on bridging the gap between science and innovation was also pursued in the exhibition area, where companies have showcase technologies developed using the LCM toolbox.

Second, communication (BtoB and BtoC) is historically an improvement lever for our community. The LCM toolbox is often considered by policy-makers and business leaders too difficult, complex and expensive to understand, implement and communicate. Indeed, this is certainly one of the reasons why other approaches, simpler albeit sometimes less rigorous scientifically speaking, could have a much stronger impact on business than LCM.

LCM 2017 included a number of sessions focusing on current standardization approaches, LCM guidelines and best practices as well as on the visualization and interpretation of LCM results.

Finally, from our perspective, it is very important for the LCM community to bridge the gap with other scientific and business communities, pursuing similar objectives, often in a complementary way. This combination can bring higher visibility to policy to the LCM toolbox and to other influential institutions and thus avoid the risk of being considered the result of a niche community of users and academics. With this objective in mind, a number of transversal sessions were run, such as a discussion panel devoted to the funding of LCM and Circular Economies, thanks to the involvement of the European Investment Bank.

This book is a selection of the most relevant contributions to the LCM 2017 together with a resume of the discussion and outcomes from each session.

I would like to thank my co-chairs, Kilian Gericke (University of Luxembourg) and Jan Bollen (ArcelorMittal), for their support in shaping the programme of the conference and the members of the organizing committee, whose tireless work has made LCM 2017 happen: Mélanie Guiton, Marylène Martin, Céline Goncalves, Tomás Navarrete Gutierrez and Lugdivine Unfer. The Event and Communication departments of LIST and Uni.lu are also gratefully acknowledged for their support in the communication and dissemination actions.

A large conference such as LCM 2017 would never have been possible without the financial help of external institutions. I am very grateful to the Luxembourg National Research Fund (FNR), the Luxembourg Ministry of the Economy and the European Investment Bank for their invaluable support. I would also like to acknowledge the extraordinary level of financial funding from private companies: Evonik Nutrition & Care GmbH, PRé Consultants B.V., Thinkstep AG and Kronospan Luxembourg S.A. (Platinum Sponsors); BASF SE, Ipoint Systems GmbH and Quantis International (Gold Sponsors); Delphi Automotive Systems Luxembourg, Plastics Europe, Nestlé S.A., Steelcase Werndl AG and Tarkett GDL S.A. (Silver Sponsors). The sponsors contributed to shape an attractive programme of keynote lectures and discussion panels in a fair and constructive atmosphere, to add valuable content to the conference programme.

We acknowledge the partnership with the Luxembourg Chamber of Commerce for the b2fair matchmaking event, a new feature introduced to the LCM conference series to facilitate networking among participants.

Finally, I would like to thank all the abstract and session contributors, chairs and reviewers, exhibitors and delegates. It is your commitment and interest that made it all happen.

Esch-sur-Alzette, Luxembourg

Enrico Benetto
Chair LCM 2017

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