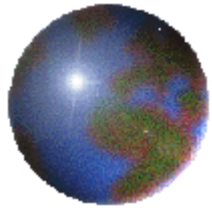


***The second Bioeconomy Course
Ceské Budejovice, May 23, 2017***



**The Italian Bioeconomy:
state of play, priorities and
opportunities**

Fabio Fava

Italian Representative, i) *Horizon2020 SC2* Programming Committee; ii) "States Representatives Group" of *Public Private Partnership Biobased industry (BBI JU)*; iii) *BLUEMED Initiative* Strategic Board

&

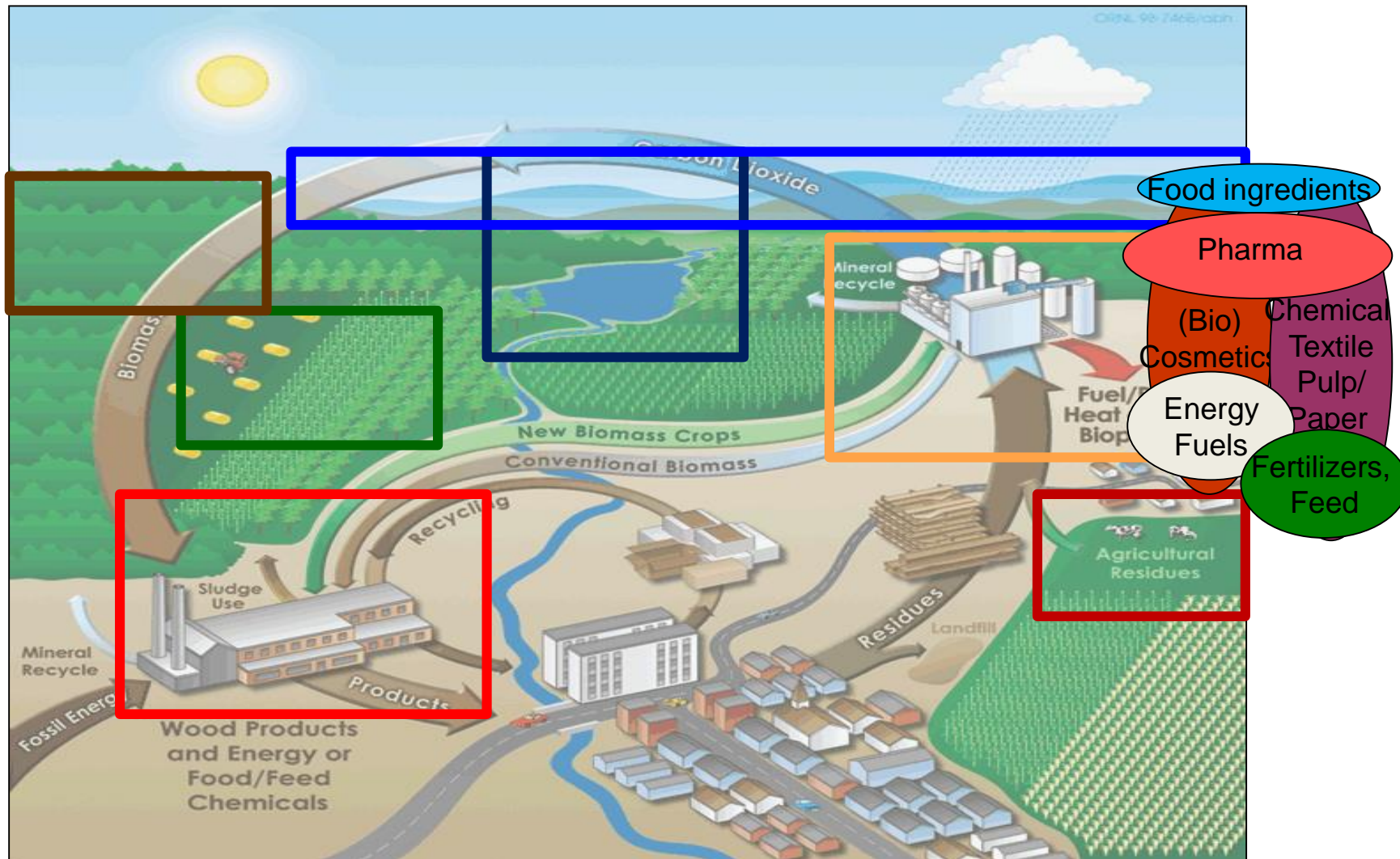
School of Engineering, University of Bologna, Bologna, Italy
(E-mail: fabio.fava@unibo.it)



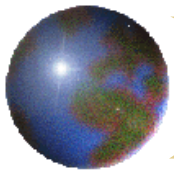
Outline

- The Bioeconomy Europe and in Italy: definition, state of play, needs and opportunities;
- The Italian Bioeconomy strategy (BIT): objectives, priorities and roadmap;
- How Horizon2020 and the PPP Biobased industry (BBI JU) sustain R&I in the Bioeconomy domain.

The European Bioeconomy (a)



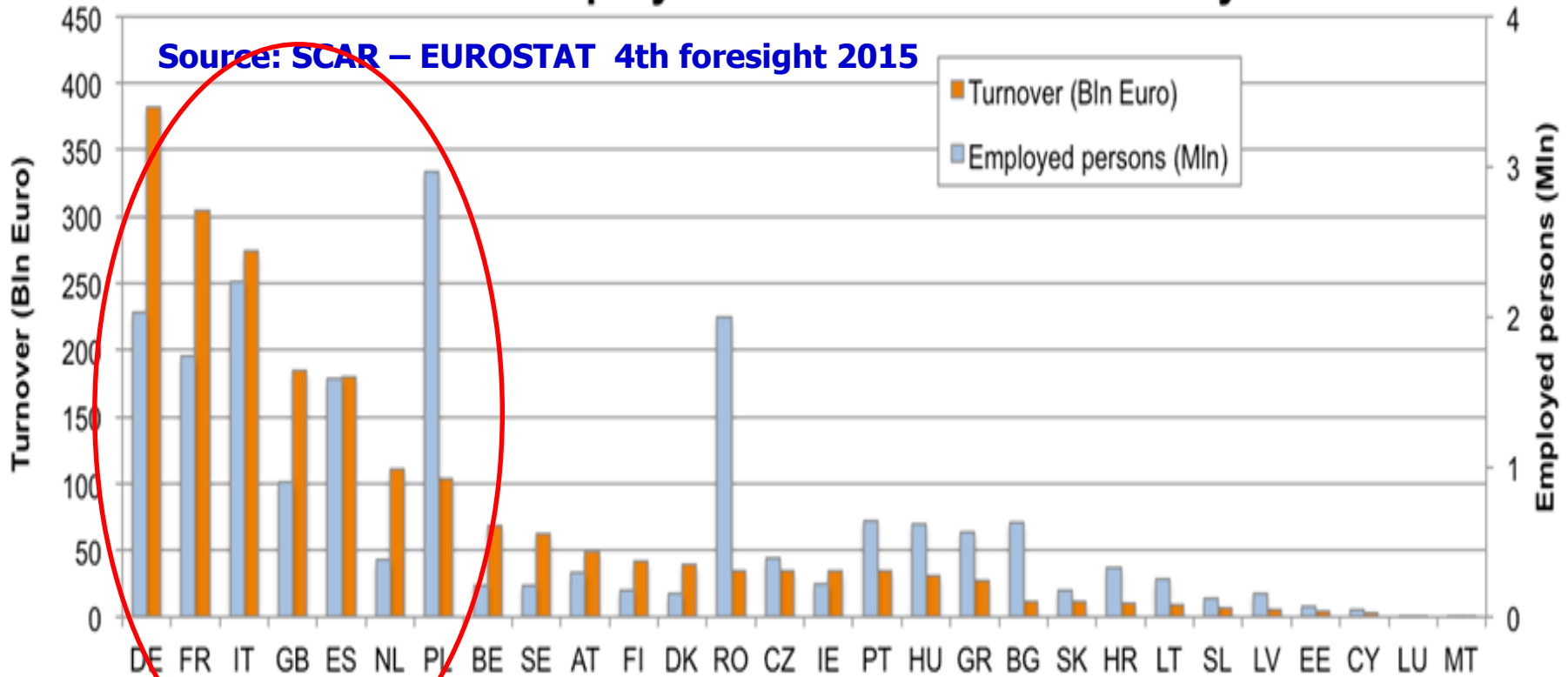
In Europe: about 2.000 Bln €/y and 20 Mln of jobs

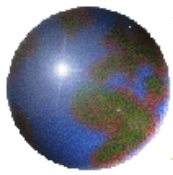


The European Bioeconomy (b)

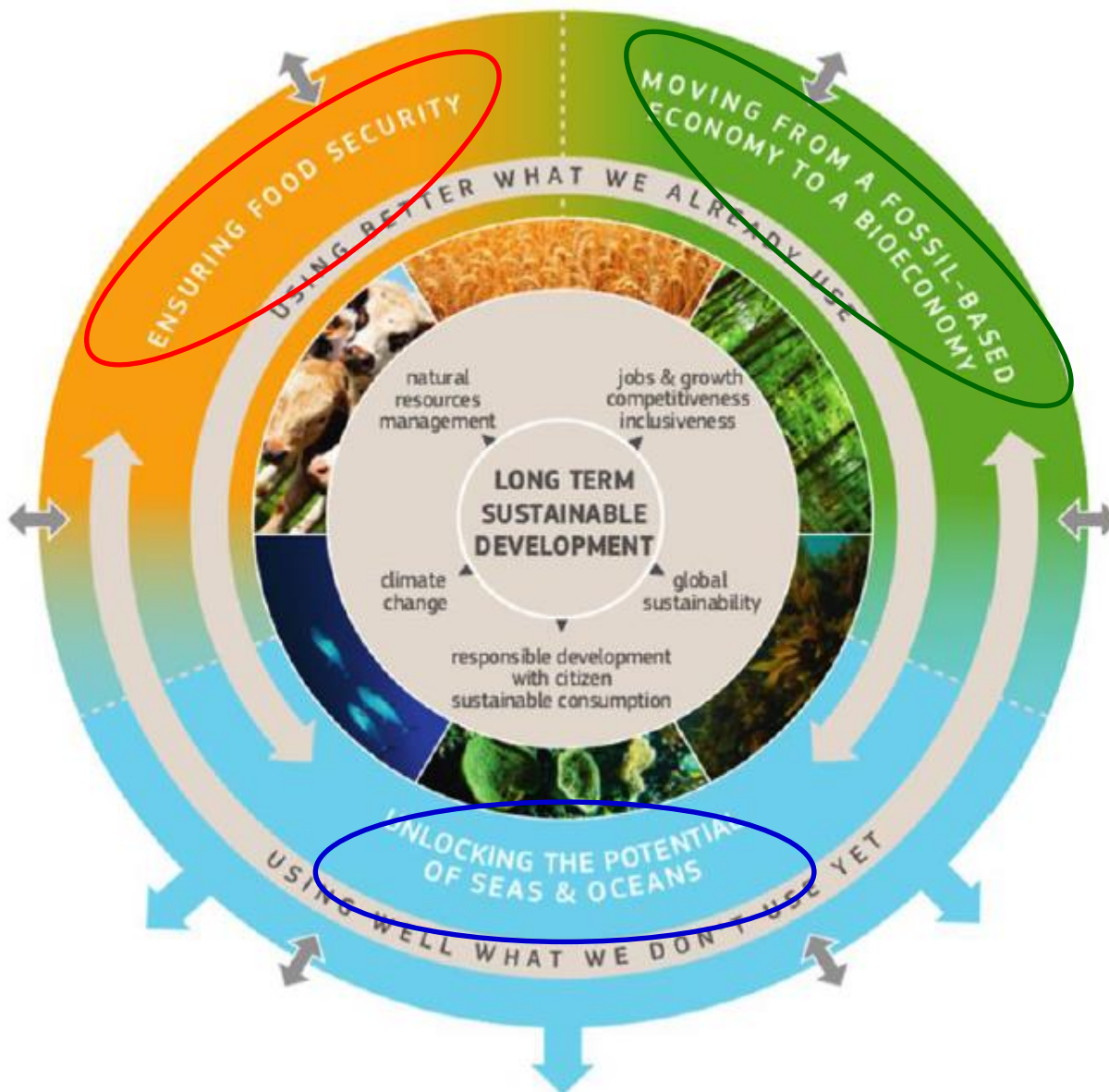
Turnover and employment in the EU bioeconomy

Source: SCAR – EUROSTAT 4th foresight 2015

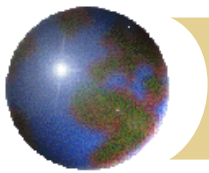




The European Bioeconomy Strategy: main priorities (*under revision*)



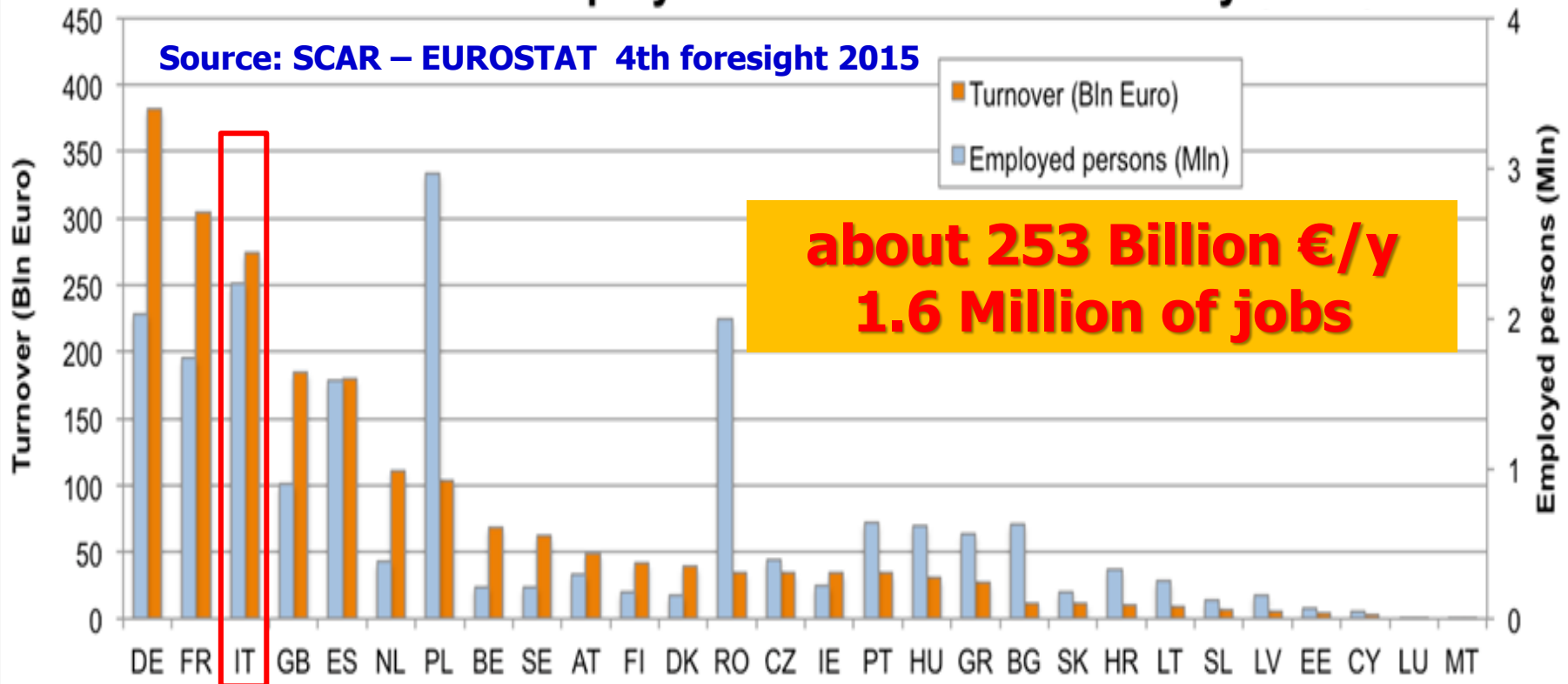
- Productive and resource-efficient primary production systems
- Sufficient supplies of safe and high quality food and bio-based products, including bioenergy
- Competitive and low carbon value chains.



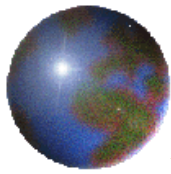
Bioeconomy in Italy

Turnover and employment in the EU bioeconomy

Source: SCAR – EUROSTAT 4th foresight 2015



IT is the 3rd EUMS as success rates in Horizon2020 SC2 & BBIJU programs. Qualified R&I scores and public/private actors/stakeholders but often fragmented; sometimes lacks of alignment among national policies, funding programmes and infrastructures.



Primary production: main challenges and opportunities

**Agriculture,
Livestock and
aquaculture.**
**Used land: ~13 M
ha, 90% in rural
areas**

~ 56 Billion €/y
~ 920,000 jobs

**Forest area:
~12 M ha**

Problems:

- ❑ Limited profitability due to low average size and low revenue of farms, poorly organized value chains
→ abandonment, reduction of cultivated land surface;
- ❑ Poorly innovative agricultural practices and systems;
- ❑ Depletion of soil organic matter and water scarcity;
- ❑ Lack of training of farmers.

Opportunities:

- ❑ Rich/unique plant/animal biodiversity; ecosystem services;
- ❑ Digitalization and precision farming;
- ❑ Abundant residues and effluents.

Problems:

- ❑ Abandonment of forests with biodiversity depletion, also due to climate change;
- ❑ Lack of training of forest company managers on new opportunities and business management.

Opportunities:

- ❑ Rich and unique forest biodiversity;
- ❑ Unique ecosystem services.



Food and biobased industry: main challenges and opportunities

Food Industry

~132

Billion €/y

~ 390,000

jobs

Problems:

- ❑ Structural limitations (very small SMEs), lack of value chain coordination;
- ❑ Strong products counterfeiting and imitations;
- ❑ Low efficiency of food chains with remarkable biomass losses, energy and water consumption and by-products/waste production;

Opportunities:

- ❑ Leading position for "typical/quality" foods (DOP, IGP, STG, etc.);
- ❑ High volumes of by-products and waste to convert into ingredients and bioproducts;

Problems:

- ❑ Wood processing industry based on imported raw material and on the production of medium/low value products;
- ❑ Limited availability of low cost sustainable non food feedstocks;
- ❑ Limited market for national biobased products and presence of products that do not comply to international standards/labeling;
- ❑ Insufficient clarity/transparency in the labeling of bio products;

Opportunities:

- ❑ Connect IT wood production with the IT wood processing industry and biorefineries to produce conventional and new/higher value products;
- ❑ Use as feedstocks the produced organic wastes/byproducts/effluents;
- ❑ Exploit abandoned/marginal lands for producing biomass and re-cover former industrial sites.

Biobased Industry (Wood and Pulp & Paper Industry, Biorefinery)

~63

Billion €/y

~ 300,000

jobs



Marine and maritime sectors: main challenges and opportunities



About 8,000 km of coastline

~ € 43 Billion €/y
~ 835,000 jobs
~20% due to Bioeconomy

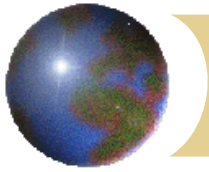
*After: V RAPPORTO
SULL'ECONOMIA DEL MARE
Unioncamere, 2016*

Problems:

- Unsustainable fishery, with productions highly affected by climate changes;
- Increasing import of fish from areas with low environ regulations and monitoring;
- Sea pollution (due to chemicals, litter, etc), presence of invasive species;
- Coastal urbanization, over- and un-sustainable exploitation of beaches.

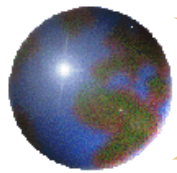
Opportunities:

- Exploit marine aquaculture (also off shore);
- Exploit richness of marine biodiversity;
- Exploit the potential of bioeconomy at the land/sea interface.

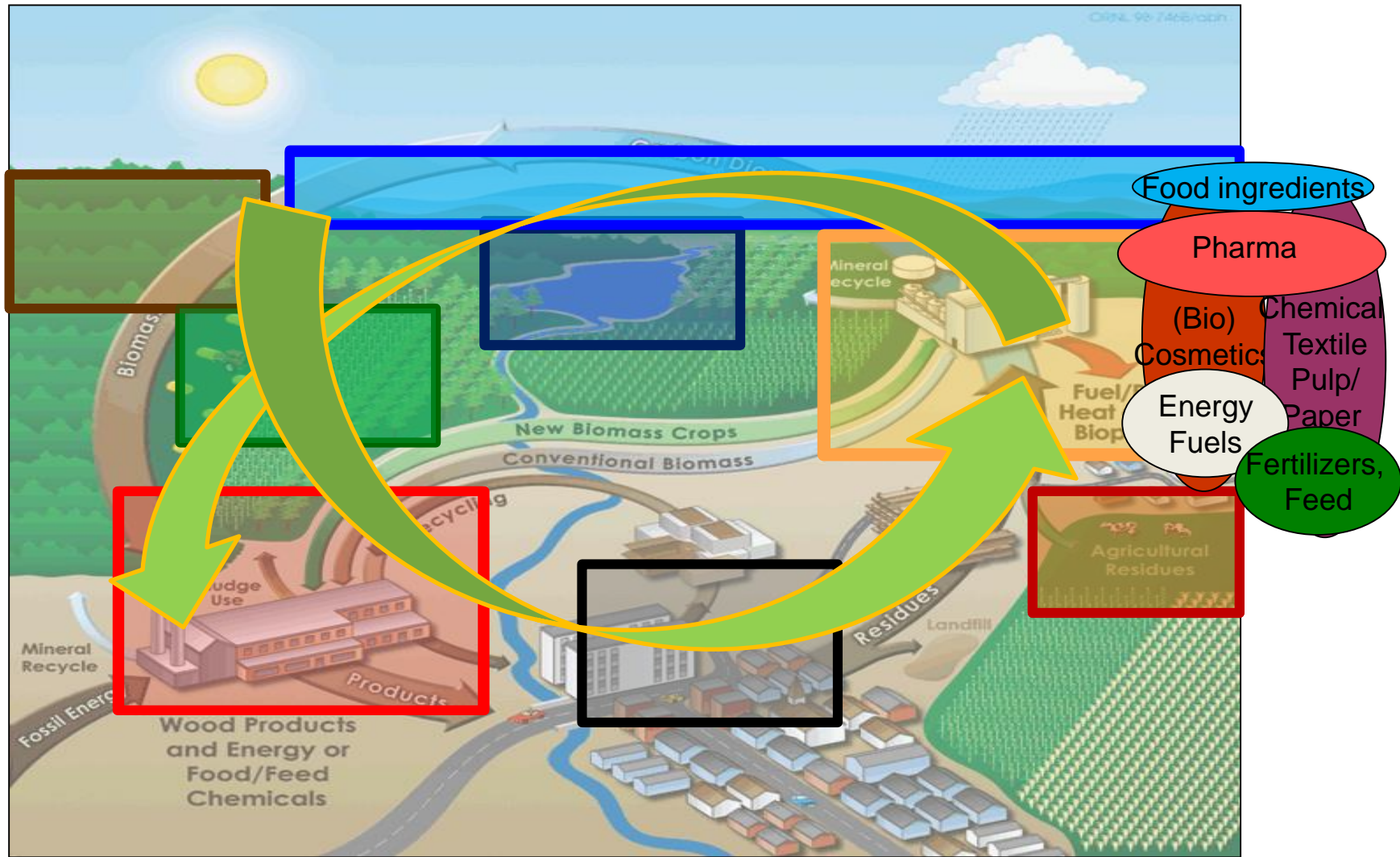


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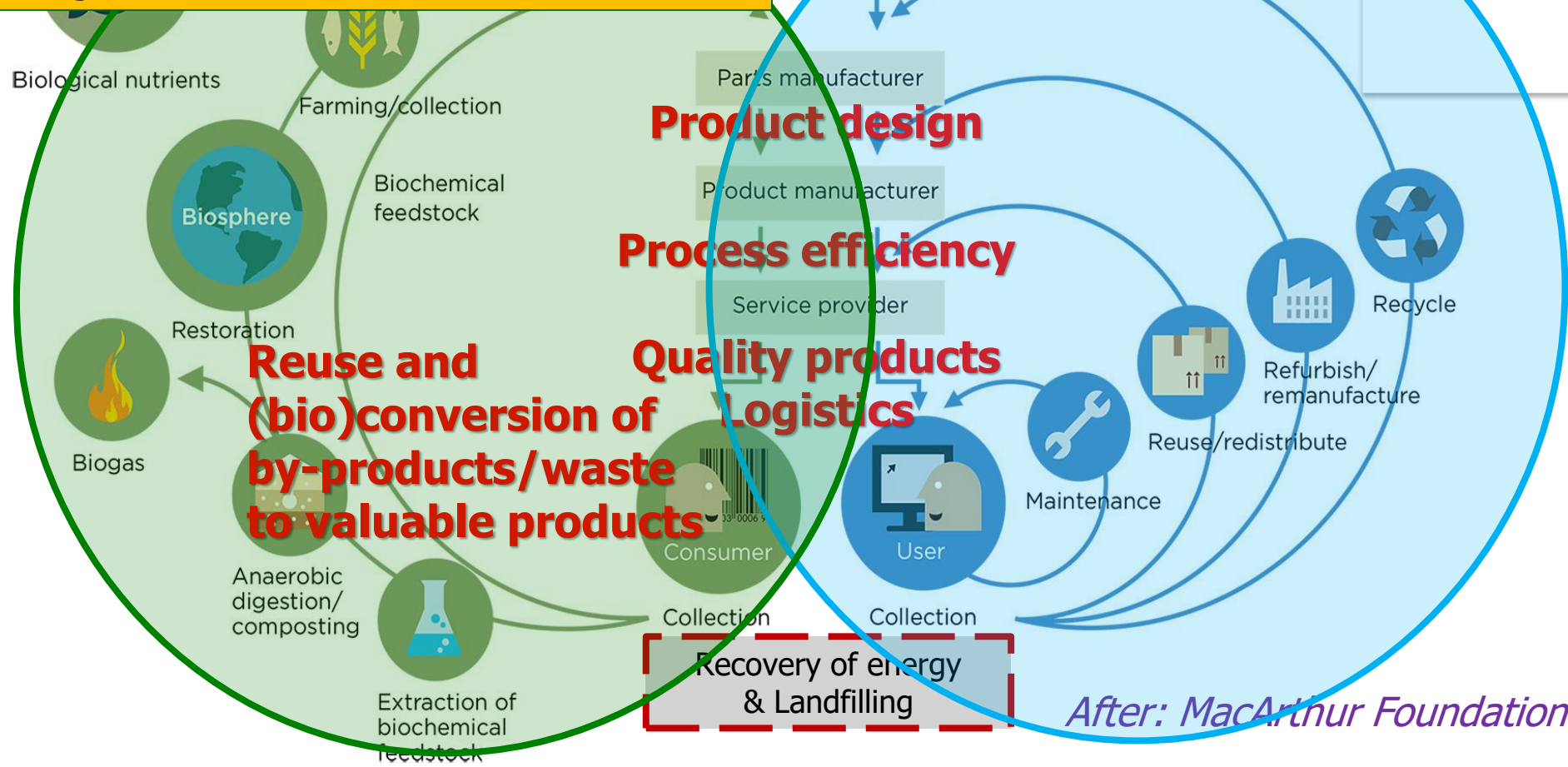
The Italian Bioeconomy strategy: the vision





Bioeconomy & Circular Economy

- Production of Biomass/Feedstocks;
- Socio-econ. growth in rural/costal areas;
- Regeneration of abandoned lands/sites



After: MacArthur Foundation

Parliament Resolution: Jul 9 2015; EU adoption of Circular Economy package: Dec 2, 2015
In EU by 2030: +30% resource saving; -50% CO₂; +2% turnover; +1 M jobs



The Italian Bioeconomy strategy: main objective and priorities

Main priorities:

- a) Improve sustainably the productivity and quality of products of each of the sectors and more efficiently interconnect them, by creating longer and more locally routed value chains, where the actions of public and private stakeholders integrate across all major sectors;
- b) Exploit national terrestrial/marine biodiversity, ecosystem services and circularity, and regenerate abandoned/marginal lands and former industrial sites;
- c) Contribute to the growth of bioeconomy in the Mediterranean area via PRIMA and BLUEMED initiatives, for a greener and more productive region, a wider social cohesion and political stability in the area;
- d) Create: i) a wider and more coherent political commitment, ii) more investments in R&I, spin off/start up, education, training, communication, iii) a better coordination between regional, national and EU stakeholders/policies, iv) a better engagement of a public dialogue, and v) tailored legislation and market development actions.

Objective:

Increase Italian Bioeconomy turnover and jobs by 20% by 2030.

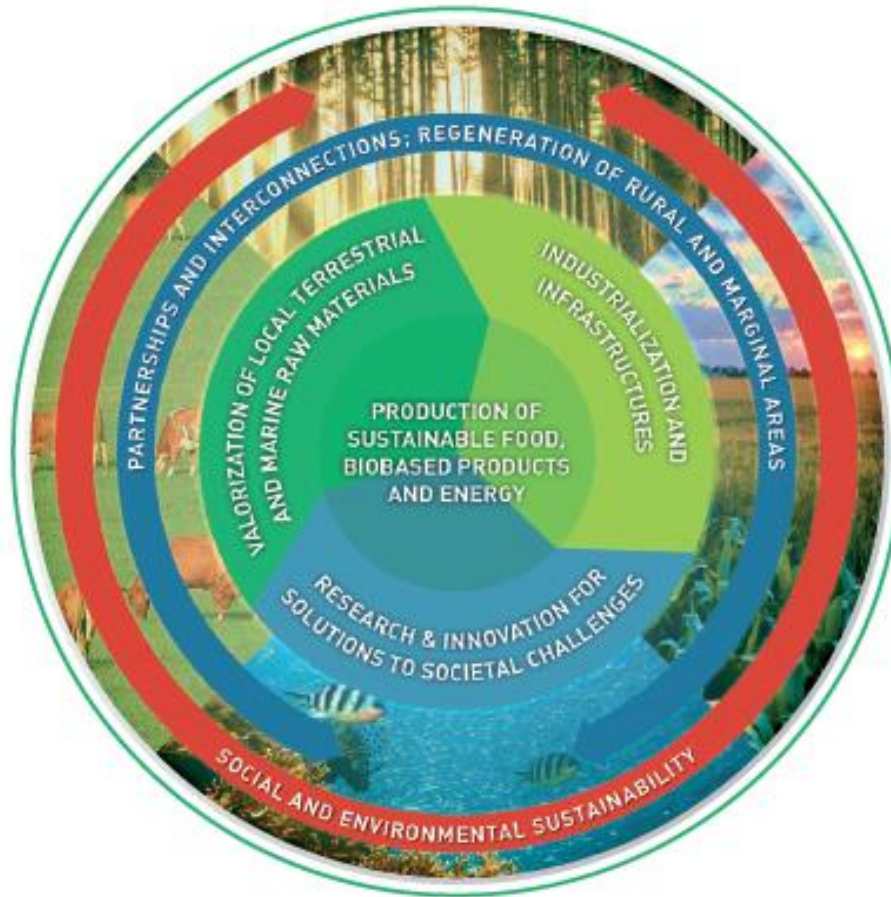
BIT

Bioeconomy in Italy

The Italian Bioeconomy strategy

AVAILABLE AT web site:

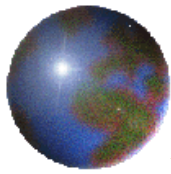
www.agenziacoesione.gov.it/it/S3/Consultazioni_pubbliche/Bioeconomy.html



A unique opportunity to reconnect
ECONOMY, SOCIETY
and the **ENVIRONMENT**

Promoted by Italian Presidency of Council of Ministers and endorsed by:

- Ministry Economical Development;
- Ministry Agriculture, Food, Forestry;
- Ministry Education, University, Research;
- Ministry Environment, Land, Sea;
- Ministry for territorial cohesion;
- Committee Productive Activities, Regions Conference;
- Agency for Territorial Cohesion;
- IT Technology Clusters Green Chemistry, AgriFood and BlueGrowth.



Tools for boosting IT Bioeconomy



*CLUSTER
NAZIONALE
BLUE GROWTH*

Mission & actions:

- ❑ Identification of main regional & national R&I needs and opportunities;
- ❑ Promotion of identified priorities/needs towards regional, national and EU institutions funding R&I;
- ❑ Promotion participation of public R&I institutions, industry and associations in regional (PNR, FESR, FSE, FEASR FSC, etc.) national and EU (Horizon 2020, BBI JU, JPIs) agendas/programs for R&I, by reducing fragmentation and duplication, and fostering effective innovation.

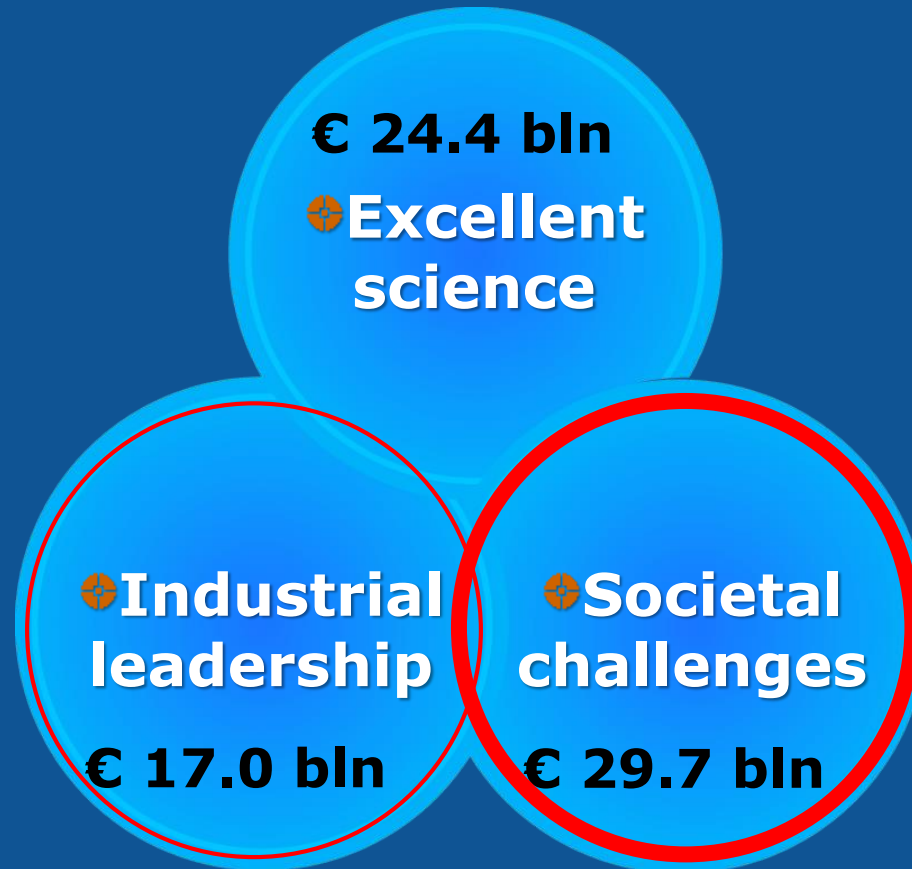


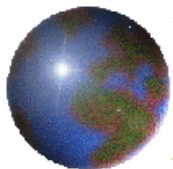
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Horizon 2020: three priorities

Horizon2020, the EU Commission research and innovation funding programme (~79 Billion, 2014-2020)





Bioeconomy as a key societal Challenge

Societal challenges



Tackling societal challenges for a better society

1. Health, demographic change and wellbeing (7.472 Bln)

2. Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bioeconomy (3.851 Bln)

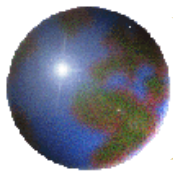
3. Secure, clean and efficient energy (5.931 Bln)

4. Smart, green and integrated transport (6.339 Bln)

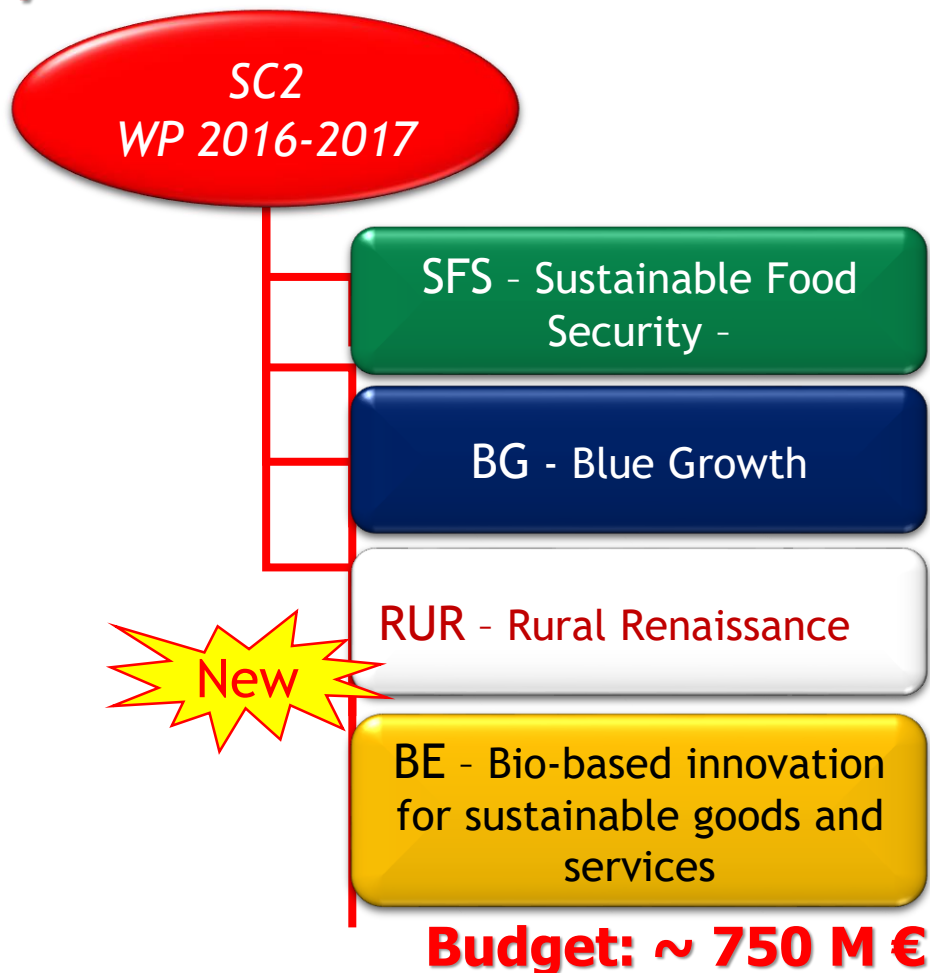
5. Climate action, resource efficiency and raw materials (3.081 Bln)

6. Inclusive, innovative and reflective societies (1.310 Bln)

7. Secure societies (1.695 Bln)



Societal Challenge 2 (Bioeconomy): ~3.8 Billion, 2014-2020



	2014	2015	2016
Success rate (%)	17	19	37
Ranking	4th	3rd	2nd

A Public-Private Partnership on Bio-Based Industries



Realising the European Bio-economy Potential

€ 3.7 Billion 2014-2020

Supported by



<http://www.bbi-europe.eu/>

 Bio-based Industries
Consortium



The BBI JU: structure and priorities

Public partner
27% of investment



€3.7 billion

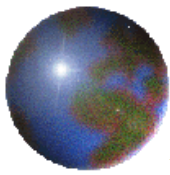


Private partner
73% of investment

A structured approach via 5 **Value Chains** (VC)...

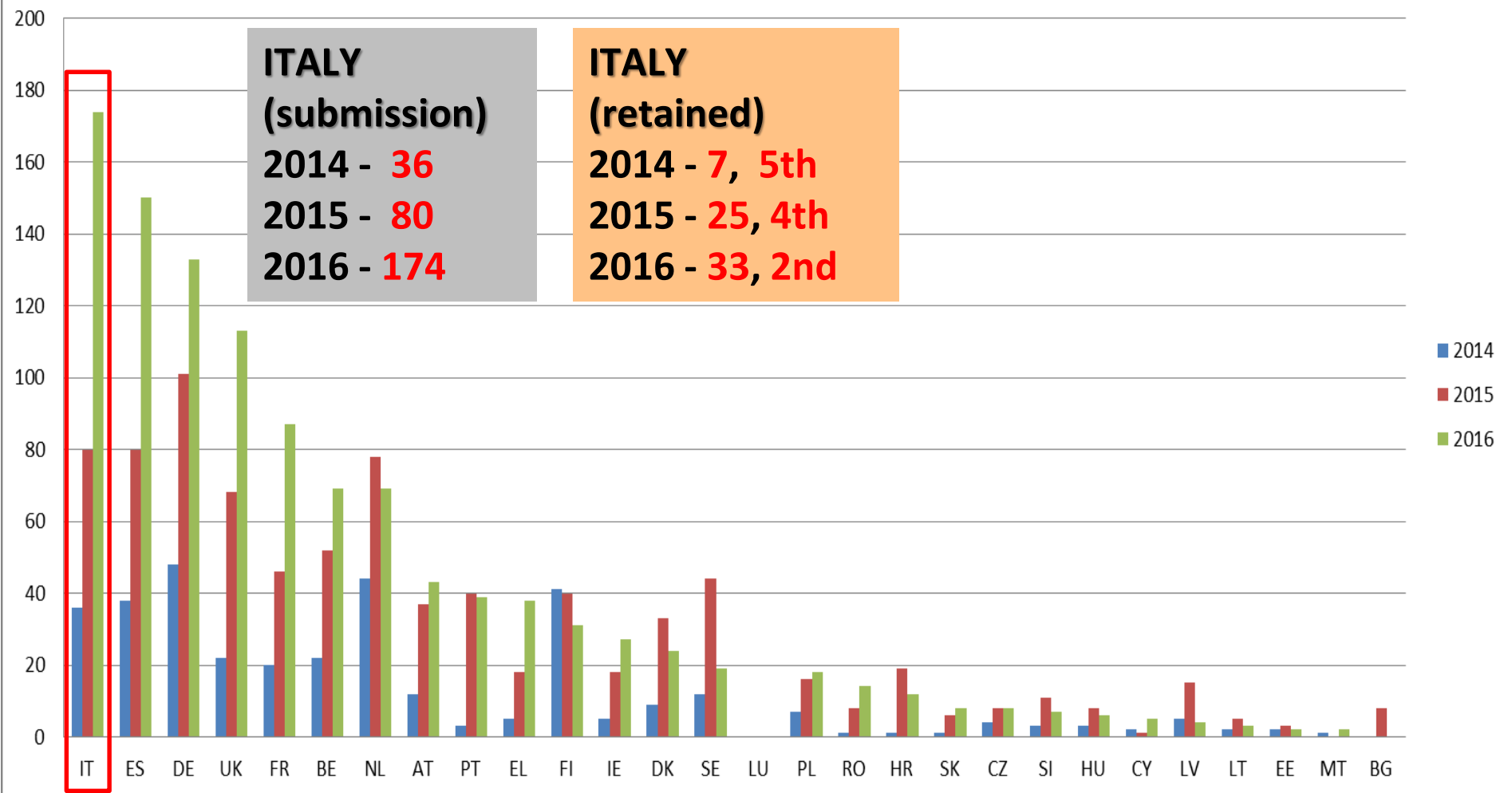
- ❑ VC 1: From ***lignocellulosic*** feedstock to advanced biofuels, bio-based chemicals & biomaterials
- ❑ VC 2: Next generation ***forest***-based value chains
- ❑ VC 3: Next generation ***agro***-based value chains
- ❑ VC 4: New value chains from (organic) ***waste***
- ❑ VC 5: ***Integrated*** energy, pulp and chemicals biorefineries

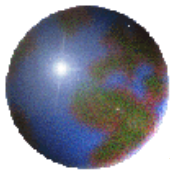
and a marine bioresource exploitation value chain is coming...



Italian participation in BBI JU calls (2014-16)(a)

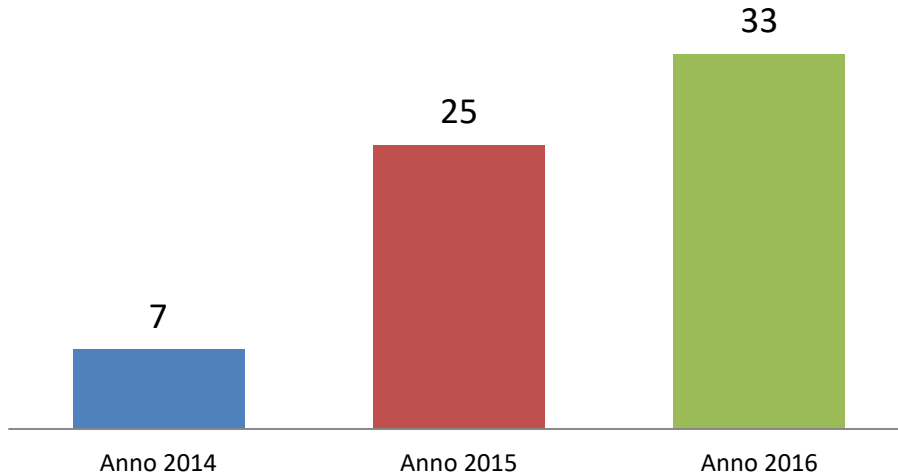
EU 28 applicants Calls 2014-2015-2016



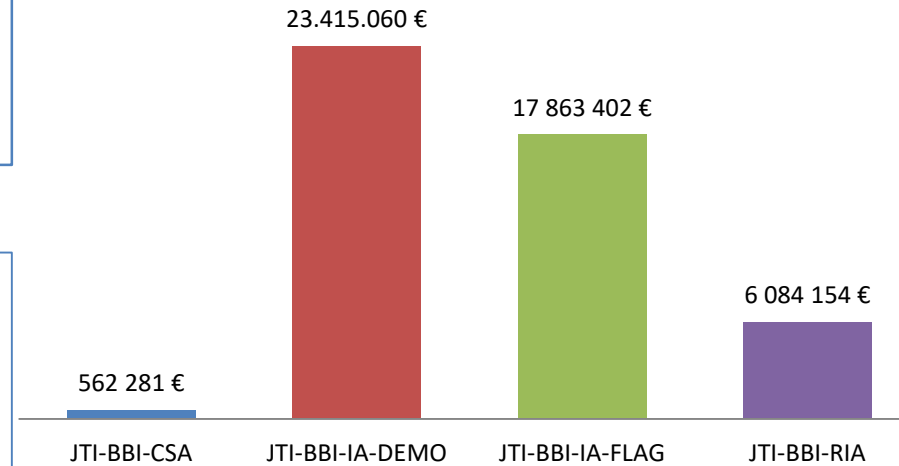


Italian participation in BBI JU calls (2014-16)(b)

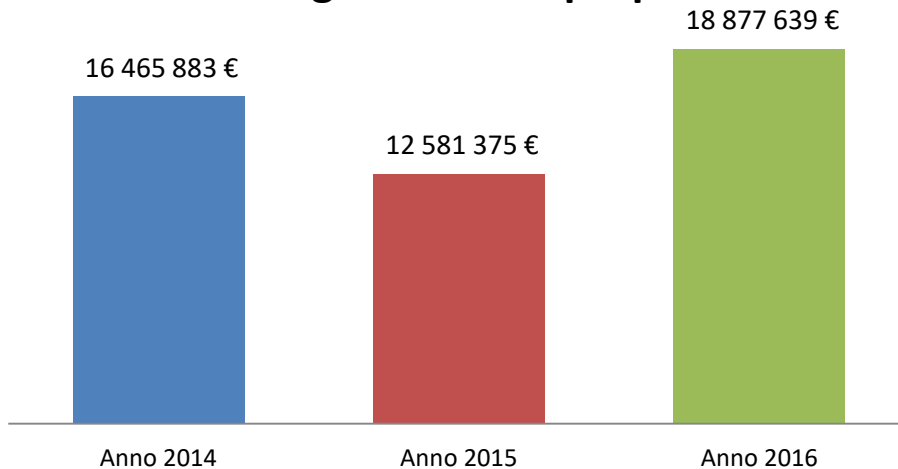
IT - Proposals retained

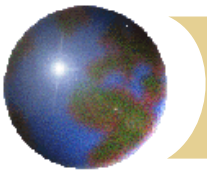


Budget proposals retained (3 years)



IT – Budget retained proposals





The Italian Bioeconomy

Thank You!



The Future is Bio-Based