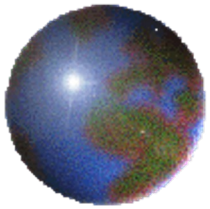
"Le scienze agrarie nella bioeconomia"
Bologna, 16-17 Febbraio 2023
DISTAL, Università di Bologna



Italian Bioeconomy and actions for promoting it in the Country and in Europe

Fabio Fava

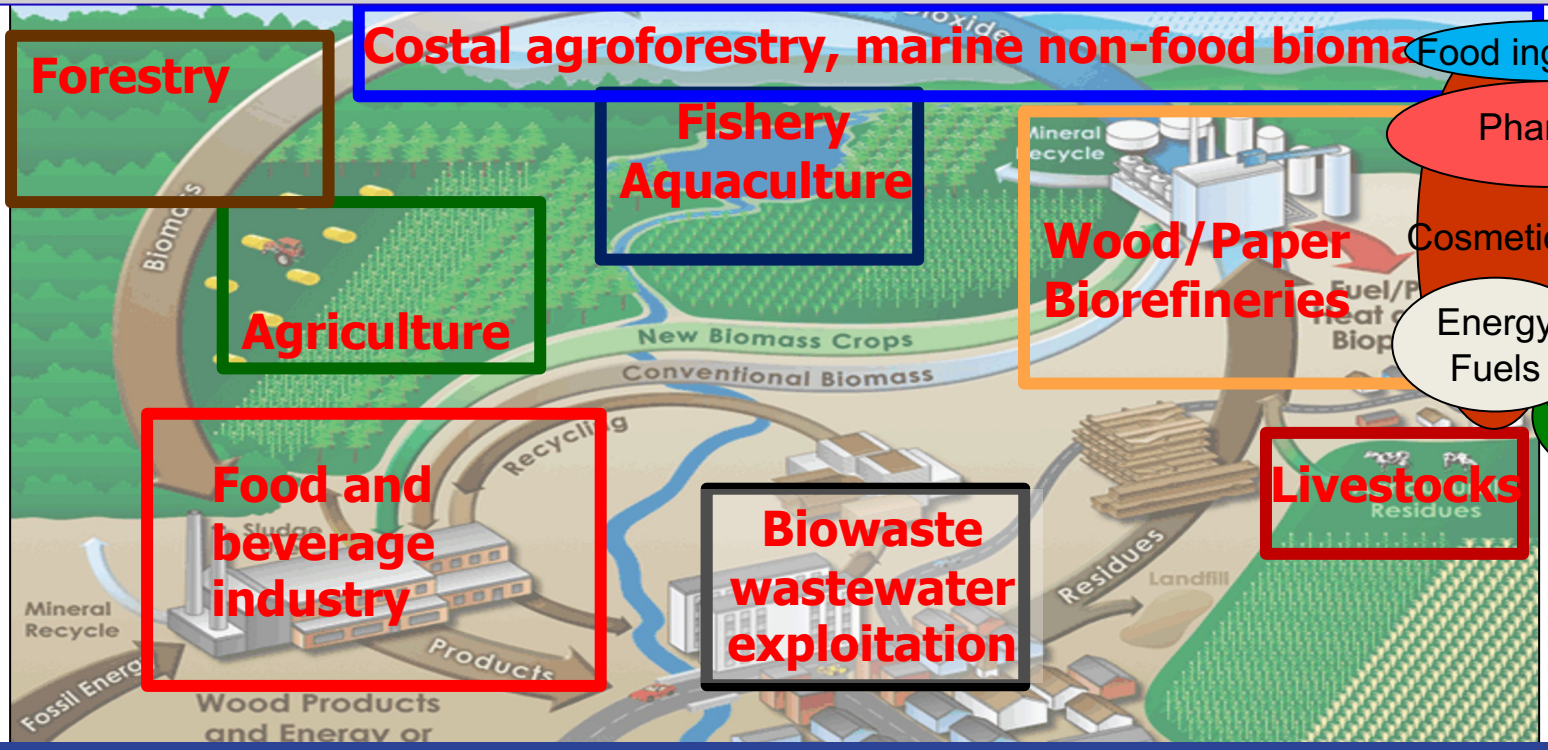
'National Bioeconomy Coordination Board", CNBBSV, Presidency of Council of Ministers
Horizon Europe, Cluster 6 Programming committee
Public Private Partnership Circular Biobased Europe JU, State Representative Group
EU Bioeconomy Policy Forum

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

Bioeconomy in Italy: state-of-the-art, needs and opportunities

The Italian Bioeconomy landscape

Agriculture, ~13M ha, 90% in rural areas; Abandoned lands, ~2M ha; **Forestry,** ~12M ha, poorly exploited**; Food&Drink companies,** ~58,000, 88% with <9 employees; **Coastline,** ~ 8,000 km, poorly exploited**…**

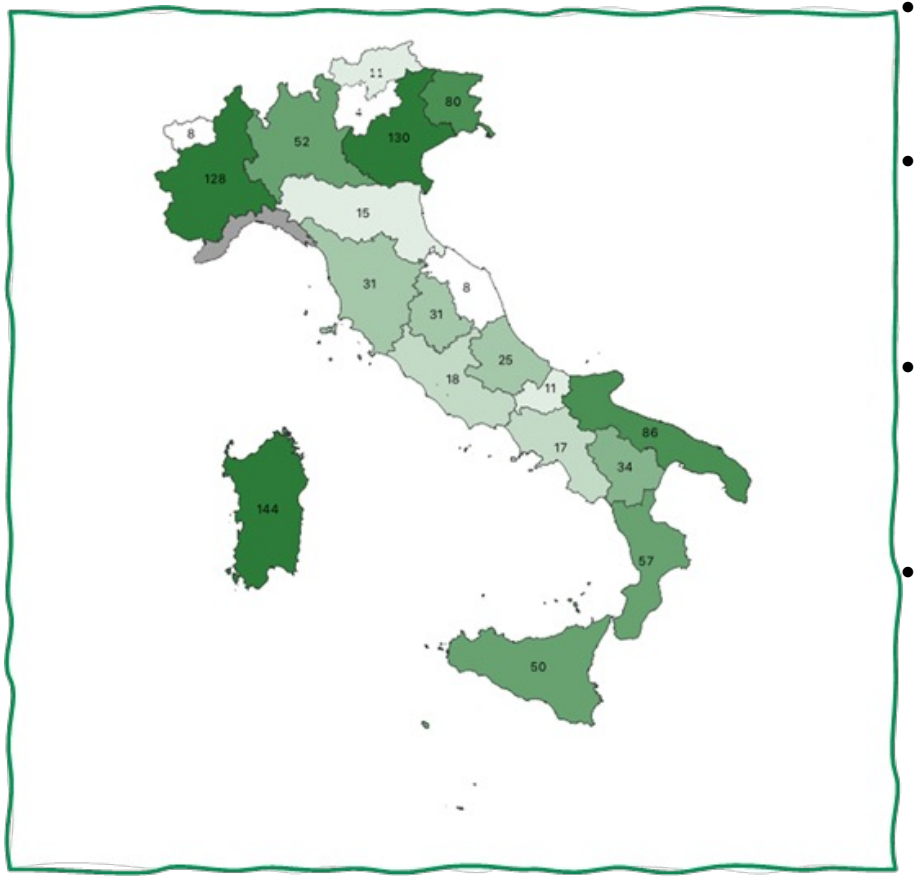


Italy: ~335 Bln €/y, ~2.0 Mln of jobs (2018); ~365 Bln €/y, ~ 2.13 Mln of jobs (2021);
In EU: 3rd turnover/jobs, 2nd as presence in H2020SC2 & BBIJU funded projects,
1st Biodiversity richness and number of high quality products (DOP, IGP, etc) on markets

Environmental and social benefits, for sustainable/regenerative/inclusive growth

Regional S3 implementation 2014-2020 (a)

Aree di specializzazione della Bioeconomia



After: Agenzia di Coesione Territoriale

Agrifood

- Identificata come area di specializzazione da tutte le Regioni, eccetto la Liguria.
- Finanziati nell'area **940 progetti**, per un valore di costo ammesso complessivo pari a **192,3 mln€**.
- Maggiore concentrazione di progetti in Sardegna, Veneto e Piemonte (insieme il 42,3% del totale). Aggiungendo Puglia e FVG la percentuale sale al 60%.
- PA di Trento e di Bolzano hanno finanziato i progetti di maggiore dimensione finanziaria, insieme a Sicilia e Campania, ma costo medio poco superiore a 200mila€
- Solo in tre casi numero di progetti finanziati inferiore a 10: **capacità diffusa a livello territoriale nella progettazione di innovazioni tecnologiche in grado di modernizzare i settori dell'agricoltura e dell'agroindustria e di proiettarli verso la cross-settorialità**, attraverso interazioni con altri domini applicativi (es. Aerospazio, Salute)

Regional S3 implementation 2014-2020 (b)

Aree di specializzazione della Bioeconomia

After: Agenzia di Coesione Territoriale

Biobased industy

- Numeri limitati in termini di **progetti finanziati (230)** e di investimenti sostenuti (**51,9 mln€**). In valore, dato più basso tra quelli registrati considerando tutte le 12 AdS, mentre il costo medio circa 225.000 €
- Forte concentrazione geografica degli investimenti. Piemonte e Toscana, hanno finanziato 167 progetti (72,6%) e sono responsabili del 62,7% degli investimenti indirizzati allo sviluppo della Chimica verde
- Valori di costo medio più significativi in Sicilia, PA di Bolzano e Umbria
- In apparenza l'AdS non ha raccolto un diffuso interesse sul territorio nazionale. In realtà diverse Amministrazioni titolari di S3 hanno scelto di classificare progetti afferenti ad usi industriali di biopolimeri all'interno di altre AdS, dando risalto alla trasversalità delle applicazioni nell'ambito dei sistemi produzioni manifatturiera avanzata, o alle applicazioni finali nell'area Agrifood o nell'area Energia e ambiente

Regional S3 implementation 2014-2020 (c)

Aree di specializzazione della Bioeconomia

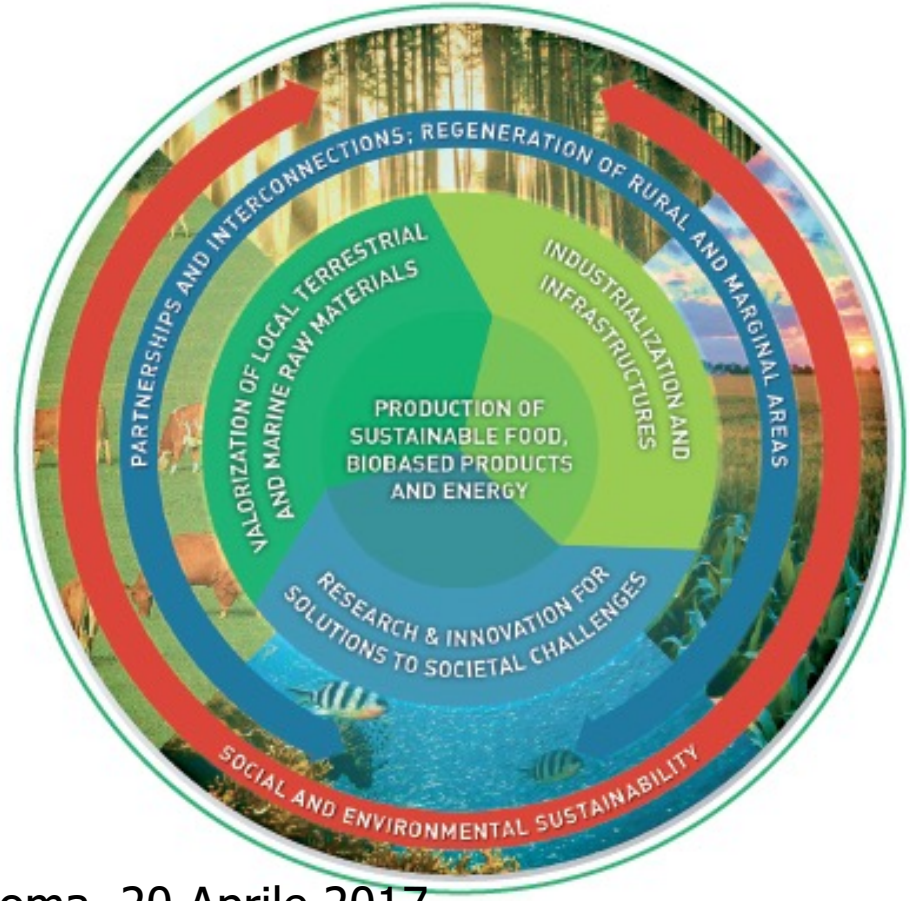
After: Agenzia di Coesione Territoriale

Blue growth

- AdS su cui poche Regioni hanno scelto di puntare
- **204 progetti finanziati**, per un valore pari a **87,3 mln€**
- solo Friuli-Venezia Giulia ne ha finanziati 159, vale a dire il 78%
- Sicilia regione che ha investito maggiormente su questo ambito tematico, con 55 milioni di euro (il 63% del totale finanziato nell'AdS)
- Costo medio dei progetti finanziati nell'area, pari ad oltre 427.000 €, il quarto più alto
- Risultato influenzato fortemente da configurazione strutturale del settore tradizionale più rilevante tra quelli presi a riferimento per la sua delimitazione tecnologica (cantieristica - settore che si connota per investimenti di scala finanziaria elevata e ciclicità delle produzioni su commessa, elementi che non facilitano l'ingresso di nuovi soggetti sul mercato)

BIT

Bioeconomy in Italy



Roma, 20 Aprile 2017

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

The Italian Bioeconomy strategy

AVAILABLE AT:
http://old2018.agenziacoesione.gov.it/it/S3/Bioeconomy.html

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

- Ministry Education, University, Research;
- Ministry Agriculture, Food,Forestry;
- Ministry Economical Development;
- 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*.

IT Bioeconomy strategy (BIT II, 2019) & Implementation Action Plan (2021)

"National Bioeconomy Coordination Board"
CNBBSV, Presidency Council Ministers, Rome

http://cnbbsv.palazzochigi.it/media/1774/bit_en_2019_02.pdf

Composition (PdC decree 2021):

- Ministry Agriculture, Food, Forestry Policies;
- Ministry University & Research;
- Ministry Economical Dev;
- Ministry Ecological Transition;
- Ministry Education.
- X and XI Conferences of Regions & autonom. Provinces;
- Italian Agency territorial cohesion; SVIMEZ;
- Institute for Environmental Protection and Research;
- Italian Technology Clusters: Circular Bioeonomy (SPRING) , AgriFood (CLAN), BlueGrowth (BIG).

IMPLEMENTATION ACTION PLAN (2020-2025) FOR THE ITALIAN BIOECONOMY STRATEGY BIT II

January, 2021

Presidenza del Consiglio dei Ministri
CNBBSV

http://cnbbsv.palazzochigi.it/en/areas-of-work/bioeconomy/strategies-and-implementation-action-plan/

http://cnbbsv.palazzochigi.it/en/areas-of-work/bioeconomy/

Primary production: main challenges and opportunities

Agriculture, Livestock and aquaculture

Used land:~13 M ha, 90% in rural areas

~ 60 Billion €/y
~ 920,000 jobs

Problems:

- ❑ Low size and low revenue farms, poorly organized value chains→ abandonment, reduction of cultivated land surface;
- ❑ Depletion of soil OM, water scarcity, biodiversity depletion;
- ❑ Poorly innovative agricultural practices and systems;

Needs, Opportunities:

- ❑ New business models, diversify rural incomes; production of quality products (also «organic»), certification and promotion
- ❑ Soil regeneration; local plant/animal biodiversity; improved, climate/stress resilient crops; breeding,microbiome knowhow;
- ❑ Precision farming/digitalization; urban farming; eco services;

Forestry

Used area:
~12 M ha

Problems:

- ❑ Fragmentation of ownership, poor valorization of forest products ->abandonment with biodiversity depletion, also due to climate changes.

Needs, Opportunities:

- ❑ Integrated management of forest with valorization its biodiversity, ecosystem services, wood and other –also food-products,via business innovation on local value chains.

Food and biobased industries: main challenges and opportunities

Food Industry

~155 Billion €/y ~ 450,000 jobs

Problems:

- 58,000 Companies, 88% with<9employees and lack of chain coordination
- Low efficiency of food chains with remarkable food/biomass losses, energy and water consumption and by-products/waste production;
- Strong products counterfeiting and imitations.

Needs, Opportunities:

- symbiotic society models, for high competitiveness,resilience,sustainability
- Digitalization food production, storage, delivery; new(bio)packaging;
- Leading position for "typical/quality" food products (DOP, IGP,STG, etc.), personalized healthier diets, defending their authenticity and traceability;
- food products from byproducts/new protein sources.

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

~135 Billion €/y ~ 600,000 jobs

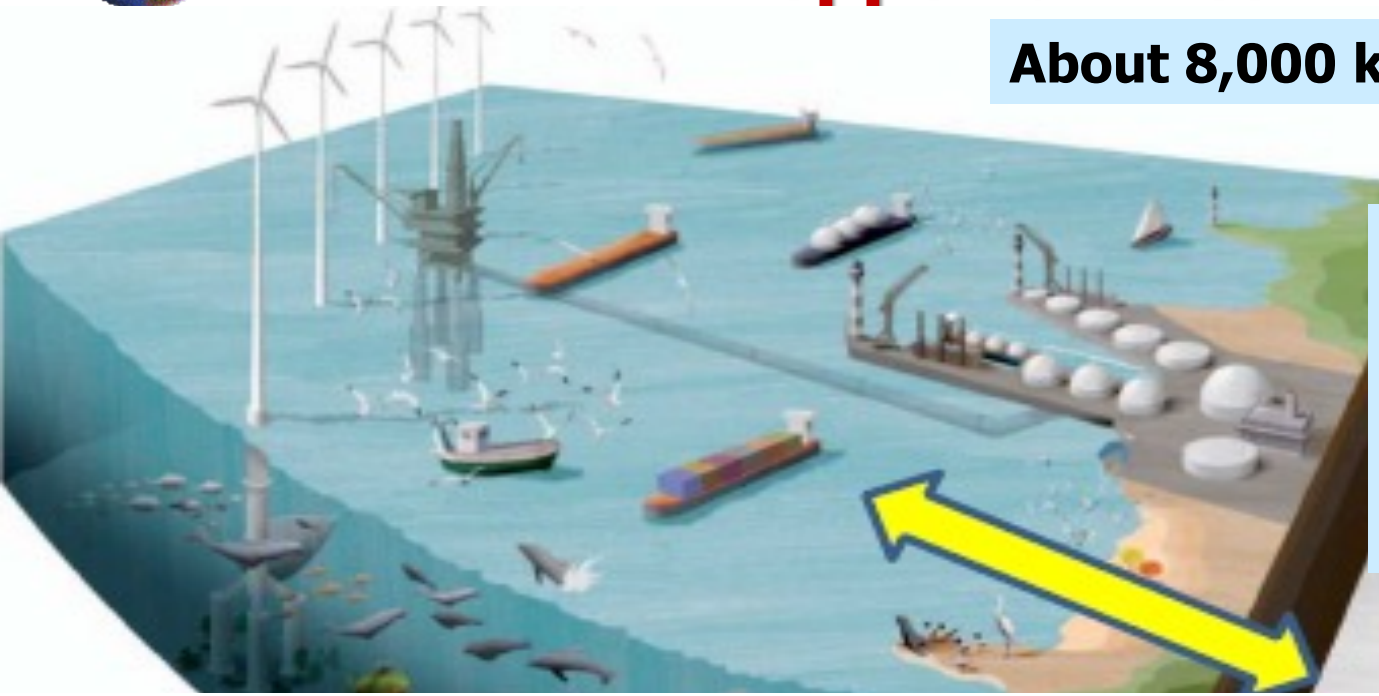
Problems:

- IT wood/paper industry imports wood and produces low value products;
- Lack of low cost non-food feedstocks; legislative barriers on biowaste use;
- Limited national market for biobased products;

Needs, Opportunities:

- Feed IT wood industry with IT wood; produce new/higher value products;
- Agrifood/marine byproducts/waste/effluents, urban waste,CO2 as feeds;
- Abandoned/marginal lands for producing biomass; convert abandoned refineries in biorefineries; wastewater/biomethane plants as biorefineries;
- Digitalization for efficiency, flexibility, multiproduct production, circularity;
- high quality and certified bio-products and use of standards and labelling

Blue Bioeconomy: main challenges and opportunities



About 8,000 km of coastline

~ € 50 Billion €/y
~ 800,000 jobs
~20% due to Bioeconomy

After: Unioncamere, 2022

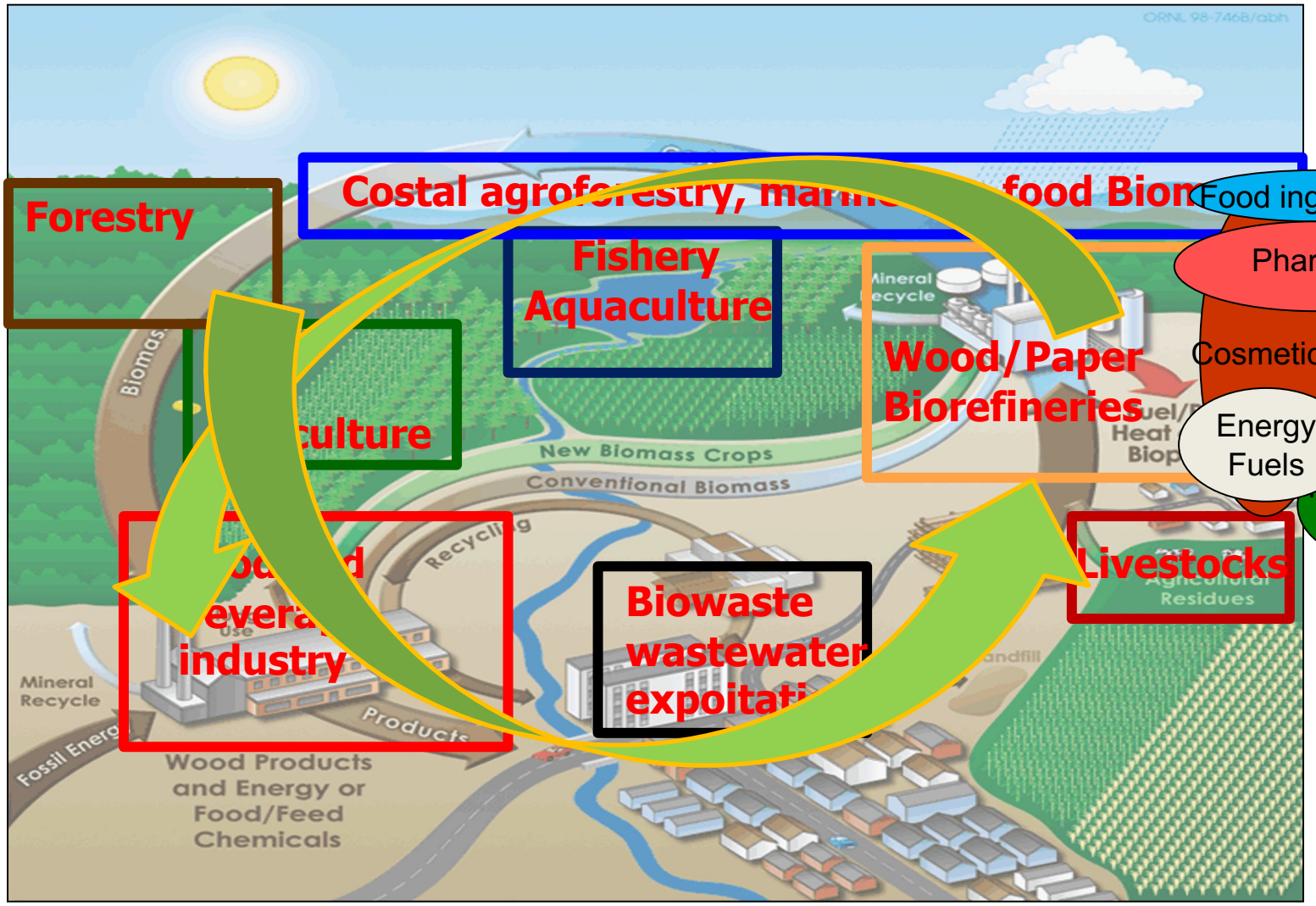
Problems:

- ❑ Unsustainable fishery and fish reproduction highly affected by climate changes;
- ❑ Market with fish imported from areas with uncertain regulations/monitoring;
- ❑ Sea pollution (due to chemicals, litter, etc), presence of invasive species;
- ❑ Coastal urbanization, over- and un-sustainable exploitation of beaches.

Needs, Opportunities:

- ❑ marine aquaculture (also off shore) and multi-trophic aquaculture;
- ❑ local marine biodiversity and bioenergy potential;
- ❑ agroforestry,cultural heritage,ecosystem services at the land/sea interface.

Needs of interconnecting Bioeconomy sectors



IT Bioeconomy Implementation: actions

- **Taxonomy**: assessment of projects funded by Regions under S3 and related structural funds in 2014-2020 under the Bioeconomy domains and re-classification of sectors under the wide Bioeconomy landscape;
- **Assessment existing/identification most suitable Indicators for measuring Bioeconomy implementation;**
- **Promotion and assessment implementation of Bioeconomy priorities in the frame of the Next Generation EU (PNRR) plans and programmes;**
- **Contribution to the contents of the IT Circular Economy Strategy and IT Forestry Strategy** (and to the set up national Technology Cluster Forestry/Wood);
- Set up of the **Pilot on Bioeconomy Education for the primary and secondary schools** in the frame of the National Plan "Rigenerazione Scuola" (site https://prgs.fvaweb.eu English version);
- **Promotion revision or set up of tailored policies** (End of Waste, "Salvamare" Decree, etc);
- National and EU actions to **set up and promote the adoption of ATECO/EU NACE codes for biobased products** and value chains (+ISTAT, JRC);
- Contribution to set up of the **IT Position towards the "single use plastics"** (with MiTE, MISE, MIPAFF, SPRING, CLAN, ISPRA, Confindustria).

Contribution of Italy to the Bioeconomy implementation in Europe

The updated European Bioeconomy strategy

Brussels, October 22, 2018

https://ec.europa.eu/research/bioeconomy/index.cfm?pg=policy&lib=strategy

Rapidly deploying bioeconomies across Europe

- set up an EU Bioeconomy Policy Support Facility for EU countries to develop national/regional agendas;
- launch pilot actions for the development of bioeconomies in rural, coastal and urban areas, interconnecting the sectors.

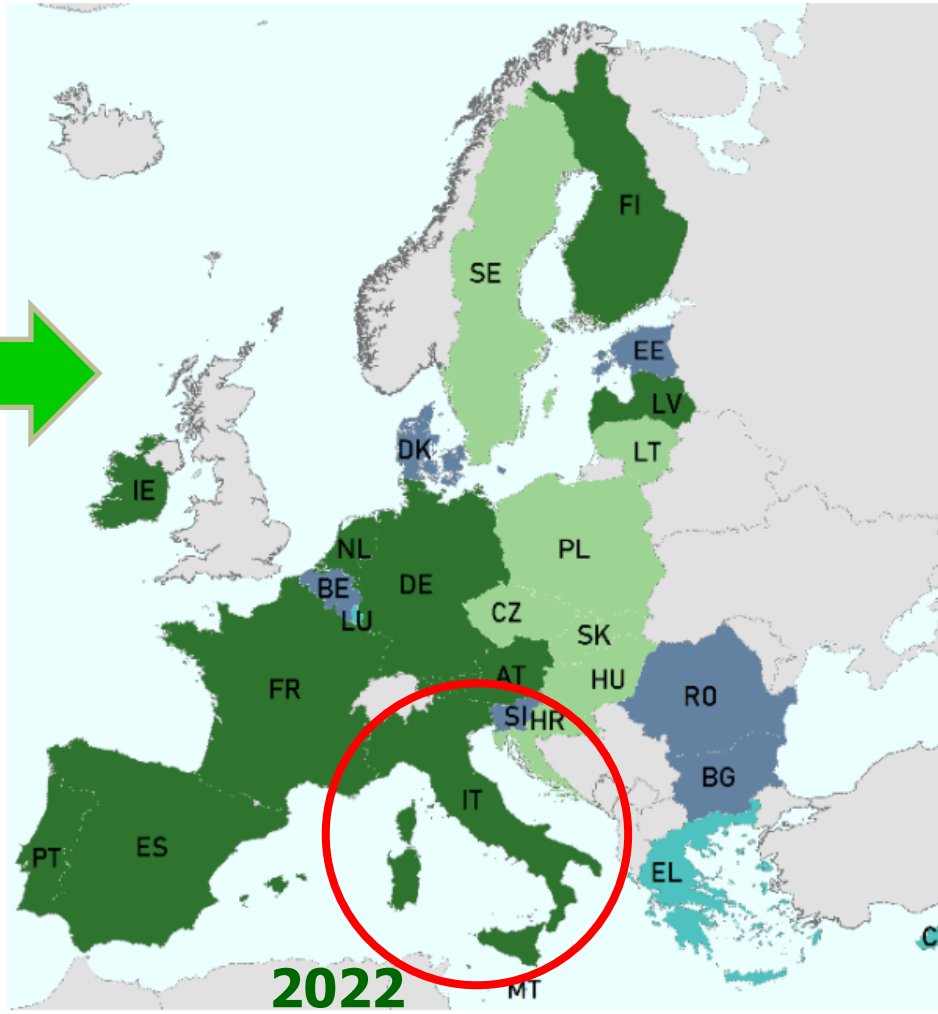
Scaling up and strengthening the bio-based sectors via a €100 million **Circular Bioeconomy** Thematic Investment Platform.

Protecting the ecosystem and understanding the ecological limitations of the bioeconomy

The national Bioeconomy strategies in Europe

Status of the national bioeconomy policies in the EU-27

- 10 Member states with dedicated bioeconomy strategies at national level (AT, DE, ES, FI, FR, IE, IT, LV, NL, PT)
- 6 MS in the process of developing their respective dedicated national strategies (CZ, HR, HU, LT, PL, SK)
- 7 MS are involved in other macro-regional (BG, DK, EE, RO, SI, SE) or sub-national (BE) policy initiatives dedicated to the bioeconomy.
- 4 MS have bioeconomy related strategies (CY, EL, LU, MT)



Dedicated bioeconomy strategy at national level
Dedicated bioeconomy strategy at national level under development
Other policy initiatives dedicated to the bioeconomy
Other related strategies at national level

Status before the adoption of the European Bioeconom
Strategy (left side) and in February 2022 (right si

Source: European Commission's Knowledge Centre for Bioeconor
Administrative Boundaries: © EuroGeographics © UN-FAO © Turks

The European Bioeconomy Policy Forum

EUROPEAN BIOECONOMY POLICY FORUM

All MSs, EC DGs, EP, CoR, EESC (high and expert-level) **2020**

2012

1° Bioeconomy Strategy (2012)

2018

Updated Bioeconomy Strategy (2018)

Towards a green and just transition

2019

Council Conclusion

The MS Bioeconomy priorities and needs

Bioeconomy Strategies of Member States — Focus		AT	DE	ES	FR	FI	IE	IT	LV	NL	PT
Sectors covered	Agriculture	●	●	●	●	●	●	●	●	●	●
	Forestry	●	●	●	●	●	●	●	●	●	●
	Fisheries		●	●	●	●	●	●	●	●	●
	Aquaculture	●	●	●	●	●	●	●	●	●	●
	Organic waste	●	●	●	●	●	●	●	●	●	●
	Food	●	●	●	●	●	●	●	●	●	
	Wood, wood products & furniture	●	●	●	●	●	●	●	●	●	●
	Pulp & paper	●	●	●	●	●	●	●	●	●	●
	Biotechnology	●	●	●	●	●	●	●	●	●	●
	Bio-based textiles	●	●	●	●	●	●	●	●	●	●
	Bio-based chemicals and materials	●	●	●	●	●	●	●	●	●	●
	Bioenergy (incl. transport biofuels, bioelectricity and H&C)	●	●	●	●	●	●	●	●	●	
	Ecosystem services	●	●	●	●	●	●	●	●	●	●
	Other specific sectors	●	●			●	●	●	●		●
Policy actions	Embed the bioeconomy into new legislative frameworks				●			●			
	Revisit existing regulatory frameworks to include bioeconomy concepts/priorities	●	●		●	●	●	●	●	●	●
	Promote the establishment of intra-governmental groups to support policy coherence or collaboration amongst different bioeconomy stakeholders	●	●	●	●	●	●	●	●		●
	Promote labels and standards for bio-based products	●	●	●	●	●	●	●	●		●
	Promote public procurement of bio-based products	●	●	●	●	●	●	●	●		●
	Enhance land management for new production systems and ecosystem functions	●	●			●		●	●		●
	Promote specific bioeconomy sectors	●	●		●	●		●	●		●
	Promote the principles of "cascading use", "circularity" and "resource efficiency" for biomass	●	●	●	●	●	●	●	●	●	●
	Enhance the knowledge on bioeconomy by setting-up knowledge hubs, observatories, information systems, web portals, conferences, etc.			●	●	●	●	●			●
	Implement specific studies (feasibility, impact assessments, land use, territorial development analyses, market analyses, foresight studies etc).	●	●	●	●	●	●	●	●		●
	Develop monitoring systems for the bioeconomy		●			●	●	●		●	●
	Promote communication campaigns for awareness raising (e.g. bioeconomy awards, information systems, events, etc.)	●	●	●	●	●	●	●	●	●	●
	Promote educational/training programmes	●	●	●	●	●	●	●	●		●
	Promote investments in bioeconomy research, innovation, market development	●	●	●	●	●	●	●	●	●	●
	Market incentives for bio-based production/consumption (e.g. subsidies, taxes)	●	●		●	●		●	●	●	

The European Bioeconomy Policy Forum

EUROPEAN BIOECONOMY POLICY FORUM

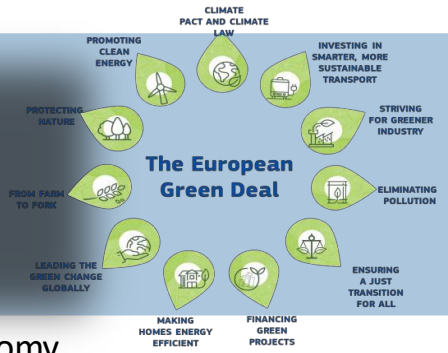
All MSs, EC DGs, EP, CoR, EESC (high and expert-level) **2020**

2012

1° Bioeconomy Strategy (2012)

2018

Updated Bioeconomy Strategy (2018)



Towards a green and just transition

2019

Council Conclusion

2022

Bioeconomy Progress Report

Bioeconomy Progress Report endorsed by the EU Parliament and Commission

High-level **Bioeconomy Conference** to present the Progress Report on the EU Bioeconomy Strategy

Brussels, 6-7th October 2022

G20-OECD workshop on Bioeconomy strategies and needs in the G20 Countries

Bioeconomy in the G20 and OECD countries: sharing and comparing the existing national strategies and policies for co-designing more effective Bioeconomy governance mechanisms and monitoring systems.

"National Bioeconomy Coordination Board", Presidency of Council of Ministers, Rome. July 16, 2021

Main outcomes:

- Wider and more effective national governances, inter-ministerial governances
- Greater access to risk capital
- Enable rapid commercialisation of biomanufacturing technologies
- New or revised EU NACE codes for biobased products
- More robust, established and harmonized indicators, along with high quality, homogeneous and aggregated data, and monitoring systems tailored for both products and territories (eg site specific).
- Intensify involvement of primary producers and citizens, more education and skills
- Foster the role of Bioeconomy and its relevant technologies in context of the European Green Deal and related policies (from the EU MSs)

OECD report under publication on Bioeconomy Journal

Horizon 2020

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)

A Public-Private Partnership on Bio-Based Industries

Realising the European Bio-economy Potential

BBI

€ 3.7 Billion 2014-2020

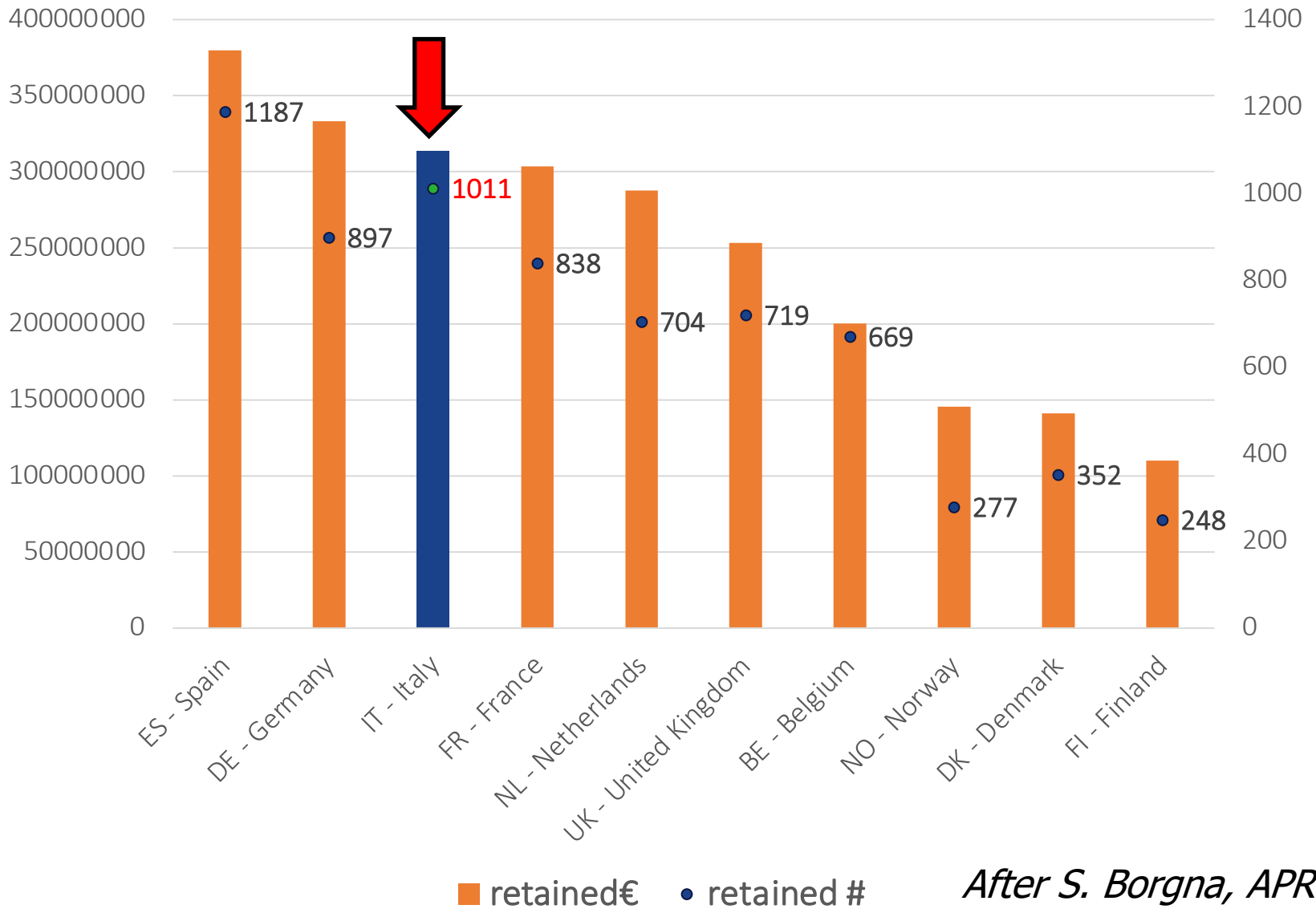
Supported by

European Commission

Bio-based Industries Consortium

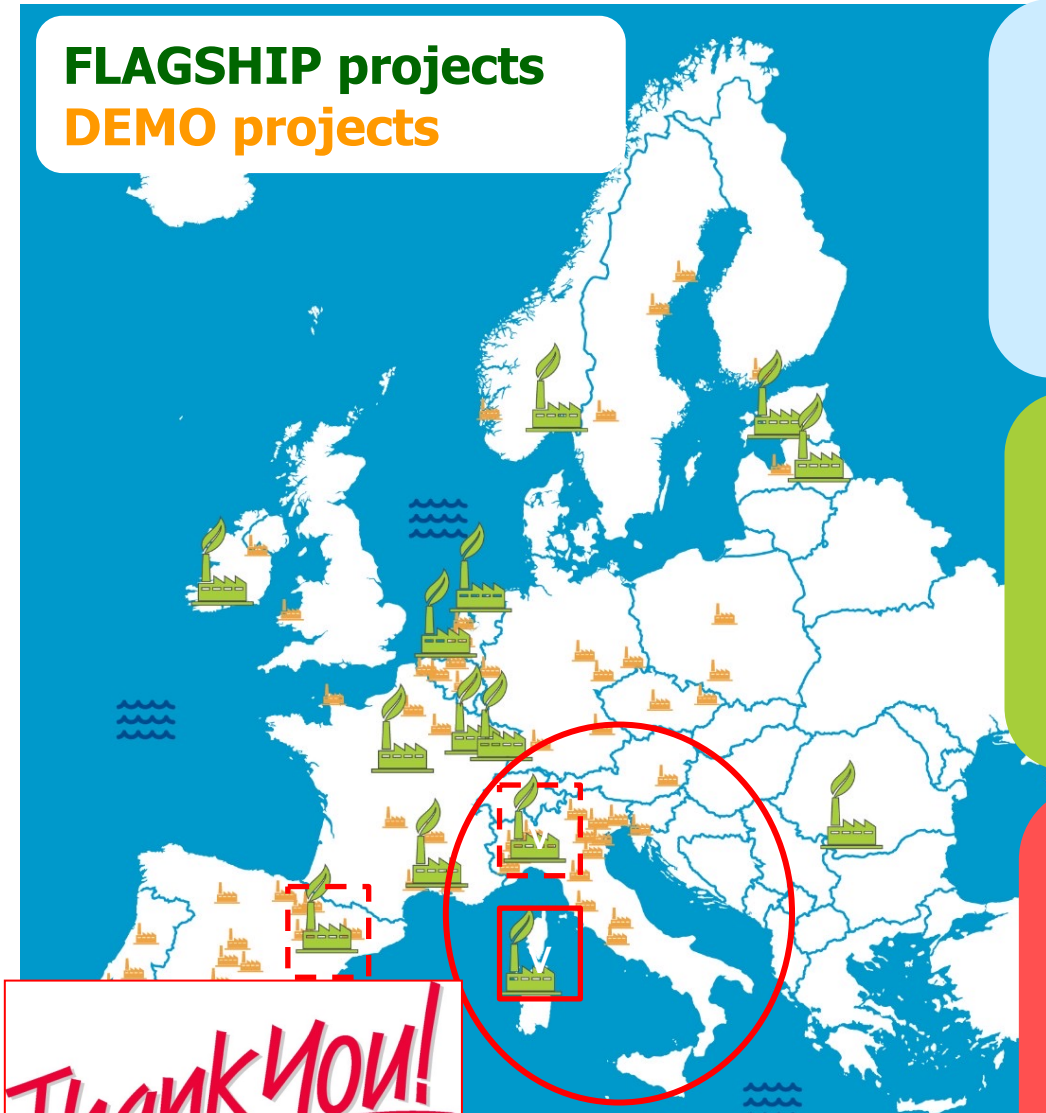
http://www.bbi-europe.eu/

IT in H2020 SC2 & BBI JU projects (2014-20)



After S. Borgna, APRE

BBI JU projects funded (2014-2020)



142 projects , ~1000 beneficiaries, ~40% SMEs

~ € 822 Mln EC + 2.5 Bln private contribution

14 FLAGSHIPS
Total Grant: € 272 Mln
€1.8 Bln private investment
> 4.700 direct
15.000 indirect jobs

Italy: involved in **81 funded projects** (108 benificiaries, 65% from the private sector, 45% SMEs); **€ 83 Mln** of public funds
9 coordinated projects, lead or co-lead of 2 flagships

Thank You!

IT Bioeconomy Implementation: actors

CLUSTER AGRIFOOD NAZIONALE

SPRING
Italian Circular Bioeconomy Cluster

BIG
Blue Italian Growth
Technology Cluster

Mission & actions:

- Integrate major national public and private actors of the sector;
- Identification of main regional & national R&I needs and opportunities;
- Promotion of indentified priorities/needs towards regional, national and EU institutions funding R&I;
- Promotion of partnerships and participation of public R&I institutions, industry and associations in regional (Next Generation EU, FESR, FSE, etc.) national and EU (Horizon 2020/EU, BBI/CBE JU, PPP & JPIs) R&I programs, reducing fragmentation and duplication, and fostering effective innovation.

Next Generation EU national Hubs « Biodiversity » and « Agritech »
Regional Clusters, Next Generation EU extended partnerships…