Call for papers – Special Issue

The bio-economy: innovations and diversity of development models

Guest Editors:

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The 21st century is a century of all challenges. Climate change and the announced end of an all-oil era are questioning our current development patterns and the aims of economic growth. Scientists are witnessing and participating in many innovative attempts to restore a balance between the socio-economic sphere and the biosphere with environmental innovation (Debref, 2017, 2018). The expectation of the public, private and civil society sphere is turning to the use of organic resources, such as biomass and biological funds (Bauer, 2018; Hermans, 2018; L. Levidow *et al.*, 2018). Renewable resources are now new support on which society can adapt, innovate, set in motion new modes of development and create new relays for triggering "green growth" (Birch, 2019; European Commission, 2018; OECD, 2009). This trajectory, known as the bio-economy, is more than a priority if we look at the projects supported by international institutions, the agro-industrial sector, the chemical and biotechnology sectors.

However, recent research has shown that the bio-economy is a polysemous term (Giampietro, 2019; Vivien *et al.*, 2019). Each of its interpretations has its own dynamics, innovation trajectories and milestones (e.g. production methods, knowledge accumulation, value chains, resource management):

> The first is part of an ecological economic perspective where innovations and knowledge are made to take into account the reproductive constraints of natural environments anchored in a given territory. Here, innovation trajectories would contribute to a "new age of wood" evolving in prudence, mutual sharing and long-term vision, based, for example, on eco-development or even degrowth strategies (Georgescu-Roegen, 1971; Passet, 1979; Sachs, 1980). Some examples are observable

in various agro-ecological practices, the economic valuation, processing and local distribution of products based on socio-technical compromises.

The second conception is based on the development of biotechnology supported by the OECD, multinationals and start-ups (OECD, 2009). Biological organisms are at the service of the economy, which will consider them as "micro-factories"(Aguilar *et al.*, 2009; Les Levidow *et al.*, 2013). Companies will aim here to protect knowledge in the form of patents and make a profit from it. This trajectory is logically part of a green growth perspective, but also feeds the hopes of a new Kondratieff cycle, synonymous with prosperity.

The third form of the Bio-economy is based on innovations that replace our dependence on oil resources with the exploitation of biomass. It is implemented in medium-term strategies to the extent that innovations and knowledge are adapted according to the supply of inputs. The core of technical change is based on the production of renewable carbon molecules depending on productive heritage (Garnier *et al.*, 2012). According to the European Commission, Biorefineries are an emblematic example of success in coupling enhancing territorial anchoring with industrial ecology, so called the “circular bioeconomy” (European Commission, 2018). On a smaller scale, we also observe the dissemination of methanizers aimed at using the co-products and by-products of agricultural activity to produce energy and digest as fertilizer. These innovations represent a new source of income for farmers and a new source of sociotechnical compromises (Berthe *et al.*, 2018).

The bio-economy is based on a diversity of complementary trajectories intertwined in different space-time relationships. These trajectories are in constant co-evolution, making our understanding of ecological transition even more complex. Therefore, we can also question the ongoing innovation strategies aimed at different objectives of growth and economic development.

<u>This special issue has the following objectives:</u>

1. To study the diversity of the bio-economy and co-evolution processes for the development of territories

2. To provide a full overview of the bioeconomy and different types of innovations, technological (low-tech | high-tech), organizational (ex. bioclusters, industrial symbioses), institutional, social and policy innovations, at play in the transformation model of developments.

3. Identify new forms of collaboration (ex. governance) and theirs purposes that influence the transition process. To illustrate how bioeconomy encourages multidisciplinary approaches between the social and natural sciences. It respond to the major challenges posed by innovations for bioeconomy in terms of regulation, supportive norms and communities (ex. collaborations between universities, public authorities and the private sphere).

4. To analyze the governance process of the transition of the bio-economy by showing the influence of the market and non-market sphere. Identify the diversity of methods for sharing tangible (e.g. biomass, co-products and infrastructure) and intangible resources (e.g. patents, shared knowledge). Understand the influence of the "commons" in the evolution and support during the transition.

5. To provide of how the bio-economy and its innovations are industrializing rural areas. How it influences local agricultural and industrial employment. Then, analyze value chain transformation, new form of profit distribution. Finally, study the emergence of new business models according to different forms of bio-economy.

Papers may address several kinds of issues, such as:

- New model of development for bioeconomy
- Diversity of the bio-economy and co-evolution processes
- Variety and co-evolution between innovation systems (ex. agroforestry, agroforestry, aquaculture, etc.)
- New industrial models for biomass valorization (ex. Biocluster, biorafinery biogas plant, biotechnological, thermochemical, extrusion process, low-tech/high-tech)
- Organizational innovation and collective management of tangible and intangible resources for bioeconomy
- Knowledge management and dissemination (e.g. patent, shared knowledge)
- New forms of cooperation : new scientific collaboration and public-private collaborations (ex. university/institution/companies)
- Bioeconomy and collective management of common goods
- Governance and support process for the transition on the territory
- Agro-ecology, new production process according to the limits of the biosphere
- Sociotechnical compromise, deliberation and development model for the bio-economy

Timetable for submission and acceptance of papers:

- **June 28th**: Deadline for complete manuscripts through online paper submission: http://www.editorialmanager.com/innovations/default.aspx

Guideline for authors: http://www.cairn.info/docs/Instructions_for_authorsGB110816.pdf
Reviewing process from October 2020 to December 2020

- **June 30, 2021:** Final notification for acceptance:

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