



## Call for papers

## Agricultural and forest biomass for food, materials and energy: bio-economy as the cornerstone to cleaner production and more sustainable consumption patterns for accelerating the transition towards equitable, sustainable, post fossil-carbon societies

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### 1. Introduction to this special volume

Since the industrial age, fossil resources have been increasingly utilised to provide the material and energy basis for societal health. However, climate changes are increasingly occurring as a result of the increasing atmospheric concentrations of carbon dioxide and other greenhouse gases (GHGs). Hence, the urgent need to accelerate the transition to truly equitable, sustainable, post-fossil carbon societies. Additionally, the global population is expected to

grow to nine billion or more people by 2050: therefore, all societies will be increasingly confronted by bio-diversity losses, food and water insecurities and resultant economic and political disruptions. There will be urgent needs for all to face the planetary boundaries, which are already being exceeded in many locations. Amongst them, water scarcities, emptying of aquifers, rapid deforestation, spreading deserts, agricultural land erosion and land contamination, water and air with numerous toxic pollutants (Blok et al., 2015; Ingrao et al., 2015; Lopes, 2015; Pellegrini et al., 2016). In response to the knowledge about our exceeding the planetary boundaries, we must take our responsibilities seriously to accelerate the transition to equitable, sustainable, post-fossil carbon societies. Therefore, responsible human reproduction limits must be addressed along with building comprehensively upon improved energy efficiency and renewable energy.

In that context, people have the societal challenge to develop societies, that are increasingly based upon bio-based economies or 'bio-economies', and so are characterised by both reduced dependence upon imported fossil fuels and reduced GHG emissions (Philp, 2015). Those bio-economies should be sustainably implemented and managed in the short and long-term to ensure the essential production and consumption transitions to reduce fossil GHG emissions, whilst boosting innovation to increase both productivity and profitability (Püzl et al., 2014; Huisingh et al., 2015). Dedicated strategies have been developed over the years in such a

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direction by the European Commission (EC), the US, Canada, Australia, South Africa, Finland, Sweden and Germany. Altogether, more than 30 countries worldwide acknowledge and politically support the potential benefits of establishing an holistic, responsible bio-economy (Lewandowski, 2015; Philp, 2015). The latter is indeed expected to play a crucial role in the building of competitive, resource efficient and low carbon economies, in order to achieve the transition towards global sustainable development (de Besi and McCormick, 2015; Huisingh et al., 2015; Scarlat et al., 2015).

An holistic, responsible bio-economy should include a broad spectrum of applications of biological sciences and their associated technologies for sustainable production and utilisation of quality and sustainable products and services in various fields of the economy, for today and the future. Moreover, it should be built upon sustainable production and consumption of renewable biological resources and their conversion into food, feed, bio-based products and energies. Therefore, it should involve industrial and economic sectors that produce, manage and utilise those resources such as: agriculture, horticulture, fisheries, forestry, bio-energy and bio-refineries (Schmid et al., 2012; Koukios, 2015; Lopes, 2015).

A particular aspect of the value and strategic attraction of a sustainable bio-economy for policy and decision-makers is its potential 'bio-greening' global impact upon policies, education, processes, products and systems. The growing bio-economy will have a greening effect upon agricultural, horticultural and aqua-cultural, food and feed supply chains, and in reforestation and sustainable management of all.

The transitions must be envisioned, designed, tested, and implemented to ensure sustainable production, distribution and consumption of biomass for food, feed, fibre, energy and chemical feedstock to manufacture products, currently made from fossil energy sources. If those transitions are properly made, they will help to catalyse improvement of technological quality, socio-economic equity and environmental sustainability in holistically integrated ways, whilst reducing the climate change impacts.

In this context, this Special Volume (SV) of the Journal of Cleaner Production (JCLP) is designed to:

- Promote scientific research and dialogue about policies, technologies, processes, scaled-up applications, monitoring, reporting and education upon all dimensions of the transition to societies based upon integrated, equitable, sustainable bio-economies; and
- Support policy makers, technology developers and producers, educators and researchers, financial systems managers, entrepreneurs, farmers, fishers, and foresters for development and usage of globally-interconnected information exchange networks designed to foster transitions to sustainable bio-economies at global scales.

Therefore, through this call-for-papers (CfPs), Dr. Carlo Ingrao and a supporting team of Guest Editors (GEs) warmly invite authors to submit their papers for potential inclusion in this SV on sustainable bio-economies. Your contributions will be important for documenting ways for bio-based concepts, tools, technologies, education and policies to play increasingly central roles in accelerating the transition to equitable, sustainable, post-fossil carbon societies.

The SV development will be build upon papers from authors who attended the following conferences:

- "Towards a Sustainable Bio-economy Innovative Methods and Solutions for the Agriculture and Forest Sectors" (<http://www.castle-itn.eu/conference.html>); and

- "Global Cleaner Production and Sustainable Consumption: Accelerating the Transition to Equitable, Sustainable, Post-Fossil Carbon Societies" conference (<http://www.cleanerproductionconference.com/>).

Additionally, articles are globally solicited from all those authors who wish to publish their findings on any dimensions of evolving bio-economies.

All authors are invited to submit research and/or review papers that address the topics in Table 1: in this regard, please note that those topics are listed under four broad categories, or 'Research macro-areas'. Nevertheless, the editorial team invites authors to focus upon one or more of those areas, and to address one or more 'Topics' in an integrated, multi-disciplinary paper designed to provide insights about the present and likely future directions of sustainable bio-based societies. The list of topics in Table 1 is illustrative but not restrictive; therefore papers addressing other, related dimensions are also welcomed.

We look forward to co-working with all of you as we together develop a fantastic SV on the need for and pathways to truly equitable, sustainable, post-fossil carbon societies!

## 2. Extended abstract and manuscript submission

All authors are invited to submit extended abstracts of 1000–1500 words of their proposed papers to Dr. Carlo Ingrao ([carlo.ingrao@unifg.it](mailto:carlo.ingrao@unifg.it)). The editorial team will review all submissions and will provide prompt feedback to the authors so that they are best guided for preparation of top-quality papers.

The invitation to submit extended abstracts pertain to people who submitted to either of the conferences and to anyone else who wishes to submit a paper for this exciting and urgently needed SV.

After the extended abstracts are reviewed, all authors will be notified whether their abstracts are accepted as submitted or amendments should be made as the authors develop their full, peer-review ready papers.

The authors invited to develop their full papers are kindly requested to access and to follow the "Instructions for authors" presented in the JCLP website (<http://www.journals.elsevier.com/journal-of-cleaner-production>). Then, in order to move onto paper submission, authors are invited to go to <http://ees.elsevier.com/jclepro>, select this SV (*Bio-economy paths for CP*), and then follow the standard submission procedures of Elsevier's Editorial System (EES).

## 3. Tentative schedule

Authors intending to participate to this CfPs are informed that the editorial team and Elsevier staff will do their best to adhere to the time-schedule, but that is also dependent upon authors and reviewers co-working with us on this cooperative journey. In that context, the editorial team hopes that this SV will be published in the first half of 2017.

Please be aware that all the information and deadlines related to the tentative time schedule were summarised in Table 2.

Finally, after acceptance, papers will be available online as accepted-manuscripts with the related doi-numbers, and so will be ready for being cited. Then, corresponding authors will be emailed and linked to the online proofing system allowing them to incorporate minor corrections in their articles before the latter are published. A couple of days after submission of those minor edits, the papers will appear on line as corrected proofs, namely published-like articles that, however, do not contain all of the bibliographic details (volume, issue and page range): the latter will

**Table 1**

These are the four 'Macro Research Areas' and the related 'Topics' that can potentially be addressed by authors for this SV.

Research macro-areas	Topics
Biomass, biomaterials and bioenergy	Biomass production and conversion; Biomass digestion for biogas production; Digestate management and treatment scenarios; Biofuels conversion methods; Bio-methane upgrading technologies; Separation and process technologies; Agricultural residues and food waste treatment (i.e. compost, sanitary landfill, bio-refinery, thermo-valorisation); Biomass refinery concepts and technologies for production of innovative materials (e.g. bio-materials, bio-chemicals) and energies; Bio-materials for applications in buildings and other industrial sectors; Inter-organisational relationships and strategies for biomass valorisation; Drivers and barriers for bio-based technology adoption; Business models for bio-based technology.
Agriculture	System approaches to crop cultivation, harvest and supply Crop-livestock integration; Farm-level resource allocation; Relationships between agroecosystems and the natural environment, with a view to land, air, and water preservation; Agroecosystem and environmental impacts such as, for instance, GHG emission, water and fossil fuel consumption, soil contamination and air pollution, land use; Interaction between agricultural and non-agricultural landscapes; Environmental and socio-economic implications of agricultural land use, and both direct and indirect land use change; Ecological consequences of intensification, soil degradation, waste application and irrigation options; Multiple-service agriculture; Climate-smart agriculture (CSA) systems; Conservation agriculture practices (i.e. no-tillage, organic fertilisation, carbon sink practices and so); Integrated and organic farming practices; Fertilisation and weed control practices improvement for a more sustainable agriculture; Irrigation and dilution water usage and management optimisation.
Forestry	Sustainable forest intensification; Forest biomass usage and carbon mitigation; Forest ecosystem services; Forest adaptation to climate change; Forest management and biodiversity protection; Forest wood supply chain; Forest health monitoring and assessment.
Food production, processing and food supply chain management	Food and derivatives production and engineering systems Food value chain; Sourcing strategies for sustainable food supply and consumption from a business perspective; Bridging production and consumption dimensions of agro-food supply chains for the advancement of bio-based/CSA; Packaging systems and preservation technologies for shelf-life extension and subsequent food-waste prevention; Economic and environmental implications of food shelf-life extension; Packaging biomaterial characterisation tests within a shelf-life extension analysis framework; Recycled materials and biomaterials utilisation for food package manufacturing; Food-waste prevention technologies in the whole supply chain (i.e. production, transformation, packaging and delivering); Novel processing and packing technologies.

**Table 2**

Tentative time planning: SV-development process deadlines.

SV-development phases	Deadlines
Submission of extended abstracts	March 20, 2016
Feedback of extended abstracts	April 8, 2016
Manuscript submission	July 8, 2016
Peer review, paper revision and final decision notification	January 7, 2017
SV online publication	April 6, 2017

be provided to the authors once the SV has been assembled and published.

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