**Course «SDGS AND SOCIAL RESPONSIBILITY**
**OUR ROLE IN A REFLECTIVE AND RESPONSIBLE WORLD»**
**8th July, 2020**

# Biodiversity protection and bio-economy development: a possible marriage?

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# EC work program 2020

C=Communication,
R= Regulation,
D=Directive,
W=White paper

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|---|---|---|---|
| 11.12.2019 | *Communication on the European Green Deal* | C | COM(2019) 640 |
| 14.01.2020 | *European Green Deal Investment Plan* | C | COM(2020) 21 |
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| Q4 2020 | *ReFuelEU Aviation - Sustainable Aviation Fuels* | | C |
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| Q4 2020 | *Review of the regulatory framework for investment firms and market operators (MiFIDII and MiFIR)* | | D/R |
| Q4 2020 | *Review of the Non-Financial Reporting Directive* | | D |
| Q4 2020 | *New EU Forest Strategy* | | C |
| Q4 2020 | *Communication on Horizon Europe R&I missions* | | C |

## Outline

3 points of contradictions

3 open question for the future:

a. land use
b. the instruments
c. prevailing socio-economic approach to development

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# a. Spatial issue

Segregative vs. integrative approach
Land sparing vs. land sharing
Specialization vs. multifunctionality

Source: https://www.foodsource.org.uk/building-blocks/what-land-sparing-sharing-continuum

**New biodiversity strategy:**

At least **10% of land** (much more than the actual 3%) will be **"strictly protected areas".**

EUROPEAN COMMISSION

Brussels, 20.5.2020
COM(2020) 380 final

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**EU Biodiversity Strategy for 2030**

**Bringing nature back into our lives**

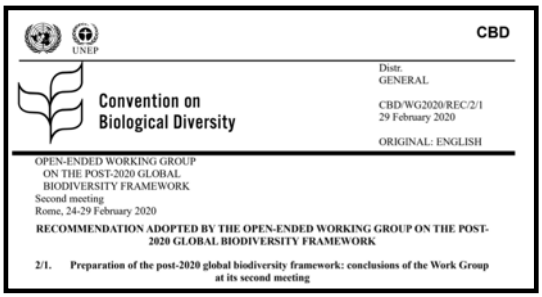
*Segregative vs. integrative approach*
*Land sparing vs. land sharing*

**An example**

In Italy:

- **27% of forest area** under a regime of strong protection (NP, N2000, ...); 21% in EU, 17% in F, 21% in G, 8% in SP, 21% in UK (SoEF 2015)
- **0.8%** of forest cover = plantations (poplar) (INARBO.IT) producing 60-70% of the total industrial roundwood

**These objectives are consistent with the new CBD strategy: 30% of protected land before 2030** and 50% in 2050



CBD

UNEP

Convention on Biological Diversity

Distr.
GENERAL

CBD/WG2020/REC/2/1
29 February 2020

ORIGINAL: ENGLISH

OPEN-ENDED WORKING GROUP
ON THE POST-2020 GLOBAL
BIODIVERSITY FRAMEWORK
Second meeting
Rome, 24-29 February 2020

**RECOMMENDATION ADOPTED BY THE OPEN-ENDED WORKING GROUP ON THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK**

**2/1. Preparation of the post-2020 global biodiversity framework: conclusions of the Work Group at its second meeting**

EUROPEAN COMMISSION

Brussels, 20.5.2020
COM(2020) 380 final

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**EU Biodiversity Strategy for 2030**

**Bringing nature back into our lives**

Define, mapping and protect all primary and old growth forest
Strict and rigorous objectives for farming
Only «sustainable bioenergy»

## The new Strategy from Farm to Fork (FtoF)

To provide space for wild animals, plants, pollinators and natural pest regulators, there is an urgent need to bring back **at least 10% of agricultural area under high-diversity landscape features =** strips, rotational or non-rotational fallow land, hedges, non-productive trees, terrace walls, and ponds.

EUROPEAN COMMISSION

Brussels, 20.5.2020
COM(2020) 381 final

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**A Farm to Fork Strategy**
**for a fair, healthy and environmentally-friendly food system**

…. the objective of at **least 25%** of the EU's agricultural land under **organic farming by 2030**

**Some advantages of the segregative approaches**

Clear policy targets
Easier M&V
Effective communication

… but are taking in serious consideration the real issues related to environmental protection?

See the case of deforestation vs. forest degradation

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a. land use
b. **the instruments**
c. prevailing socio-economic approach to development

# Instruments of environmental policy

- **Passive: Command and control (regulative instruments) ("stick"):**
  - Taxes and fees (Eco-taxation: "who pollutes, pays")
  - Licenses, permits, thresholds, standards, …
- **Active: stimulus to economic incentives (based on voluntary participation) ("carrot"):**
  - Tax deduction, tax exemption
  - Incentives and compensation
  - **Market-based instruments:**
    - Payments for Environmental Services (PES) and PES like schemes
    - Socially responsible procurement policies
    - Tradable permits, deposit-refund systems, offset schemes
    - Standard setting, certification & labeling,
    - Technical support, provision of services (e.g. seedling, irrigation water, infrastructures, … provided at no price or at below costs prices), direct management of some economic activities (e.g.: hospital, school, forests, …)
- **Information ("sermon")**
  - Technical assistance, Training & education, R&D

# Policy instruments

- The need to protect natural resources much exposed to degradation through an active and intense **regulative policy action** (command and control instruments: regulations, taxes, thresholds and standards, legal requirements, …. at national and international level)
- The need to enhance the use of **voluntary, market-based mechanisms**, also to actively involve civil society in the management of natural resources

**A point of contradiction**
("stick" vs. "carrots" and "sermons"):

• we stress the need to enhance the use of **voluntary, market-based mechanisms and social innovations**, linked to the idea to actively involve civil society in the management of natural resources …

•… but we tend to increase the use of **regulative policy tools such as** Natura 2000, "greening" obligations, DD of the EU-TR, VPA licence, … and of the **direct control of natural resources** (State forest enterprises): the old set of instruments

In this way public administrations **tend to concentrate on bureaucratic control**, while the new options to protect environmental resources would require a **proactive public administration** open to partnership, negotiation, innovative attitude in sharing responsibilities, advisory services, providing good and clear signals …

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## The focus of the new Green Deal

**EU definition of bioeconomy** comprises those **parts of the economy that use renewable biological resources** from land and sea – such as crops, forests, fish, animals and micro-organisms **– to produce food, materials and energy** (Europe's Bioeconomy Strategy, European Commission, 2012).

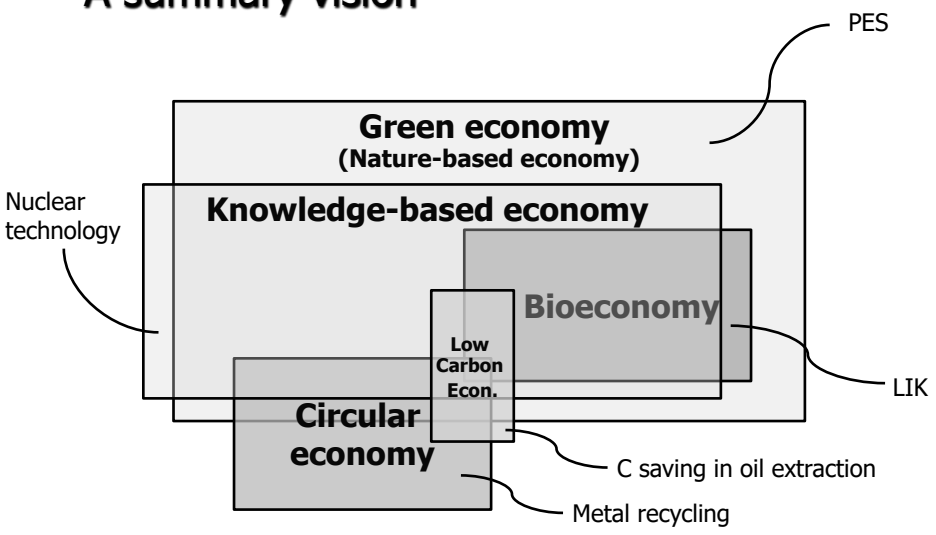
It "includes **agriculture, forestry, fisheries, food** and **pulp and paper production**, as well as parts of chemical, biotechnological and energy industries" (European Commission 2012b: 5).

## Other similar and connected terms …

- Green economy
- Circular economy
- Circular bio-economy
- Bio-resources economy
- Bio-technology economy
- Knowledge-based bioeconomy
- …

→ **Borders/meanings not always clearly defined!**

## A summary vision




A risk: are we playing with the words?

## Two rather opposite approaches to bioeconomy

The key-idea of of **bioeconomy** where agriculture, forestry, fishery, food and biotechnology should produce **more goods** becoming the engine of the growth.

The increasing importance of the nature-based **non-market components** of the economy (from an economy based on commodities to a an economy based on services)

## A strong emphasis on the first approach within the bioeconomy framework: the key role of biorefineries

- A **key factor** in the transition to a bio-based economy will be the **development of biorefinery systems** (Scarlat *et al.*, 2015)
- Biotechnology and the biorefinery concept are **essential components** of the bioeconomy (McCormick and Kautto, 2013)
- The bioeconomy is integrating traditional agricultural, forest and marine biomass feedstock production systems with a **range of biorefinery options and applications** (SCAR, 2014)
- Biorefineries are increasingly **at the core** of the bioeconomy vision at the EU level and worldwide (World Bioeconomy Summit, 2015)

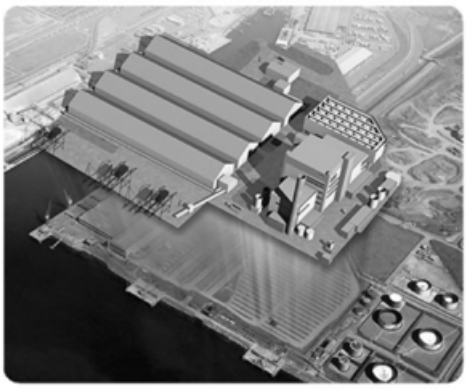
## The technological (dominant) approach with reference to the forestry sector (modified from Toman, 2012; Pettenella, 2015; Secco *et al.*, 2015)

| | Technological approach |
|---|---|
| ***Focus on*** | • Technological innovations<br>• Large scale investments<br>• Value chain perspective<br>• Sectoral development<br>• Vertical integration |
| ***Input/output diversification*** | 1 or more inputs<br>Diversification in outputs |
| ***Market power*** | Increasing role of business owning/controlling the (new) technologies |
| ***Model regions*** | Northern EU (UK, Scandinavian countries) |

## Technological approach: example 1, Finland


- Largest investment in the history of Finnish forest industry
- **100%** of wood raw material used
- **1.3 million tonnes** of pulp/year + bioproducts (e.g. textile fibres, biocomposites, lignin products, fertilisers…) and bioenergy
- **+4.000 jobs** created (including value chain and consumption) → **61.000** jobs expected in 30 years

## Technological approach: example 2, UK



MGT TEESSIDE

The Tees Renewable Energy Plant (Tees REP) is a proposed 299MW biomass power station that will generate electricity for the equivalent of 600,000 homes, 24 hours a day. The scheme will help to meet the UKs legally binding renewable energy target of 15% of all energy consumed by 2020, accounting for around 1% of the target. It will save about 1.2million tonnes of $CO_2$ per year by displacing a mix of coal and natural gas from UK generation.

- From 2019
- Area: 14 ha
- Expected consumption of wood biomass: **1.2 M tonnes/year → 299 MW**
- Fuelled by wood **pellets** and **chips**, **imported by ship primarily from the United States**.

## Technological approach: example 3, Norway

**Tofte pulp-mill, Statkraft + Södra announced (May 2014) planning process for liquid biodiesel-production at the site**
**240 MW ← 1 M tons chips**

### Statkraft to acquire Södra Cell Tofte

Published: Fri, 2014-05-16 08:26 LIKES 1

Plans biofuel production

Statkraft and Södra have signed a letter of intent to create a company with the aim of establishing production of biofuel based on forest raw material in the future. The agreement means that Statkraft will acquire the company Södra Cell Tofte AS, which owns the industrial site of the former Tofte cellulose plant in Hurum, Norway.

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Biofuel plays an important part in the drive to achieve national and international targets for reducing climate emissions from the transportation sector. It is predicted that authorities will provide incentives to stimulate an increased mix of sustainable biofuel in oil-based fuels.

"Statkraft views biofuel as an interesting area in renewable energy. I believe that the collaboration with Södra will be a solid basis for development of the project," says Statkraft CEO, Christian Rynning-Tønnesen.

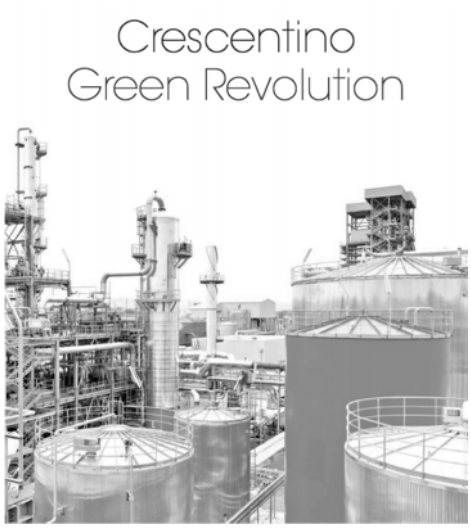
"Södra is monitoring with great interest the technology developments and the business opportunities presented by the use of forest raw materials for industrial production of climate-neutral fuels. We have also enjoyed good collaboration with Statkraft in the past and look forward to joining the two companies' expertise and experience in this project," says Södra's CEO Lars Idermark.

Sodra Cell's Tofte mill in Norway ceased production in August 2013. The mill had an annual production capacity of 400,000 tonnes of chemical pulp.

http://www.pulpapernews.com/2014/05/statkraft-to-acquire-s-dra-cell-tofte

## Technological approach: example 4, Italy

- Biorefinery of small-medium size in Crescentino (VC – Piedmont Region) owned by Beta Renewables (Mossi Ghisolfi Group): one of the first plants in the world (13 MWe + 75 M litres of bioethanol).
- From October 2017: bankruptcy agreement with 121 workers unemployed
- **Not enough large to resist in the market?**




## 2 large biorefinery models

**(Europabio, 2011, European Commission, 2012, Ceapraz *et al.*, 2016)**

A. **Port-biorefinery → strongly connected to global flows of raw materials,** key-logistic location (inside/nearby harbors, along channels…), high specialization, threshold effects, and economies of scale

B. **Territorial biorefinery → strongly connected to local/surrounding territory** and (in general terms) dependent on a more diverse and more thorough valuation of various biomasses


**75% of the biorefinery sites and 70% of the largest sea harbors** are located within a circle consisting of France, Germany, Denmark, Belgium, the Netherlands, and the UK

BIOPOL

Biorefinery Euroview

Source: Reith and Steinmetz (2009); Fava (2015)

Does this approach really support rural development and general economic growth?

# The social approach

**(modified from Toman, 2012; Pettenella, 2015; Secco *et al.*, 2015)**

| | Technological approach | Social approach |
|---|---|---|
| ***Focus on*** | • Technological innovations<br>• Large scale investments<br>• Value chain perspective<br>• Sectoral development<br>• Vertical integration | • Social innovations<br>• Small scale<br>• Networks<br>• Cross-sectoral development<br>• Horizontal integration (= forests and agriculture as the green infrastructures for rural development) |
| ***Input/output diversification*** | 1 or more inputs<br>Diversification in outputs | Diversification in the use of inputs<br>High added value products & services |
| ***Market power*** | Increasing role of business owning/controlling the (new) technologies | Role of networks, groups, associations, public-private partnerships… |
| ***Model regions*** | Northern EU (UK, Scandinavian countries) | Southern EU (Mediterranean region) |

# Social Innovation in Mediterranean forests

## Example 1: Produtos silvestres do Alentejo (Portugal)


International cooperation/exchange of best practices

- 7 municipalities
- 16 associations and cooperatives
- 5 research institutes
- 2 national business associations
- 59 individual private promoters

…but local knowledge, specialties and typical products, niche markets

Source: www.alentejosilvestre.com

## Social Innovation in Mediterranean forests

### Example 2: Borgotaro network (territorial marketing)


Enterprises: 62

15 Agro-tourisms/ Farm businesses
12 Hotels/Guest quarters
8 B&B/Inns/Hostels
9 Cheese, sausage and wine growing and producing factories
2 Didactic farms
3 Museums/Private collections
30 Restaurants/Porterhouses
26 Typical products sellers

**Imago product:**
*Boletus* mushroom

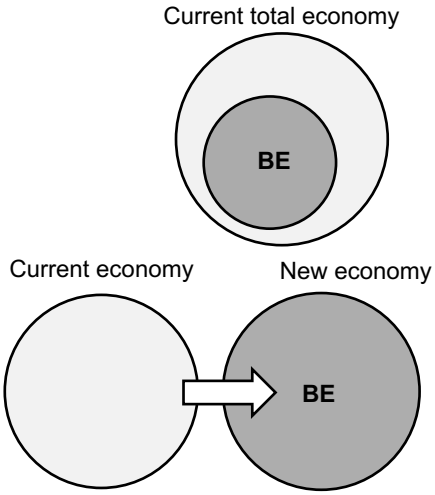
The real innovative and crucial aspects of the **bioeconomy** are related to **equity, social inclusiveness, tenure security, employment**, i.e. to social and political issues, more than to problems connected to natural science or technology

Unfortunately, it seems that the prevailing vision for many sectoral stakeholders of the **bioeconomy in the nature-based sector = innovative industrial pulp-chemical plants producing bioplastic, biofuels**, **biotextiles,** …

# Some final points of reflection

## A different vision of bioeconomy that is not outspoken nor defined (Staffas *et al.*, 2013)

- **Bioeconomy (BE)** → a sub-part of the nation's total economy (often in relation to biotech and life science)
- **Bieconomy (BE)** → an economy where renewable resources instead of fossil ones constitute feedstocks for both energy, food, feed and materials

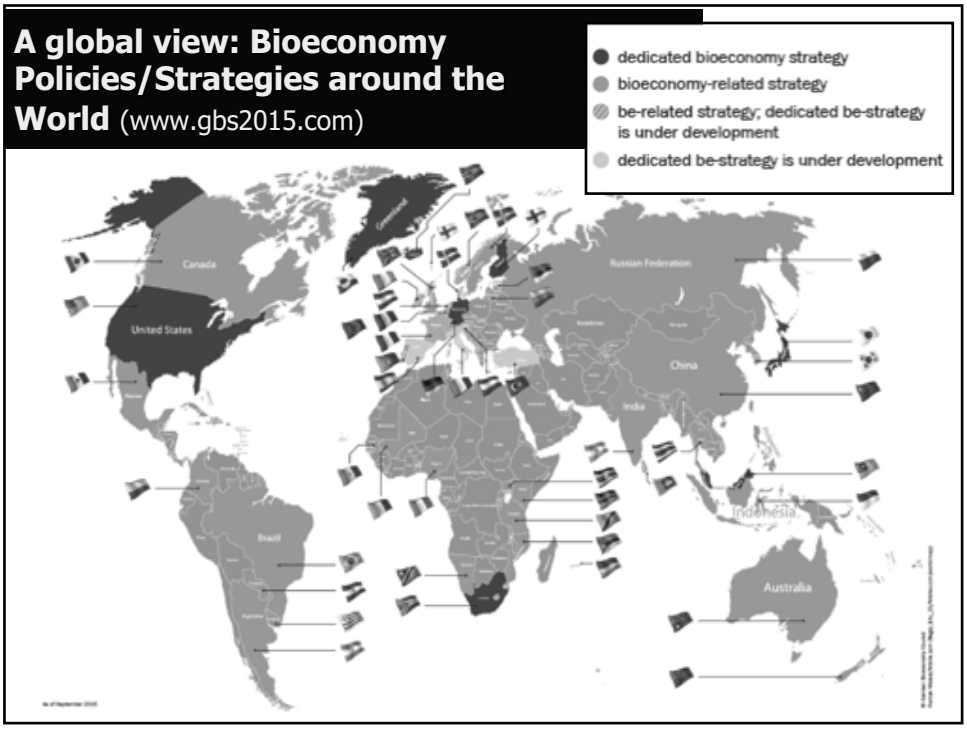


## Opposite views of bio-based economy

**Adaptive strategy** ("Old wine in new bottles") → conventional wisdom of externality correction (i.e., "getting prices right" giving the true value to resources, reducing the consumption of natural capital; weak sustainability concept; low Carbon economy); focus on innovation and technological change

Alternative strategy: "**Strategies for synergies**" (M.Toman, 2012): which consider not only the protection of natural capital, "*but it stresses as well the importance of addressing equity and social inclusion challenges in moving toward a green economy*".

**A global view: Bioeconomy Policies/Strategies around the World** (www.gbs2015.com)



## Five points about the bio-economy strategies and visions that demand critical attention (Staffas *et al.*, 2013)

- **Sustainability focus** → Sustainability is not heavily emphasized and it is over shadowed by economic growth
- **Scarcity of resources** → Only mentioned in a few of the documents
- **Measures of success** → Few measures are presented in the documents, but the importance of measures is highlighted
- **Consumption patterns** → Not addressed (except for the documents by Finland and Sweden)
- **Stakeholder interaction** → This is acknowledged in the documents as critical, but needs increased efforts.