Bioeconomy and Biosystems Economics Laboratory

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- **Research Activities**

The future bioeconomy is expected to drive the transition towards a more sustainable economy by addressing some of the major global challenges, including food security, climate change and resource scarcity. The globally increasing demand for food in particular, but also materials and renewable energy, necessitates innovative developments in the primary sectors. Innovations will need to generate more resource-use-efficient technologies and methods for increasing productivity in agriculture, forestry and aquaculture without jeopardizing the Earth's carrying capacity and biodiversity.

The bioeconomy exploits new resources by building on renewable biomass. Through this, the introduction of innovative and resource-use-efficient production technologies and the transition to a sustainable society, it helps to substitute or reduce the use of limited fossil resources, thereby contributing to climate change mitigation.

Domains of activity:

- Conceptual issues: understanding and monitoring bioeconomy; added value of bioeconomy to economic analysis and policy design.
- Welfare analysis: evaluate costs and benefits as well as externalities from biomass production, conversion and final product use; estimate impacts on welfare and allocation of losses and benefits from alternative bio-based vale chains; analysis on new value chains.
- Social and environmental sustainability questions: farm resource use; waste management; land use change; greenhouse gas emissions; bioenergy; biorefineries; life cycle assessment; social implications.
- Managerial and micro-economic issues: investment appraisal of technology, business models for new bio-based products/processes; logistic supply chains; technology & knowledge transfer and property right questions.
- Policy analysis: Policy studies are needed throughout due to the high relevance of agricultural policies, the public goods features of the Bioeconomy, the innovation component and the fact that many bioeconomy products require in fact the creation of new markets.

- **Lab infrastructure**
  - GAMS (commercial software), GREFAM (operational), webSDSS (under development)
  - Kremmydas D., S. Rozakis, K. Tsiboukas (2018) G.RE.FA.M. Greek Representative Farm Model, Reference Manual, ed. 0.3, Agricultural University of Athens

- **Research Projects**
  - 'Optimised Pest Integrated Management to precisely detect and control plant diseases in perennial crops and open-field vegetables' — 'OPTIMA' H2020 - Συντονιστής ΓΠΑ 2018-2021
  - New Strategies on Bioeconomy in Poland, Widening ERA Chair H2020 – 2017-2018