

# **South – South International Cooperation For Biobased Development**

## *Manifesto of Mezzogiorno*

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HR EXCELLENCE IN RESEARCH

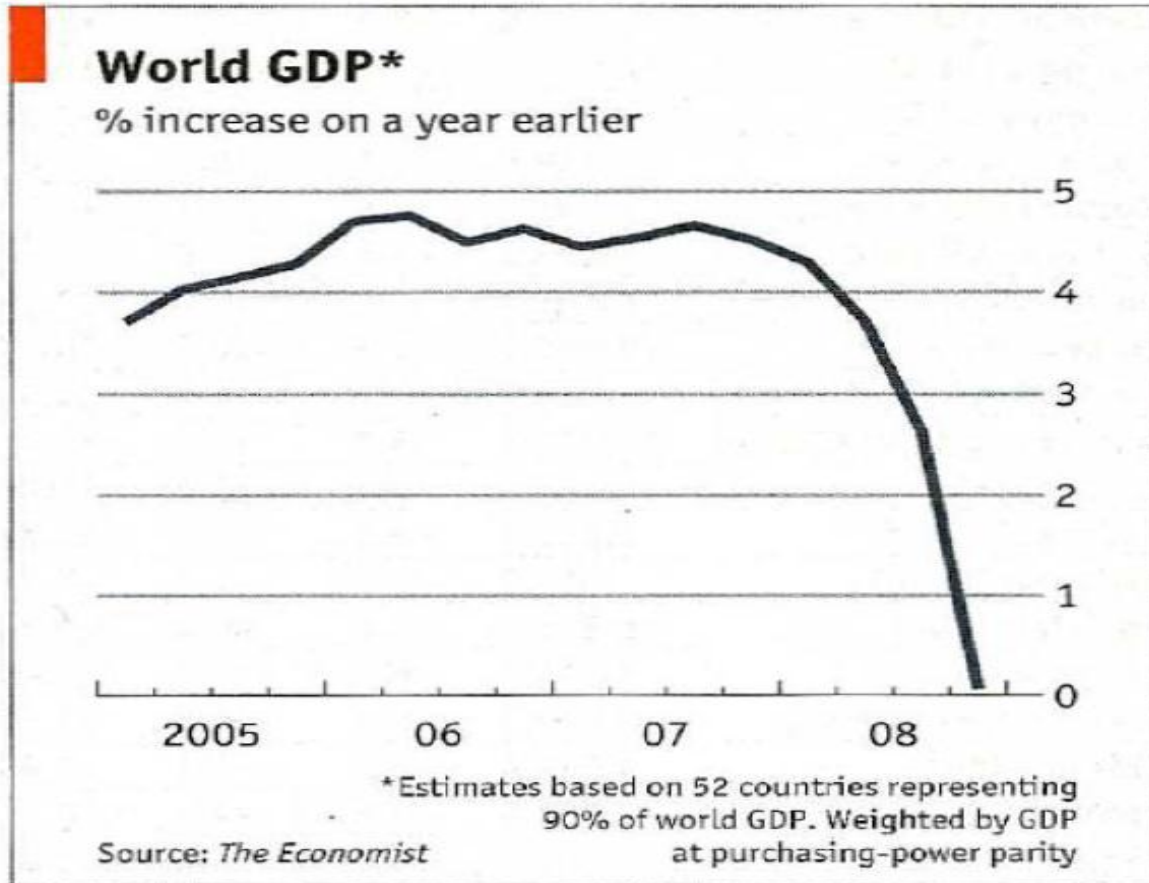


# **Scientific & Technological Advancement In Research on Agro-Energy**

**Coordination and Support Action (Supporting)  
FP7-REGPOT-2011-1**

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# A Time of Deep Crisis...



**... A Time of Change!**





# Wiki Definitions of Key Terms (1)

- ❖ **MANIFESTO:** “A published verbal declaration of the intentions, motives, or views of the issuer (...). It usually accepts a previously published opinion or public consensus and/or promotes a new idea with prescriptive notions for carrying out changes the author believes should be made”

# Wiki Definitions of Key Terms (2)

- ❖ **MEZZOGIORNO:** “The traditional term for the southern regions of Italy (...). It was sometimes associated with notions of poverty, illiteracy and crime: stereotypes of the South that often persist to this day. Sometimes it is referred to in order to generally highlight extreme disparities between regions within a country”

# The European Mezzogiorno

- From the western coast of Portugal to the eastern coast of Cyprus a spectre is spreading all over crisis-plagued Southern Europe: the spectre of following the wrong development model.
- Five EU Economies are directly concerned (W-to-E):
  - ❖ Portugal
  - ❖ Spain
  - ❖ Italy
  - ❖ Greece
  - ❖ Cyprus
- ALSO: Balkan, Mediterranean, Emerging Economies

# Focus on Sustainable Bioeconomy

- ❖ *The term “bioeconomy” includes all industrial and economic sectors that produce, manage and otherwise exploit biological resources, and related services, supply or consumer industries, such as:*
  - Agriculture; fisheries; forestry; aquaculture;
  - Agro-, food, wood, fibre and other bio-industries;
  - Human and animal health; pharmaceuticals;
  - Biochemicals; biomaterials; “green” bio-chemistry;
  - Bioenergy; biofuels; other bio-products;
  - Bio-remediation; bio-waste management;
  - Bio/eco-systems management; rural development.



# Focus on Sustainable Bioeconomy

- ❖ The term “bioeconomy” was first used in the short title of European Commission’s FP7 Theme 2, “Food, Agriculture and Fisheries, and Biotechnology”, i.e., *KBBE* or else the “Knowledge-Based BioEconomy”
- ❖ Bioeconomy is also included in the *Horizon 2020* research and innovation programme of the EU

# Bioeconomy in Europe (EC data)

<b>Bioeconomy Sector</b>	<b>Turnover (B Euro/yr)</b>	<b>Employment (millions)</b>	<b>Missing Info To be added</b>
Agriculture	210	15	Aquaculture - Multipliers
Food	800	4.1	Imports - Multipliers
Forestry/Wood	150	2.7	Imports - Multipliers
Pulp/Paper	400	0.3-4	Imports - Multipliers
Ind.Biotech.	50	?	Green Chemistry/Biofuels
Totals	1610	22.1	(As above)

## MISSING INFO ON:

- **Conventional sectors: aquaculture, HUMAN HEALTH**
- **Imports and exports of food, fibre and other biomass**
- **Emerging, knowledge-based sectors: “green chemistry”**
- **Added-value and rural multiplier coefficients**
- **Food & feed supplements, substitutes, additives, specialty**
- **Bio-wastes and residues**
- **More recent/better quality data from Member States**

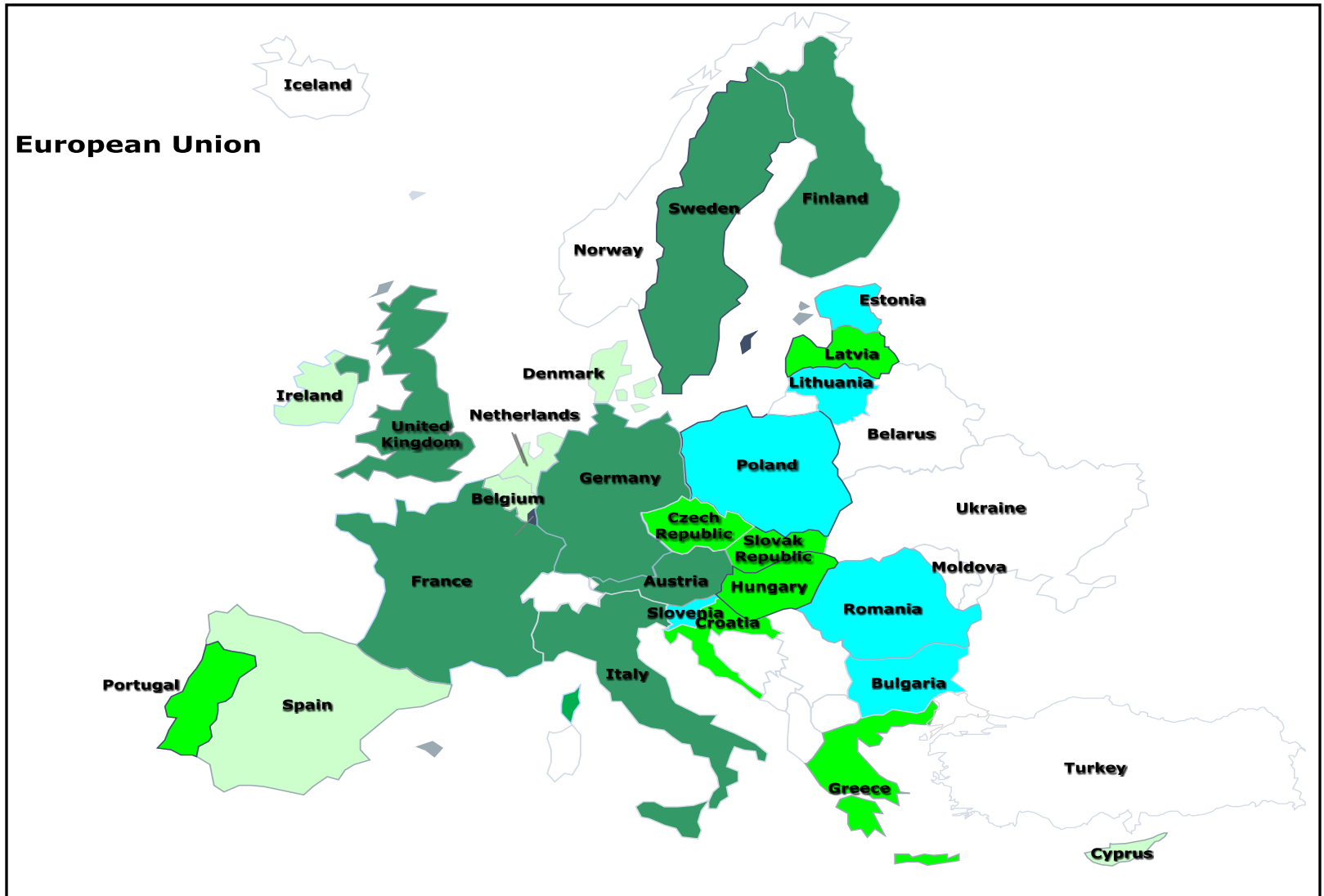
# **12+1 Reasons for Focusing on Green Bioeconomy as an EU Mezzogiorno Strategy**

- I. HIGH STAKES**
- II. CHANGE DYNAMICS**
- III. INNOVATION POTENTIAL**
- IV. ENVIRONMENTAL ASPECTS**
- V. CLIMATE CHANGE**
- VI. SUBSTITUTION**
- VII. SOCIO-ECONOMIC ASPECTS**
- VIII. QUALITY & SECURITY**
- IX. BUSINESS OPPORTUNITIES**
- X. POLICY COORDINATION**
- XI. EUROPEAN VALUE**
- XII. GLOBAL DEVELOPMENT**
- XIII. A SMART MOVE...**

# Four Types of EU Bioeconomy (1)

Type of System	Income Expectations	Innovation & Tech Level	Bioresource Management
<i>“Industrial North”</i>	Very High	High	Maximum Use
<i>“Green West”</i>	High	High	Best Practices
<i>“Rural South”</i>	Low	Low/Med	Best Practices
<i>“Emerging East”</i>	Very Low	Low	Maximum Use

# Four Types of EU Bioeconomy (2)



# ***THE TEN COMMANDMENTS:***

## **10 Theses for a New Development Model (1)**

- I. Recognize research and innovation as key development drivers**
- II. Give priority to product innovation for sustainable development**
- III. Get innovation power from the three “tsunamis”:  
Info, Bio, Nano**
- IV. Couple technical innovation with required “soft”  
research actions**
- V. Focus national innovation strategies on “Green”  
(Sustainable) Bioeconomy targets**



***THE TEN COMMANDMENTS:***  
**10 Theses for a New Development Model (2)**

- VI. Consider a number of critical points for deployment of Southern European Bioeconomies**
- VII. Adopt new forms of research and innovation in Bioeconomy**
- VIII. Support new professional skills by novel education and training missions**
- IX. Learn to survive and navigate within a complex institutional and policy landscape**
- X. Plan for international and inter-regional cooperation on Green Bioeconomy themes**

## **II. All Innovation is not the Same!**

- **INNOVATION A: Process, Method, Protocol**
  - In peripheral socio-economic value areas
  - Away from critical interfaces
  - Of cosmetic or status-related value
  - Useful in long-term change and public attitudes
- **INNOVATION B: Product, Service, Function**
  - In strategic sectors and fields
  - Bridging critical interfaces
  - Of vital structural and socio-economic value
  - Priority choice for immediate action

# A Challenge: Domesticating Molecules!



***"About 10,000 years ago, man began to domesticate plants and animals. Now it's time to domesticate molecules," says MIT Professor of Biology Susan Lindquist.***

# III. The Low-to-Medium Tech Trap

- **TECHNOLOGICAL HYBRIDISATION STRATEGY**
  - «*Escaping from the Present*» through the side-door /backdoor - Synergies
  - Priority focus on High-Tech uptake and trends of convergence, e.g., ICT-BIO-NANO
  - High-Tech hybrids with conventional technologies generating national specialisations
  - Intelligent synthesis of sectors and fields, benefiting from fuzzy borders, internal breaks, penetrating emerging issues

# Biotech-driven Bioeconomy Hybrids

- **GARDEN OF AMALTHIA:** Food Industry, New Agriculture, Health, Quality of Life, Rural Development, Agro-Tourism, Agro-Biotech, ICT, ...
- **HOUSE OF GAIA:** Eco-Management, Green Industry, Renewable Energies, Industrial Biotech, Eco-Tourism, New Biomaterials, ICT, Nanotech, ...
- **TEMPLE OF IASO:** Health, Quality of Life, Culture, Urban Environment, Sustainable Transport, Knowledge-based Tourism, ICT, Health Biotech, Biomedical, Nano-applications, ...

# Linking the Information Society With the BioBased Economy



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## **IV. Couple Technical Innovation with Soft Aspects**

- **A VERY WIDE SPECTRUM: Economic, financial, legal, sociological, policy-related, cultural, cognitive, anthropological, psychological, historical, ethical, philosophical, epistemological, structural, strategic, and linked to other analysis and assessment methods**
- **THEIR REAL KEY ROLE: “Soft” aspects are in fact in the “core” of the innovation process, and their early activation is of the outmost importance for the success of the new development model.**
- **BEST PRACTICES: An example of a best-practice is systematic involvement of key stakeholders since the first stages of research**
- **SPECIAL TYPE OF TOOLS: “Strategic technological intelligence” studies can help us to identify critical non-technical elements and manage them properly**

# VI. Main Critical Points for the Deployment of European Bioeconomies

## Based on recommendations by KBBE's Advisory Group

1. Linking more closely KBBE research to that of the other related EU-funded RTD fields (environment, energy, and health);
2. Strengthening social and economic aspects within KBBE research;
3. Enhancing (eco)systems thinking, especially to improve understanding of complex bioeconomy phenomena, including sustainability issues;
4. Need for an interdisciplinary approach across the programme mainlines;
5. Focus on a small number of strategic research topics and aspects; major example bio-waste as a biomass resource;
6. More emphasis on the targeted development of appropriate tools, especially in fast growing fields like bio-informatics.
7. Mitigate Bioeconomy's fragmentation risks by a Great Vision

# Bio-Waste: A Critical Resource

## Bio-Waste on the KBBE Agenda?



*\* Slide taken from the AG8 presentation by Eckhart George.*

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# **A Challenge: Fragmentation vs. Integration – Managing Risks and the Role of Vision**



# VII. Promoting Green Bioeconomy by Research

## *The 7 “Golden Rules”*

0. An emerging space for vital innovation
1. Better understanding of complex phenomena involved
2. Planning and implementing knowledge-based actions
3. Environmental biotechnologies as a potential research flagship
4. Design of environmentally compatible solutions, drawing upon other novel RTD areas and approaches
5. Significant role in social and economic development, and key opportunity field for international cooperation
6. Responding to societal concerns, and assessing risks
7. Research to be accompanied by appropriate information, communication, dissemination and crisis-management components

# Bio-Greening – A Crossroads History

## THE BIO-PATH

1962: Nobel Prize for DNA

1970s: Molecular Biology

1980s: Genetic Engineering

Genomes Mapping

1990s: Crises-like Phenomena

GMOs Public Debates

2000s: Biobased Development

Bio-Info-Nano Hybrids

## THE GREENING PATH

1970: “Limits to Growth”

Club of Rome Report

1970s: Oil Crises, Research  
on Renewable Energies

1987: “Our Common Future”  
Defining Sustainability  
Brundtland UN Report

1990s: Climate Change debate  
Kyoto Protocol, IPCC

2000s: Greening strategies  
Greening policies



# VIII. New Skill Needs for Green Bioeconomy

## The 7 “Golden Rules”

0. STRATEGIC ISSUE - MULTI-PLAYER ACTIONS
1. RADICAL CHANGE: shift in socio-economic structures, cultures and lifestyles, knowledge modes, and organisation patterns
2. MUTUALLY TRANSFORMING PROCESSES: by learning and cognition
3. KNOWLEDGE: cognitive and affective elements
4. ALL CRITICAL FLOW SYSTEMS: molecular, energy, materials, information, financial, and human
5. TO DO (1): Introduce Greening skills through problem-oriented University curricula
6. TO DO (2): Add an extra layer to the existing professional education systems
7. TO DO (3): Use the KIC (Knowledge & Innovation Communities) concept as new instrument for change

# **IX. Implementing Green Bioeconomy Within a Multi-Policy Environment (1)**

## **KBBE-Relevant EU Policies**

- **Europe 2020**
- **ERA**
- **CAP, CFP**
- **Maritime**
- **Public Health**
- **Energy**
- **New Functional Biomaterials**
- **Environment**
- **Industrial Competitiveness**
- **Regional Development**
- **International Development**
- **Crisis/Recovery Management**

# **IX. Implementing Green Bioeconomy Within a Multi-Policy Environment (2)**

*Options for the Biobased policy component to safely cross the policy “Minefield”:*

- *THE GORDIAN KNOT: Obtaining – through hard work, scientific excellence, and relevant political influences - the power necessary to develop into a new full policy for development cutting across the policy web.*
- *THE POWER OF FRIENDS: Forming a strategic alliance with a major policy areas - e.g., environmental, crisis management, agriculture - giving more power, but also the colour of its ally, e.g., green for the environment.*
- *HELP FROM THE SKY: Adopted by a powerful policy area, catalysing the horizontal inoculation of policies concerned with appropriate Bioeconomy elements, and promoting key synergistic actions, e.g., friendly regulations.*

# **X. Inter-National/-Regional Cooperation (1):**

## **Open Bio-Systems – Closed Eco-Cycles**

- **Bioeconomic systems are usually open ones, communicating, trading and exchanging goods and services with each other**
- **This communication/exchange might involve any of their essential flows (molecular, cellular, energy, information, financial, and human)**
- **Self-sufficiency is normally an exception, usually caused by extreme conditions: wars, catastrophes, crises, political isolation**
- **In no case should the target of “sustainability” lead us to the wrong idea of closed, self-sufficient systems**
- **We advocate that interregional and international cooperation become key ingredients of the proposed new bioeconomic strategies**
- **We must distinguish this product and service openness from the green accounting of the closed cycles of nutrients, carbon, water and energy in rural and urban ecosystems**

# **X. Inter-National/-Regional Cooperation (2): New R&D Policy Shifts/Trends**

## **GOALS & ISSUES:**

- **Bilateral → Multilateral**
- **Local → Regional**
- **Partner Networks → Synergies**

## **TOOLS & APPROACHES:**

- **Episodes → Systems**
- **Open/Targeted projects → New Instruments**
- **Project-based → Programme-based – Project TWINING**

## **RESEARCH AGENDAS:**

- **Fragmented → Bioeconomy**
- **Joint R&D → Dissemination & Training**
- **Building upon successes → Forward looking**

# Roadmap to the Future (1)

- **“The regulators of the post-crisis world are doomed to fail in their efforts to make the global (...) system crisis -free. They can never know enough to manage such a complex system. They will only learn from the last crisis how to make the next one” (N. Ferguson, 2012)**

# Roadmap to the Future (2)

- **Implementing sustainable bioeconomy will depend upon new agricultural practices, new industrial technologies, new business models, and new skill profiles. This task requires a sense of urgency to move forward timely, and mobilize human and other key resources of this procedure, a true REVOLUTION - *Let's get started!***



**“Aux Armes, Citoyens!”**

