



Economia Circolare e Simbiosi Industriale

“ quadro di riferimento “

Le opportunità per le imprese
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**EU
FOOD
Industry
per
countries**

	Turnover	Value added	Number of employees	Number of companies
	€ billion	€ billion	1,000	
Austria	12.6	4.7*	58	3,921*
Belgium	44.5	6.7	89	4,912
Bulgaria	4.7	0.8*	99*	5,612
Cyprus	1.5	0.4*	13*	863
Czech Republic	11.3	2.9	105	8,360
Denmark	25.4	3.2	55	1,610*
Estonia	1.5	0.3	13	422
Finland	11.3	2.5	33	1,900
France	157.2	29.3	500	10,000
Germany	163.3	11.5	550	5,960
Greece	11	1.4	65	1,180
Hungary	8.3	2.0	97	6,556
Ireland	22.0	6.0*	43	689
Italy	127.0	24.2	408	6,300
Latvia	1.6	0.3*	25*	788
Lithuania	3.6	0.6*	42*	1,205
Netherlands	59.2*	14.3	131	4,385*
Poland	49.7	8.9*	403*	13,708
Portugal	14.5	2.9	110	10,513
Romania	10.5	2.2*	186	8,239
Slovakia	3.7	0.7	30	218
Slovenia	2.2	0.5*	16*	1,214
Spain	83.8	20.0*	446	30,000
Sweden	19.2	4.4	56	3,400
TOTAL	937	174	3,943	138,455

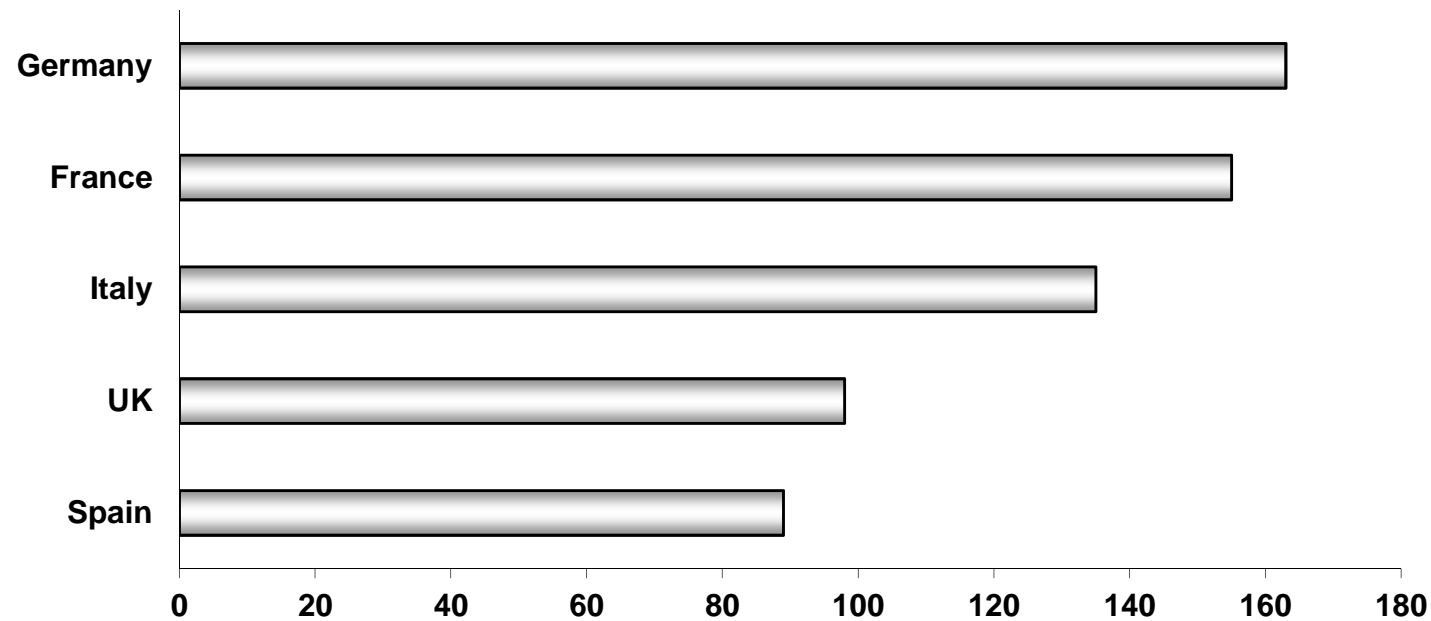
Source: Data & trends of the European Food and Drink Industry 2012 (FoodDrinkEurope)



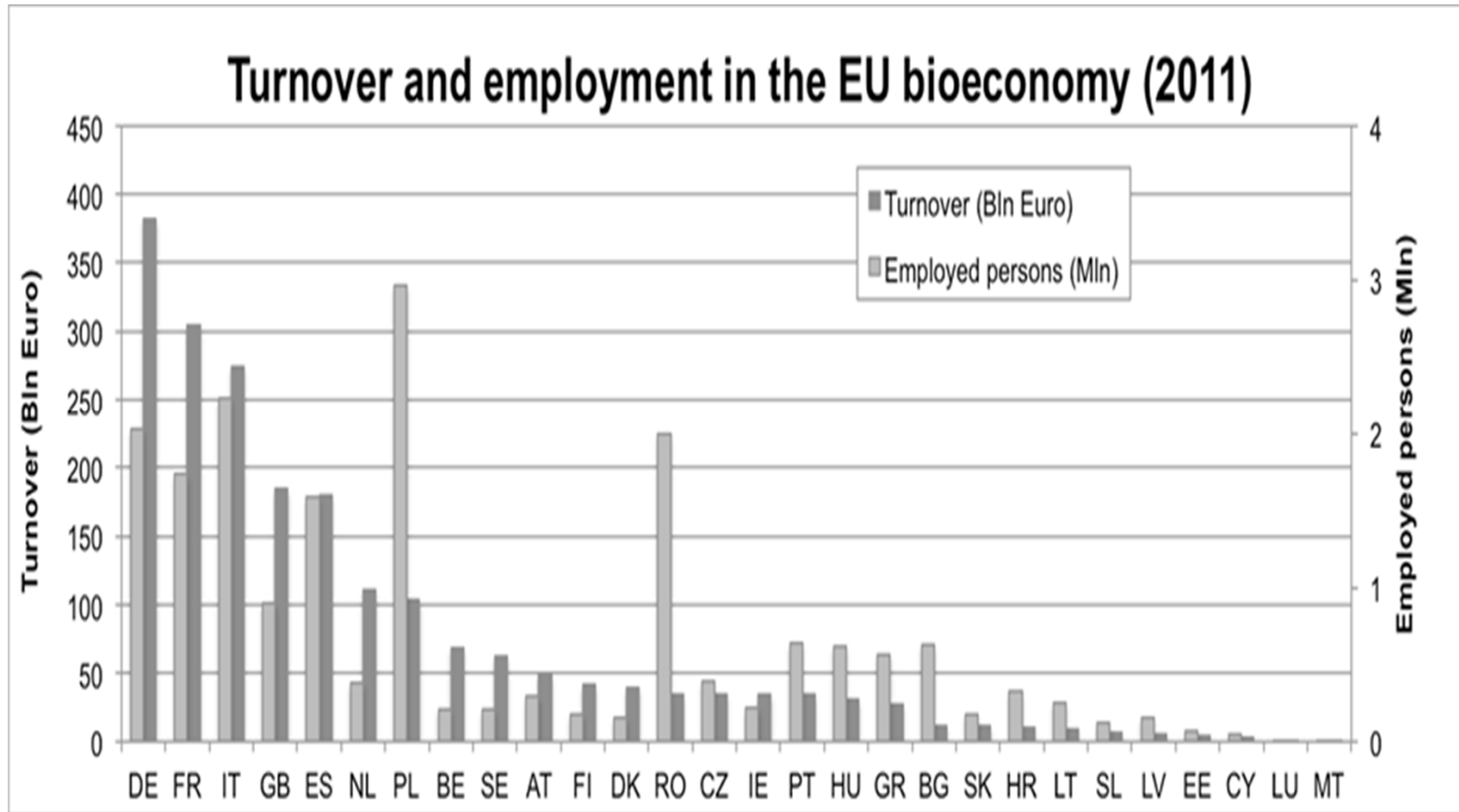
TOP 5 F&D INDUSTRIES IN THE EU



Top 5 Member States in terms of food & drink industry turnover,
2014 (€ billion)



Source: Federalimentare elaboration from preliminary Eurostat data



Source: SCAR – EUROSTAT 4th foresight 2015



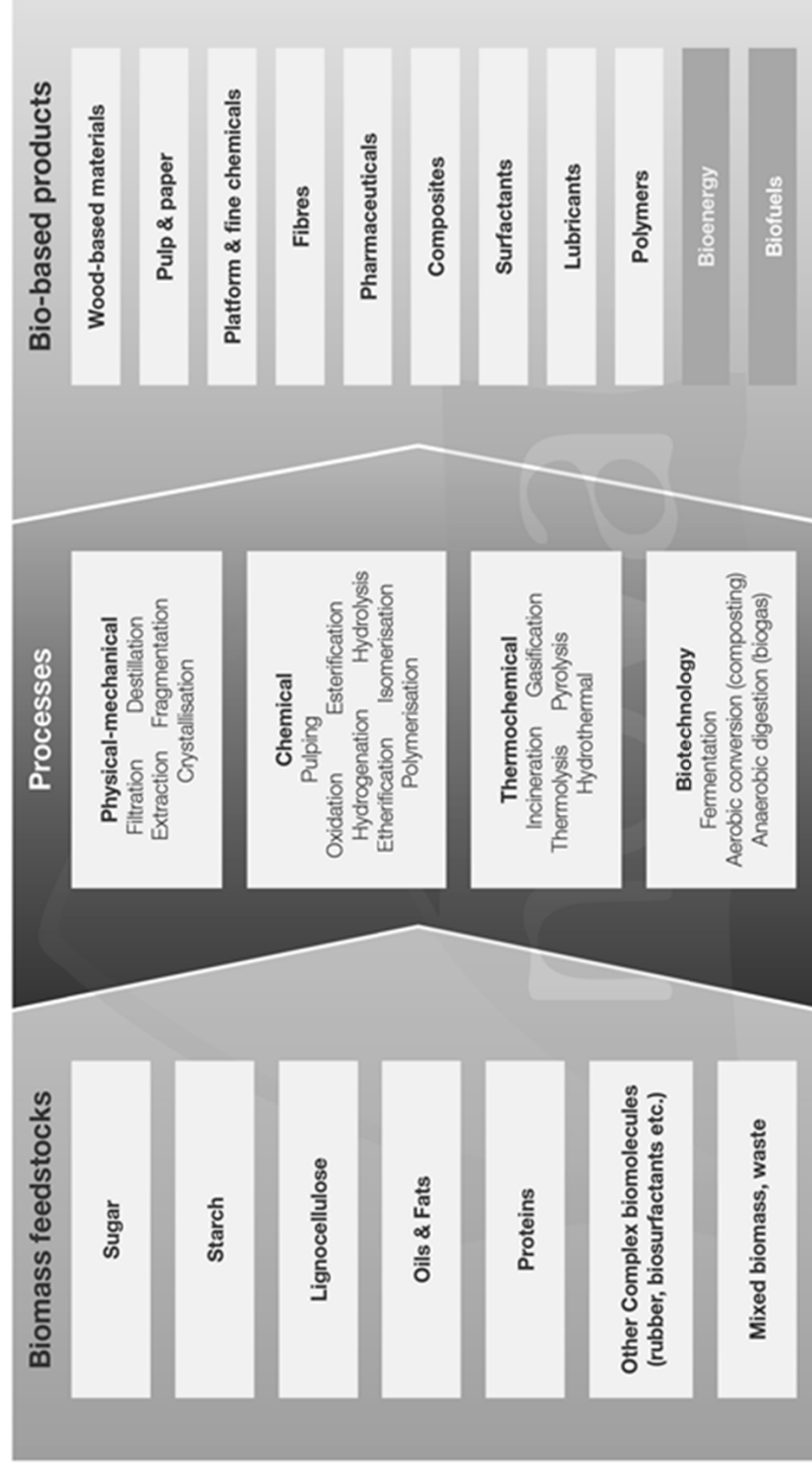
2014 EU BIO-ECONOMY



EU bio-economy turnover of 2.690 billion € with 22 million employees.

Sector	Turnover (Billion €)	Employees (million)	Source
Food & Drink Industry	1.186	4.4	FoodDrinkEurope
Agriculture	430	12,0	COPA-COGECA
Fisheries	14	0.5	FAO
Paper, Leather etc.	428	1,8	CEPI
Forestry	337	2,0	CEI-BOIS
Others	227	1,0	CEFIC
Bio-based materials			
<i>Chemistry</i>	60 (est)*	0,15 (est)*	USDA, Arthur D Little, Festel, McKinsey, CEFIC
<i>Enzymes</i>	1 (est)*	0,005 (est)*	Amfep, Novozymes, Danisco/Genencor, DSM
<i>Biofuels</i>	7	0,15	EBB, eBio
Total	2.690	22	

Bio-based Economy: feedstocks, processes and products (without food & feed)





European long-term priorities of The European Technology Platform Food for Life

- A more **competitive agri-food industry and chain** in Europe;
- **More innovation** in farming and food processing:
- **Farm for Tomorrow - Food Factory of the Future;**
- **Resource efficiency** in the Circular Bioeconomy
- **Improving added value of high quality foods**, traditional and PGI ;
- Dietary needs of the **elderly**, in **pregnancy**, in others target groups;
- Early **detection** of chemical and microbiological **hazards**;
- **Low cost and low scale processing**, **tech transfer** and networks for SMEs;
- Impact of food and drink **policies** in Europe (VAT, excise, access, comm.).





The European Technology Platform Food for Life: aims

- **Increase** R&D strategy;
- **Coordinate** research in Europe and prevent duplication;
- **Promote** SME participation, specific programmes and networks;
- **Focus**, align and collaborate transnationally between stakeholders;
- **Increase** multidisciplinary / cross-sector education and training;
- **Optimise** knowledge capture and dissemination of knowledge between Member States and towards farmers and SMEs.

36 Food for Life NTPs: think locally, act globally!



COORDINATOR:
Italian
Food for
Life





NTPs

Figures

- More than **35.000** SMEs and **4.600** national stakeholders involved (Industry, Farmers, Universities, Research centres, Consumers, National Public Bodies, Retailers, Financial institutions).
- **87** strategic documents visible and published on ETP website (SRA, Implementation Plan, Vision document etc.)
- **2** mln € yearly availability of public national funds specifically for NTPs
- **450** mln € yearly availability of public national funds for food chain research

Meetings



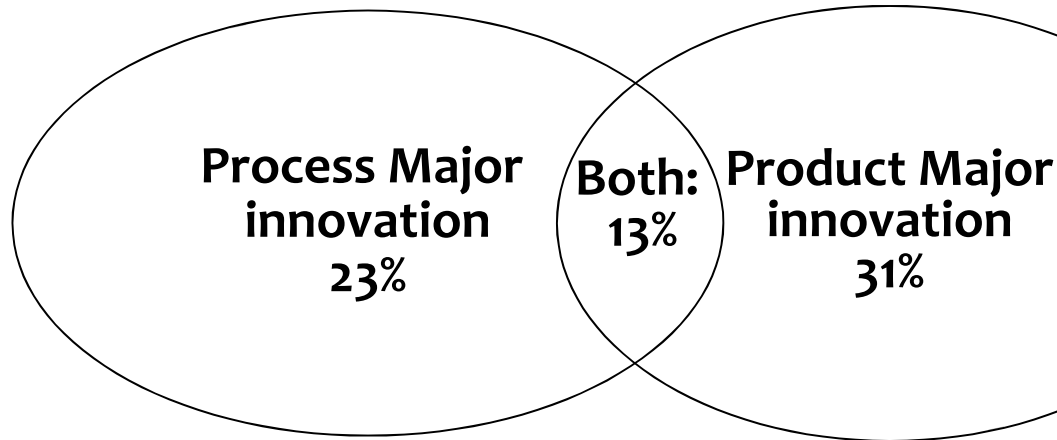
1. Rome, 14.04.2007
2. Brussels, 14.09.2007
3. Brussels, 6.06.2008
4. Budapest, 12.09. 2008
5. Barcelona, 11.05.2009
6. Riga, 2.10.2009
7. Brussels, 4.03.2010
8. Rimini, 16.09.2010
9. Budapest, 2.05.2011
10. Bonn, 2.11.2011
11. Istanbul, 11.06.2012
12. Paris, 23.10.2012
13. Vienna, 22.04.2013
14. Brussels, 3.09.2013
15. Athens, 11.03.2014
16. Turin, 6.10.2014
17. Prague, 13.04.2015
18. **Athens, 11.11.2015**
- 19- **Bruxelles, 20.04.2016**

EUROPE

European F&D INDUSTRY INNOVATORS GROUPS

INNOVATORS
GROUP

Major innovators: 41%



Only 15%
of all
F&D firms
did not
introduce
innovations
in the
last 3
years

Improvers who did not introduced major innovations:
44%

F&D INDUSTRY FUTURE TRENDS



- Wide variety of products.
- Convenience, ready to eat.
- Attention to specific nutritional needs.
- Tasty products, texture, density, colour, pack.
- Products affordable in price / quality ratio.
- Attention to specific needs: religious / ethnic / ethical .
- Attention to environment, sustainability, naturalness
- New occasions: brunches, aperos, happy hours, street food, catering, slow food, grazing, gastros.

Challenges and responses for Food Manufacturers



- Scarcity in **raw materials**;
- **Globalization** to manage;
- **Local food chains and markets** enhanced;
- **Buyers and Retailers concentration**;
- **New ways of consumption**;
- High **stratification** of consumption;
- **New glocal values**: ethics, envi, ethnic, authentic, natural ...;
- **New policies** on food&drink: neo protect, neo prohibi, neo info;
- **New trade policies**: Europe, Efta, Nafta, Asian, Ttip, Med, Mercosur.

- **Precision farming** and sustainability;
- Raw materials **diversity**;
- **Low scale technologies** and scale economies;
- Resource and manufacturing **efficiency** to improve;
- **Horizontal** Innovation to be incorporated: new mats., ICT, process, pack
- From old to **young generation of entrepreneurs**;
- **Food Supply Chain** and **Collaborative Networks**;
- New **distribution systems** and **business models**;
- **Flexibility and differentiation** to face new ways of consumption;

MAIN CHALLENGES FOR INNOVATION OF AGRI FOOD SMEs BUSINESSES

- Access to innovative ideas
- converting of research results into practical solutions
- Reduction of the risks of investment of company resources into innovation
 - reduction of failure rate of innovation projects (technical management, business support) during the process
 - reduction of barriers: legal, administrative
 - protection of confidential information/knowledge, on which innovative products, processes, services, systems, market solutions are based
- Financing innovation
- Training and tech transfer to farmers and SMEs companies
- Aggregation of entrepreneurships

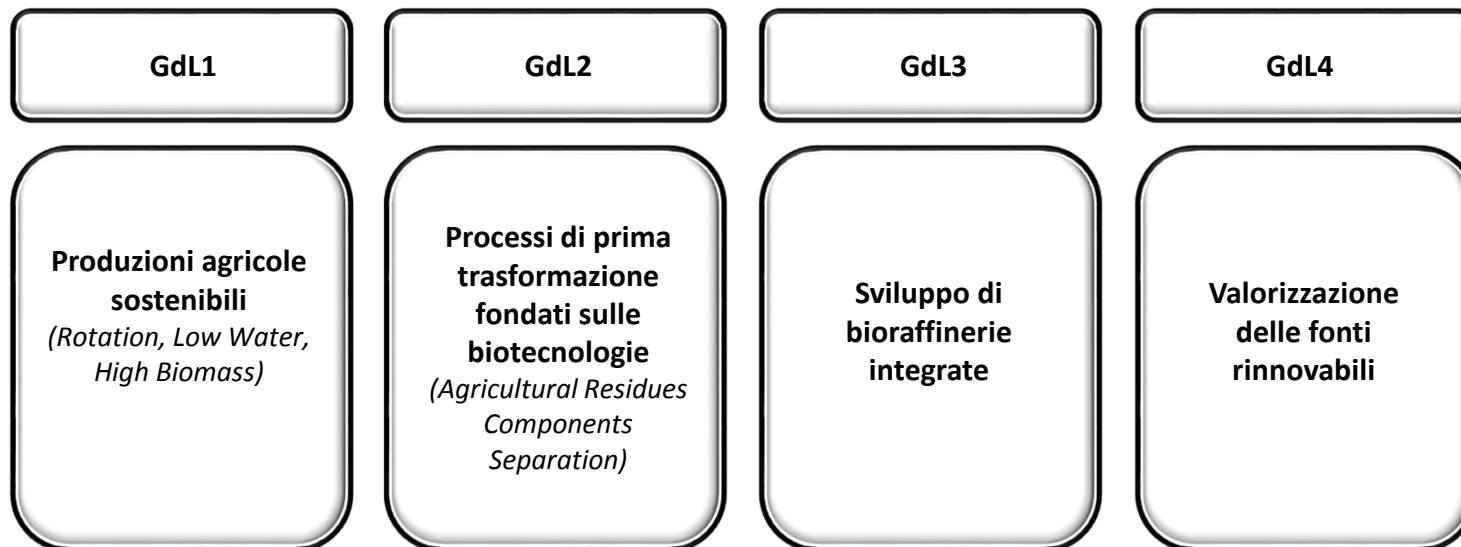
6.

bioeconomia: RETE CR

RETE CR2050 comprende aziende agricole, aziende di trasformazione dei prodotti agricoli, aziende chimiche, aziende che producono biocarburanti, aziende specializzate nella progettazione, realizzazione e gestione di impianti a biogas.

OBIETTIVO GENERALE: Favorire integrazioni di filiera tra produzione primaria e industria di trasformazione e, nel contempo, aumentare il reddito agricolo e creare valore aggiunto nell'intera filiera, attraverso progetti collaborativi di R&S.

In particolare: studio dei possibili trattamenti dei coprodotti agroindustriali per ottenere substrati zuccherini idonei alla produzione di oli (per l'uso dei quali c'è una forte competizione nei settori alimentare, mangimistico, oleochimica e biocarburanti) e altri *chemical*.



Business models for the bioeconomy

- Circularity implies new ways of designing and manufacturing products, new relationships between economic actors, new ways of recycling components and waste, etc.
- Actors and activities will be reassembled in time and in space.
- Different production models in terms of scope and size should not only be able to co-exist, but also capture the synergies between them.
- Public sector involvement is needed for these new business models to work, as public goods are generated in the circular economy but often not remunerated by the market.



2014 ITALIAN BIO-ECONOMY



**IT bio-economy turnover of 269 billion € (460 billion euro at consumer price)
with 2,439 million employees.**

Sector	Turnover (Billion €)	Employees (million)	Source
Food & Drink Industry	133	0,5	FoodDrinkEurope
Agriculture	41	1,2	COPA-COGECA
Fisheries	3	0,1	FAO
Paper, Leather etc.	37	0,2	CEPI
Forestry	30	0,3	CEI-BOIS
Seeders (Fruit&Veget)	2	0,1	ANVE,CIVI,MIVA,FVG
Others (build, textile ...)	16	0,1	CEFIC
Biobased materials			
<i>Chemistry</i>	4 (est)*	0,02 (est)*	USDA, Arthur D Little, Festel, McKinsey, CEFIC
<i>Enzimes</i>	0,2 (est)*	0,001 (est)*	Amfep, Novozymes, Danisco/Genencor, DSM
<i>Biogas</i>	2,2	0,008	GSE
<i>Biofuels</i>	0,8	0,01	EBB, eBio

Le cifre di base dell'Industria Alimentare italiana

Bilanci e previsioni (stime in euro e variazioni % su anno precedente)

	2013	2014	2015 (stime)
FATTURATO	132 miliardi (+1,5%)	133 miliardi (+0,8%)	135 miliardi (+1,5%)
PRODUZIONE* (quantità)	-0,7%	+0,6%	+1,1%
NUMERO IMPRESE INDUSTRIALI (con più di 9 addetti)	58.500	56.000	55.000
NUMERO ADDETTI	385.500	385.000	383.000
ESPORTAZIONI	26,2 miliardi (+5,8%)	27,1 miliardi (+3,5%)	28,7 miliardi (+6,3%)
IMPORTAZIONI	19,4 miliardi (+4,1%)	20,4 miliardi (+4,8%)	21,1 miliardi (+5,0%)
SALDO	6,7 miliardi (+11,5%)	6,7 miliardi (+2,5%)	7,6 miliardi (+10,1%)
TOTALE CONSUMI ALIMENTARI	213 miliardi (variazione reale -3,1%)	214 miliardi (variazione reale -1,0%)	216 miliardi (variazione reale +0,3%)
POSIZIONE ALL'INTERNO DELL'INDUSTRIA MANIFATTURIERA	2° posto (12%) dopo settore metalmeccanico	2° posto (13%) dopo settore metalmeccanico	2° posto (14%) dopo settore metalmeccanico

ITALIAN FOOD & DRINK INDUSTRY

REGIONAL TURNOVER AND EXPORT 2014

Regioni	Fatturato (stima - miliardi di euro)	Inc% fatt. reg./fatt. tot.	Export (miliardi di euro)	Inc% exp. reg./exp.tot.	Inc.% exp./fatt.
Piemonte	13,0	9,1	4,7	16,1	36,2
Valle d'Aosta	0,1	0,1	0,0	0,3	31,0
Lombardia	32,6	25,2	4,8	19,5	14,6
Liguria	1,7	1,3	0,3	1,3	18,8
Veneto	14,0	10,7	3,4	13,9	23,5
Friuli Venezia Giulia	2,3	1,7	0,5	2,2	23,8
Trentino	3,2	2,4	1,3	4,8	36,7
Emilia Romagna	27,8	21,3	4,1	16,0	13,7
Toscana	5,0	3,7	1,6	6,1	29,8
Umbria	2,2	1,6	0,4	1,3	18,2
Marche	2,1	1,6	0,3	0,9	10,0
Lazio	6,6	5,0	0,6	2,2	7,9
Abruzzo	2,5	1,8	0,5	1,7	17,4
Molise	0,7	0,5	0,1	0,1	6,0
Campania	6,8	5,1	2,3	9,1	32,3
Puglia	5,0	3,8	0,6	2,2	10,4
Basilicata	0,4	0,3	0,1	0,2	11,4
Calabria	1,3	0,9	0,2	0,4	8,3
Sicilia	3,7	2,7	0,5	1,7	11,8
Sardegna	2,0	1,4	0,2	0,1	5,6
Totale Italia	133,0	100,0	27,0	100,0	20,3

BioEconomy 2 : Cascade Principle

The Italian Matrix

	Food	By products	Micro-Macro Ingredients	Feed	BioMaterials Non Food	Compost Fertilizers	BioGas	BioFuels
Meat industry	X	X		X	-		X	
Feed industry		X		X		X	X	
Milk & dairy	X	X	X	X	X			
Vegetable processing	X	X	X	X		X	X	
Bread & bakery	X	X		X	X			X
Sweets & Candies	X		X				X	
Juices & concentrates	X	X	X	X			X	
Analcoholic beverage	X		X		X			
Alcoholic beverage	X	X	X	X	X			X

Circular Economy

Global Challenges after 2008 crisis

- Nutrition security and climate change: sustainable food supply system (SFSP-FAO UNEP);
- Access to enough, safe and nutritious food : EU JPI FACCE and Healthy Diet for a Healthy Life and WANA;
- A more resource – efficient agriculture, marine and food chain, in rural and urban dimensions:FAO Agrifood Task force and IPCC and CFP
- Developing the human and social capital: High level panel of experts (FAO UNEP HLPE);
- Land use and rural development strategy: CAP, OECD WP on rural growth and CIHEAM;
- Long term strategy for the bioeconomy : EU biobased PPP – Green Economy and IAASTD and ETC group.
- Long term strategy for renewable energies: BIOGAS european development

Circ bioeconomy: The Italian way – Agri Hot Topics

- New perennial grain crops and sustainable yields;
- New biological active compounds as alternative pesticides;
- Management of natural resources and biodiversity;
- Optimizing livestock production systems;
- Soil, marine and water conservation in a changing environment;
- Improved high quality plant based protein sources;
- Valorization of by-products and wastes in a circular bioeconomy (no losses);
- Innovative tools and methods to improve quality and safety of local and origin denominated food;

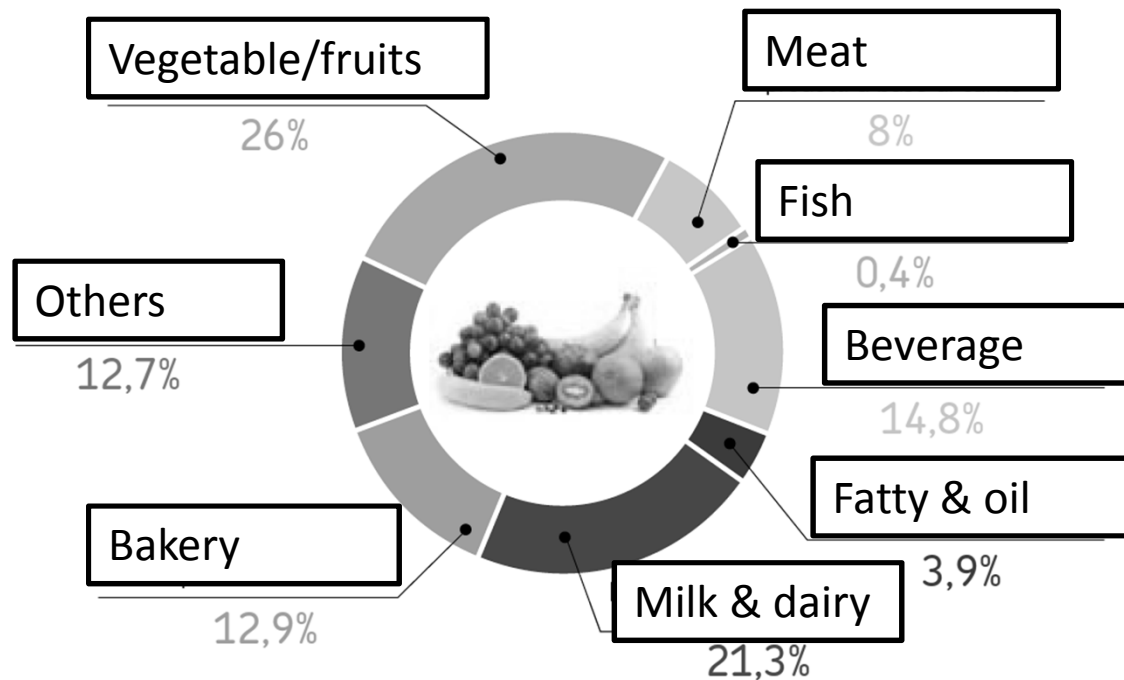


Circ Bioeconomy: the Italian Way - Industry Hot Topics

- The food human axis: effect of ingredients, processing and way of consumption on human wellbeing, low scale, low cost technologies;
- High quality stable and fresh food ready to eat with packaging extended shelf life;
- Consumer response to food price instability: from raw materials to retailers supplier;
- Valorization of genetic resources and technological improvements to increase the nutra-functional values of processed foods;
- New track systems and sustainable transportation and logistics, losses and waste reduction;
- Markers identification of varieties used in the production of DOP/IGP



Italian food waste – agrifood industry



Ripartizione dello spreco nell'industria alimentare (2009)

Fonte: Segrè e Falasconi, 2011

Substrate potential

Substrate	Dry matter [%]	Biogas [m ³ /t]	Methane [%]	Electricity (35%) [kWh _{el} /t]	Heat (50%) [kWh _{th} /t]
Pig slurry	6	20	60	42	59
Milk whey	8,5	58,5	53	109	154
Yeast residues from beer industry	25	152	62	327	467
Potato pulp	19	108	50	187	268
Ruminal content	15	60	55	114	164
Slaughtering fats	28	266	67	618	883
Pastry residues	88	650	53	1.195	1.707
Vegetable/fruit residues	35	224	56	435	622

Often substrates are blended in the biogas

Barriers to biogas exploitation – Italy case

- Small amount of wastes → Lack of material from a single agrifood company → difficult cooperation with farmers
- Lack of appropriate and proportionate incentives → long payback of investment
- Binding legislative constraints on land availability to spread digestate
- Waste classification for some materials
- Lack of EU regulation on biogas → each region, province make a different interpretation/law
- Lack of training and knowledge among agrifood operators
- Another activity and priority for the agrifood industry
- Low fossil energy cost.....



THANK YOU FOR YOUR ATTENTION !

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