

# Preface

Global economic and population growth trends are placing pressures upon natural resources threatening future economic and social development. Most notably, the world population, standing on 7.2 billion people in mid-2014, is projected to increase by almost one billion people within the next decade, and further to 9.6 billion in 2050 (United Nations 2013). At the same time, large and fast-growing economies (i.e. the BRICS members) will experience increasing wealth. A major consequence of these two trends is higher consumption and demand for food and other goods, increasing in parallel the rate of waste production and depleting the amount of available resources (e.g. demand for several elements, including helium, phosphorus, indium and gallium is predicted to exceed supply in the near future). Overarching all of these issues is the threat of climate change and the concerns about how mitigation and adaptation measures may affect the food system (Schmidhuber and Tubiello 2007; Godfray et al. 2010).

Scientists, analysts and policy makers are taking stock of these trends, trying to push the society towards more sustainable development patterns. An emerging area of enquiry looks with growing interest at food waste reduction and valorisation as a key area of research to provide answers to these emerging challenges. In fact, the valorisation of food waste has many advantages. It is a rich source of functionalised molecules (i.e. biopolymers, protein, carbohydrates, phytochemicals) and contains valuable extracts for various applications (e.g. resins from cashew nut shell liquid), avoiding the use of virgin land and water resources. In addition, it solves a waste management issue and represents a sustainable renewable resource; making the valorisation of food waste doubly green.

Moving from this, the 15 chapters included in this book address these emerging societal challenges building on the idea that food waste reduction and valorisation is fundamental for promoting environmental, economic and social sustainability, in the framework of the growing interdependence between human societies and the natural environment.

The plurality of perspectives considered gives a truly transdisciplinary angle to the book. Indeed, the proposed book is the outcome of rather fertile networking and research activities conducted over the last years by a broad group of experts,

coming from different disciplines, most of whom were partnering in the COST action TD1203 on Food Waste Valorisation for Sustainable Chemicals, Materials and Fuels (EUBis) initiated by Prof. James Clark (head of the Green Chemistry Centre of Excellence at the University of York) back in 2012 and that successfully ended on the 22 November 2016.

Within the COST Action TD1203, the fourth working group, in which the editors of this book took part, dealt specifically with ‘Technical & Sustainability Assessment and Policy Analysis’, focusing on the economic assessment of alternative innovative technologies, including supply logistics and feasibility evaluation of green processes at the industrial level, whilst also exploring the environmental and social impacts of the valorisation technologies.

The book opens with an introductory chapter by James Clark, presenting the genesis, the purpose, and the scope of the work and setting out a roadmap to guide the readers through the book, underlying the common thread linking the remaining 14 chapters comprised in the book.

We hope this book will contribute in shedding new light on social, techno-economic and policy related issues concerning food waste reduction and valorisation, paving the way to new research in this field of enquiry.

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