SITES – ICABR 2026 Summer School

July 6-7, Ravello (SA)

Economics for Sustainable Development: A One Health Framework

Economics for Sustainable Development: A One Health Framework
The One Health framework recognizes that human well-being, ecosystems, and economic systems are deeply interconnected. In this integrated perspective, productivity and welfare increasingly depend on the quality of natural resources, human health, and the resilience of ecosystems, as well as on the understanding that externalities—both positive and negative—extend far beyond their point of origin. This calls for a shift in how we conceptualize and design solutions, moving toward approaches that account for systemic interdependencies and long-term sustainability.
Within this evolving paradigm, the bioeconomy emerges as a strategic framework to translate interdependence into practice across sectors. Advances in biological inputs, circular production systems, and bio-based manufacturing are opening new opportunities for sustainable growth, value creation, and economic transformation. While these developments remain rooted in primary sectors, their implications extend across industrial systems, global value chains, and public health outcomes.
This Summer School is designed to explore these challenges and opportunities, equipping PhD candidates, researchers, and professionals with the conceptual frameworks and applied tools needed to analyze, design, and implement policies and strategies for a sustainable and integrated bioeconomy.

Please note that the programme is provisional and subject to change

DAY 1 — FOUNDATIONS & EMERGING BIOECONOMY THEMES

08:30–09:00 — Welcome + Overview

Opening Seminar: Framing the Bioeconomy–Rural Development Nexus –

Introducing the role of development economics in shaping transformation pathways, understanding structural change, and analyzing how bioeconomy transitions affect low-income regions.
• What is the **bioeconomy**?
    - Definitions from OECD, EU, FAO
• Rural areas as **nature-based solution (NBS)** providers
• One Health as a **systems approach** linking environment, production, health, and economies
• The role of modern agricultural technologies:
    - breeding innovations and climate-resilient varietieso
    - low-input and biological inputs
    - circular bio-based systems
• How new bio-based sectors create sustainable opportunities
• Governance, equity, and social acceptance: enabling conditions for the bioeconomy

09:00–10:30 — LECTURE 1

One Health as an Economic Framework (Environment, AMR, Bioeconomy)

Themes:
- Rural economies/areas: market failures, structural constraints, and externalities; rural economies at the heart of the bioeconomy transition
- Environmental externalities & sustainability
- Productivity–environment trade-offs in rural systems
- Agricultural input use: transitions to bio-based inputs
- How innovative agricultural technologies (breeding, biological inputs, microbial tools) support One Health outcomes
- Systems thinking & socio-ecological linkages in rural landscapes
- The role of circularity and resource-efficient practices

Outcome: Participants understand how environmental health, agricultural innovation, productivity, and well-being are economically intertwined.

10:45–12:15 — LECTURE 2

Rural Development Economics & the Bioeconomy Transition

How bio-based innovations foster rural resilience and environmental improvement

Contents:

- Place-based development strategies & territorial diversification
- Modern plant and animal breeding methods for climate adaptation
- Soil restoration as NBS: integrating bioinputs, organic amendments, microbiome tools
- Biomanufacturing & green industrialization:
  - Bioenergy
  - Biomaterials
- Governance, institutions, and community buy-in

Outcome: How bio-based innovations foster resilience and environmental improvement

12:15–13:30 — Lunch

13:30–15:00 — LECTURE 3

Global Value Chains (GVCs) for Bio-based Products & Rural Systems

Topics:

- Development economics perspective on value capture, upgrading constraints, and inequality in global
- bio-based chains.
- Upgrading participation in higher-value bio-based segments
- GVCs for bioenergy, horticulture, sustainable fibers, fermentation-based products
- Value capture: where and how rural regions benefit
- Environmental certification, sustainability standards, and compliance
- How new agricultural technologies shift upstream/downstream activities
- Circular GVCs and reduction of waste streams
- Equity and governance in value chains: avoiding value capture bottlenecks

Outcome: Participants can trace economic, environmental, and institutional linkages of bio-based value chains.

15:15–17:00 — LECTURE 4 PRACTICAL SESSION

Empirical Tools I: SAM & GAMS for the Bioeconomy

Hands-on exercises:·

- Representing One Health externalities (pollution, land use, water extraction, AMR pressure)
- Identifying bio-based sectors
- Estimating multipliers for bio-based industries
- Environmental footprint tracing (water, nitrogen, land-use, energy)
- Modeling how bio-based inputs and new technologies alter value-chain flows and income distribution
- Modeling household-level welfare effects, income distribution, and poverty impacts of bio-based transitions.

Outcome: Participants introduced to SAM and GAMS techniques.

DAY 2 — METHODS, BIOECONOMY IMPACTS & SYSTEM DESIGN

08:30–10:00 — LECTURE 5

Empirical Tools II for Bioeconomy & Innovation

Topics:

- Evaluating adoption of bio-based inputs, and NBS

- Measuring inclusive development outcomes, inequality effects, and social mobility generated by bioeconomy innovations
- Environmental and social externalities: water, land use, soil health, community effects
- Natural experiments and strategies for innovation

Outcome: Participants learn robust causal strategies for empirical bioeconomy research.

10:15–12:00 — LECTURE 6

CGE & PE Modeling of Bioeconomy Transitions

Partial Equilibrium Modeling:
- Effects of adopting bio-based fertilizers, biological inputs, low-input crop systems
- Monitoring price, productivity, and environmental feedbacks

Computable General Equilibrium Modeling:
- Representing bio-based industries (bioenergy, biomaterials, biomanufacturing)
- Modeling transitions in input mixes & land allocation
- Environmental externalities with NBS
- Rural–urban linkages and labour market effects
- Incorporating improved crop varieties and breeding improvements as productivity shocks
- Land-use–energy–environment interactions in a systems economy

Hands-on simulation:
- Introduce a bio-based input sector
- Expand bioenergy crops
- Run an environmental improvement scenario

Outcome: Participants interpret macro- and microeconomic impacts of rural bioeconomy transitions.

12:00–13:00 — Lunch

13:00–16:00— LECTURE 7 PRACTICAL SESSION I

Designing Integrated Rural–One Health–Bioeconomy Interventions

Topics:
ABM Agent Based Modeling
- Hands on construction of an AB model with the inclusion of circularity.

Outcome: Participants build a systems map linking rural economy, environmental quality, health, and bio-based innovation.

16:00–17:00 — **Closing Panel: Key Note Speech Prof. Carlo Carraro**

- Synthesis and future Research Agenda in Bioeconomy & One Health
- Invitation to continue engagement and networking via ICABR 2026