

Inno-Food SEE: Setting up the **innovation support mechanisms** and increasing awareness on the potential of **Food Innovation & RTD in the South-East Europe area**

Key Results : Food Innovation in the SEE Regions

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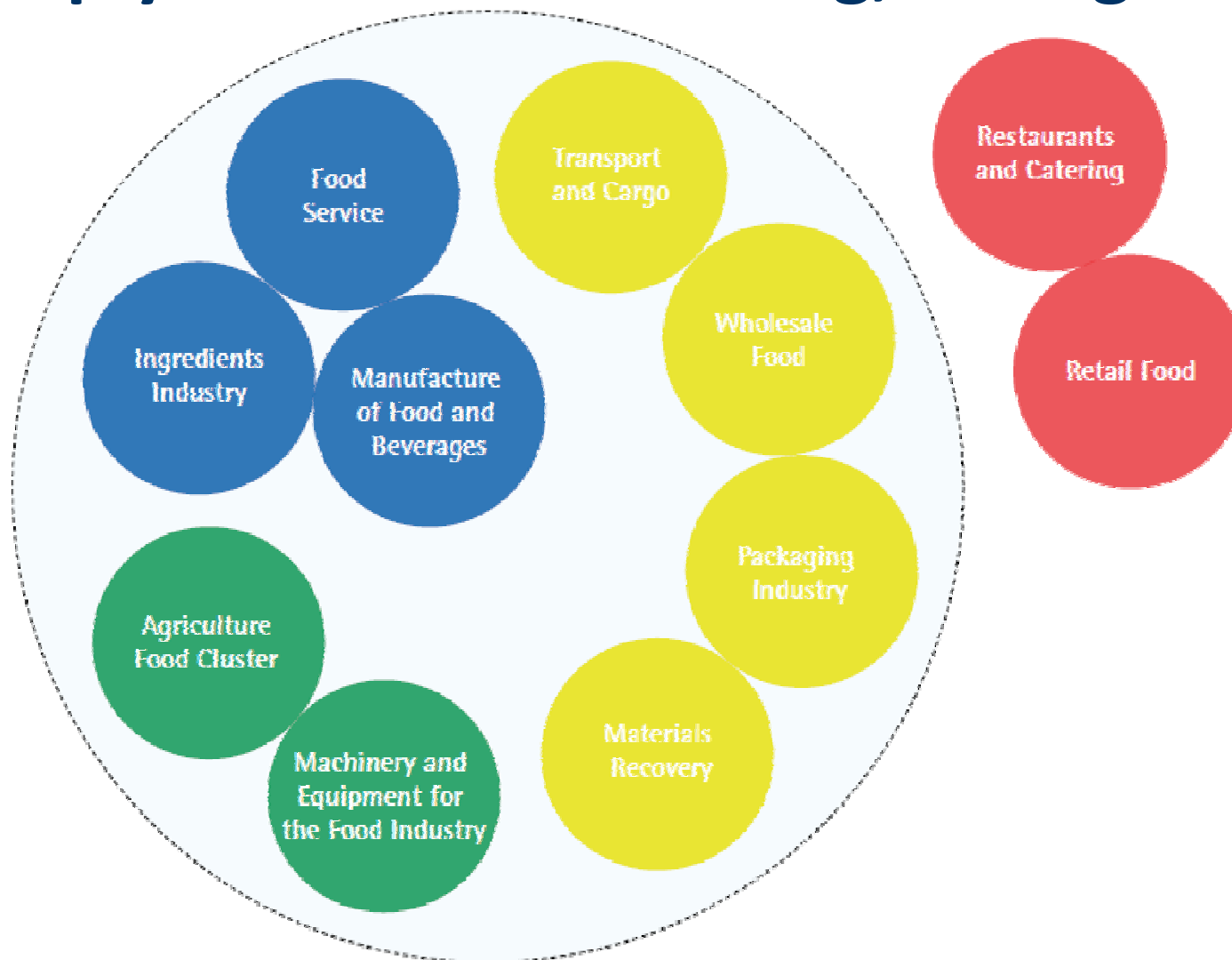
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Not simply food manufacturing, nor agriculture



Who leads the sector?

- *Every time you open your fridge, you step into the **global food system*** Oxfam International

- From fork to farm...

FORK = consumer

FARM = producer

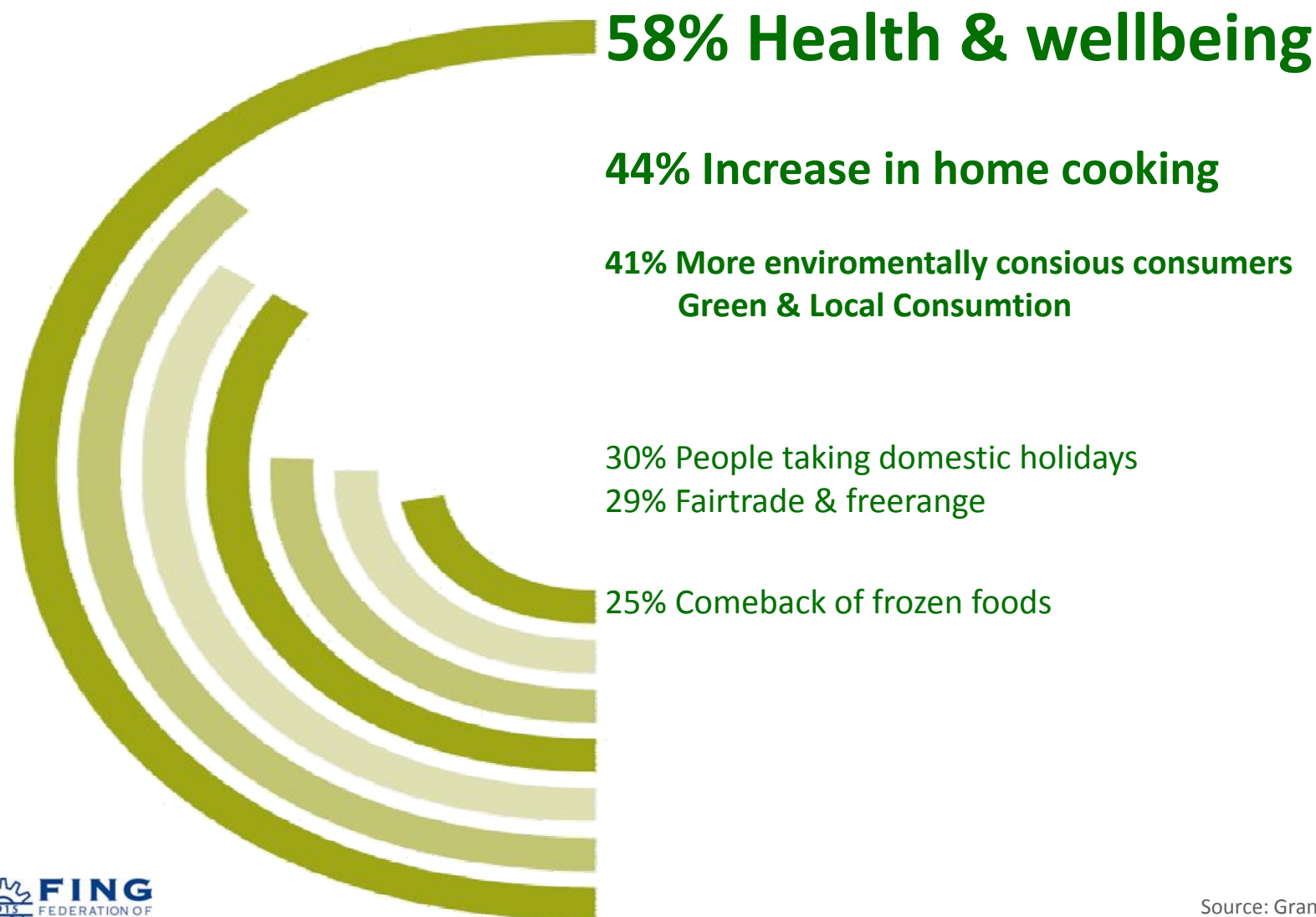
Challenges & Opportunities for agrofood sector in South East Europe: Innovation & Research

26-27 March 2014 , University of Bari "Aldo Moro", Bari, Italy



Consumer trends offer the greatest opportunity for business

[global trends]

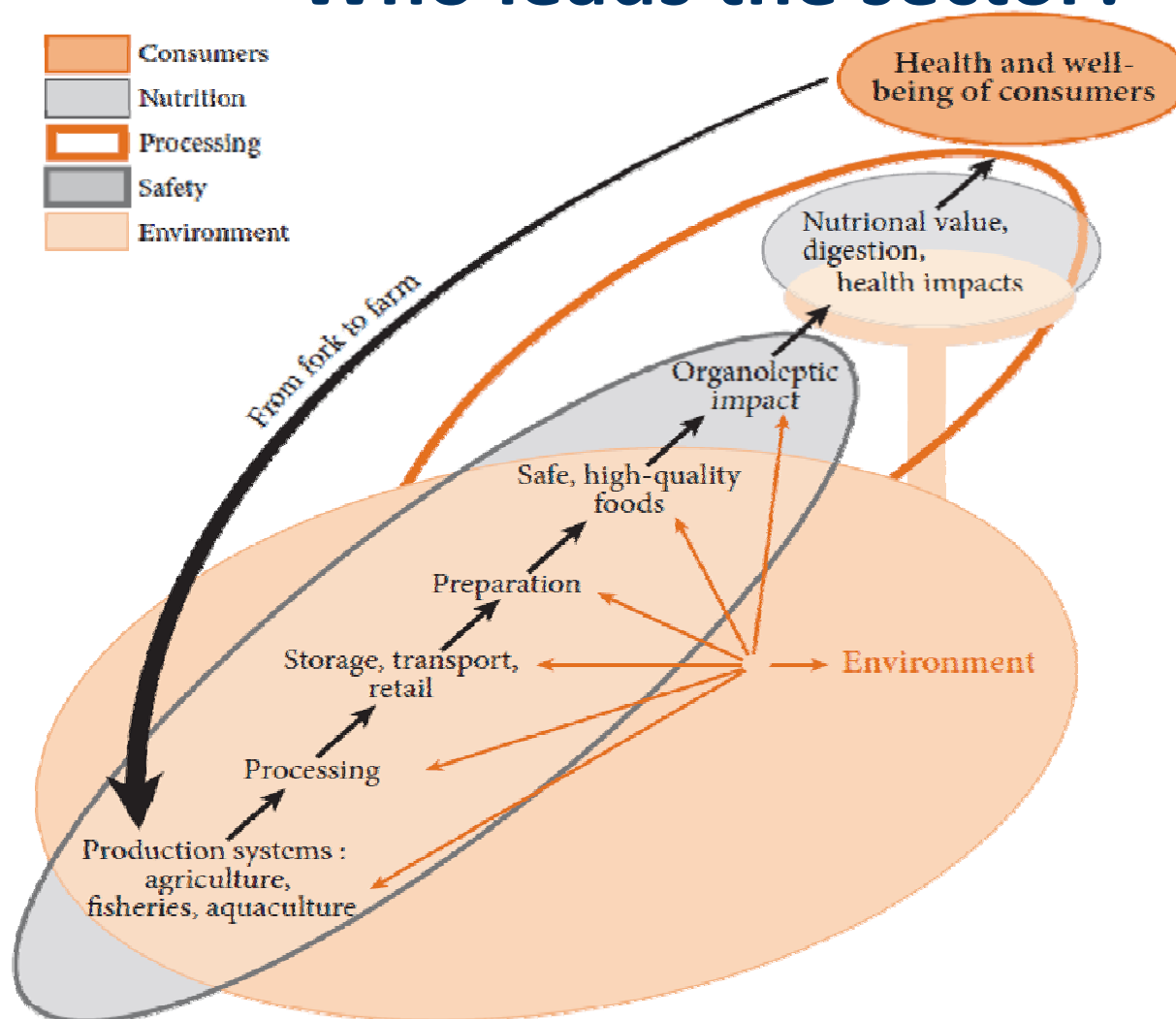


The bioeconomy in the European Union

Sector	Annual turnover (billion €)	Employment (thousands)	Data source
Food	965	4400	CIAA
Agriculture	381	12000	COPA-COGECA, Eurostat
Paper/Pulp	375	1800	CEPI
Forestry/Wood ind.	269	3000	CEI-BOIS
Fisheries and Aquaculture	32	500	EC***
Bio-based industries			
<i>Bio-chemicals and plastics</i>	50 (estimation*)	150 (estimation*)	USDA, Arthur D Little, Festel, McKinsey, CEFIC
<i>Enzymes</i>	0.8 (estimation*)	5 (estimation*)	Amfep, Novozymes, Danisco/Genencor, DSM
<i>Biofuels</i>	6**	150	EBB, eBio
Total	2078	22005	

*Estimation for Europe for 2009; **Estimation based on a production of 2.2 million tonnes bioethanol and 7.7 million tonnes of biodiesel at average market price in Europe; ***EC, Facts and figures on the CFP, Basic Statistics Data, ISSN 1830-9119, 2010 Edition

Who leads the sector?



Food manufacturing in the EU

Turnover

€1,017 billion
(+ 6.8% compared to 2010)

Largest manufacturing sector
in the EU (14.9%)

Employment

4.25 million people
(Stable compared to 2010)

Leading employer in the EU manufacturing
sector (15.0%)

SMEs

49.3% of food and drink turnover

63.4% of food and drink employment

External Trade

Exports €76.2 billion
(+ 16.6% compared to 2010)

Imports €63.0 billion
(+ 13.5% compared to 2010)

Trade balance €13.2 billion
Net exporter of food and drink products

Number of companies¹

287,000

Fragmented industry

Value added

(% of EU GVA²)

1.9%

Consumption

(% of household
expenditure)

14.5%

EU market share of global exports

16.5% (20.5% in 2002)

Shrinking share in world markets

R&D

(% of food and drink industry turnover)

0.53%³

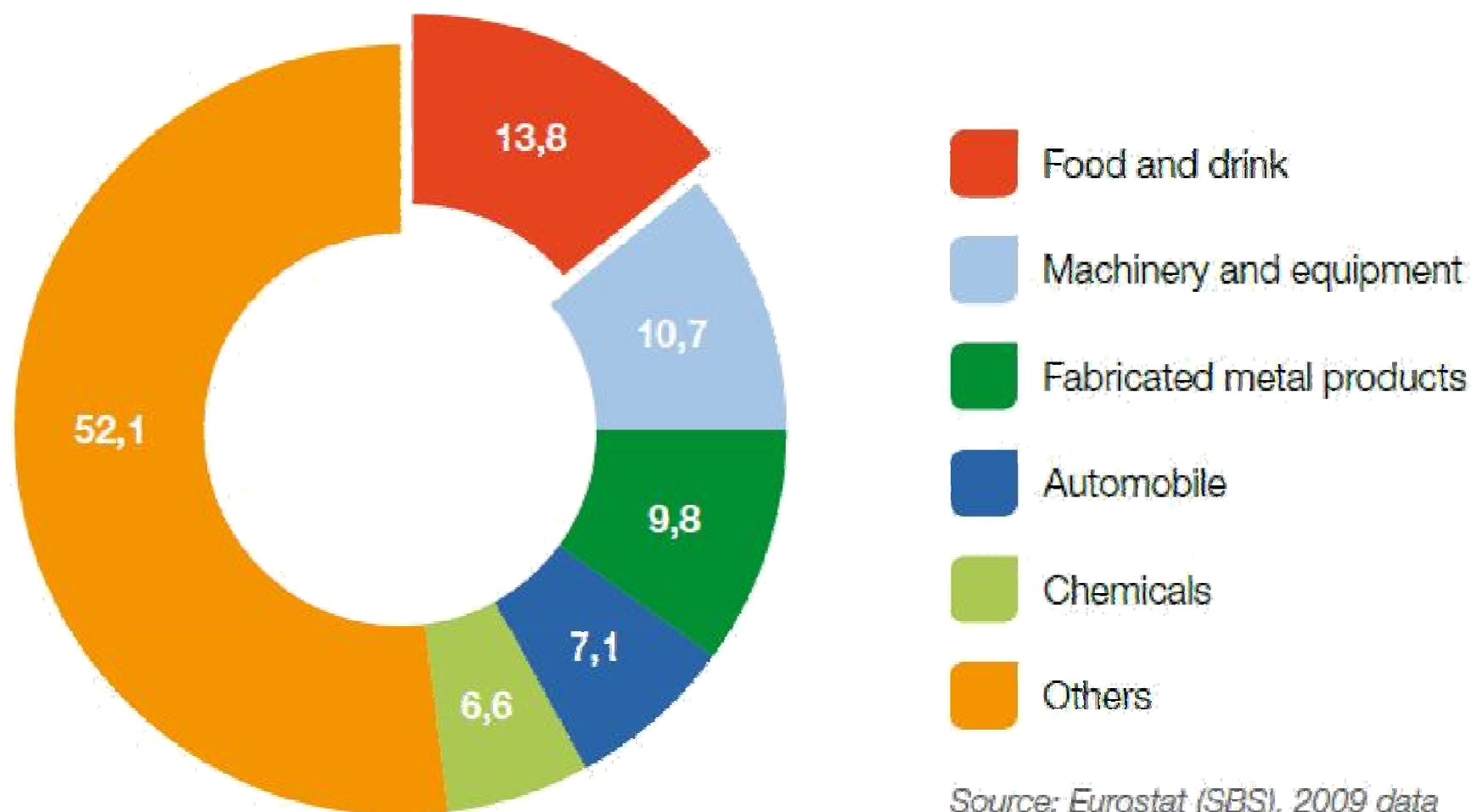
Sources: Eurostat, UN COMTRADE, OECD

(1) 2010 data

(2) For definition, see page 26

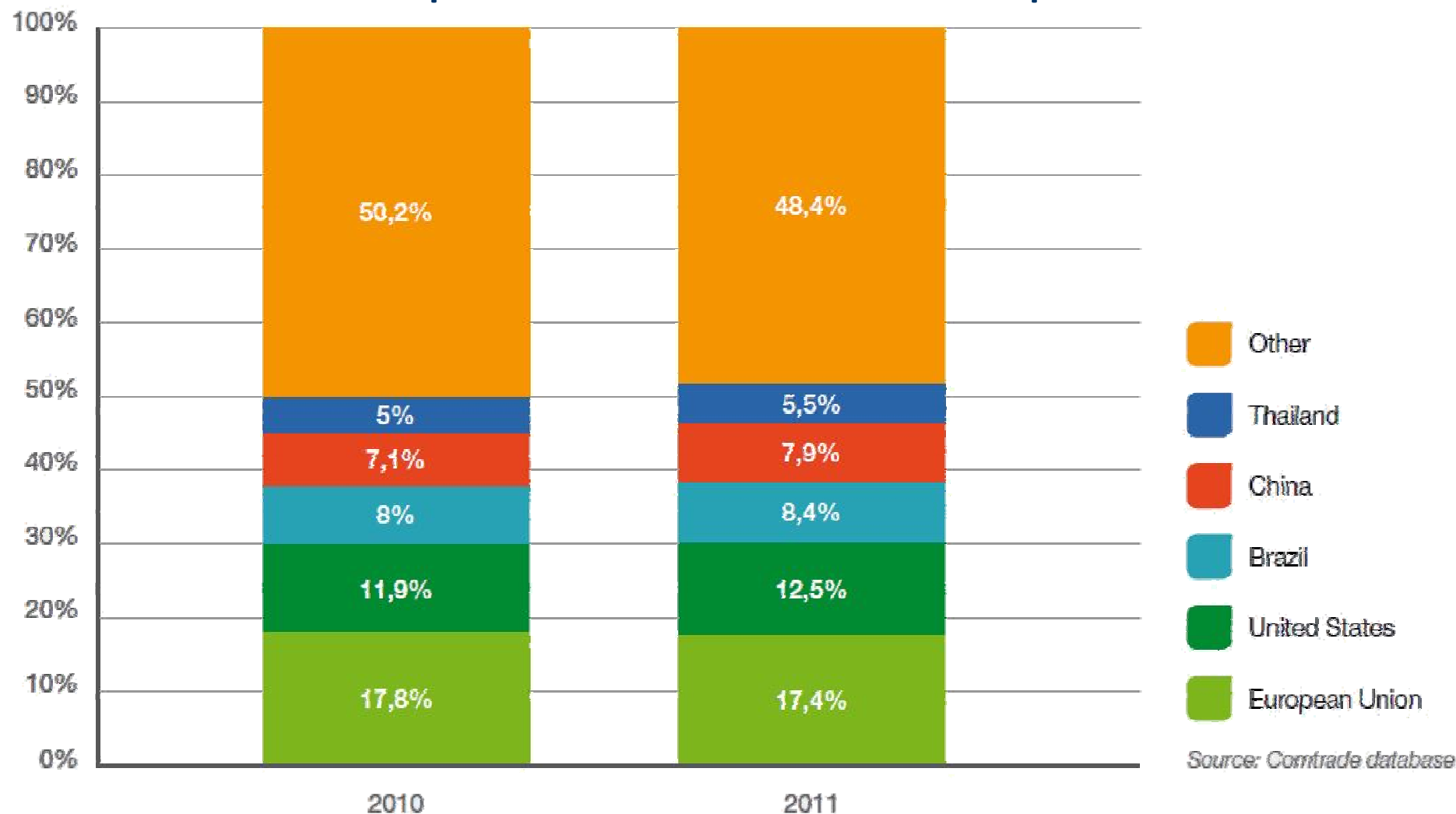
(3) 2009 data

The Importance of Food Sector in the EU

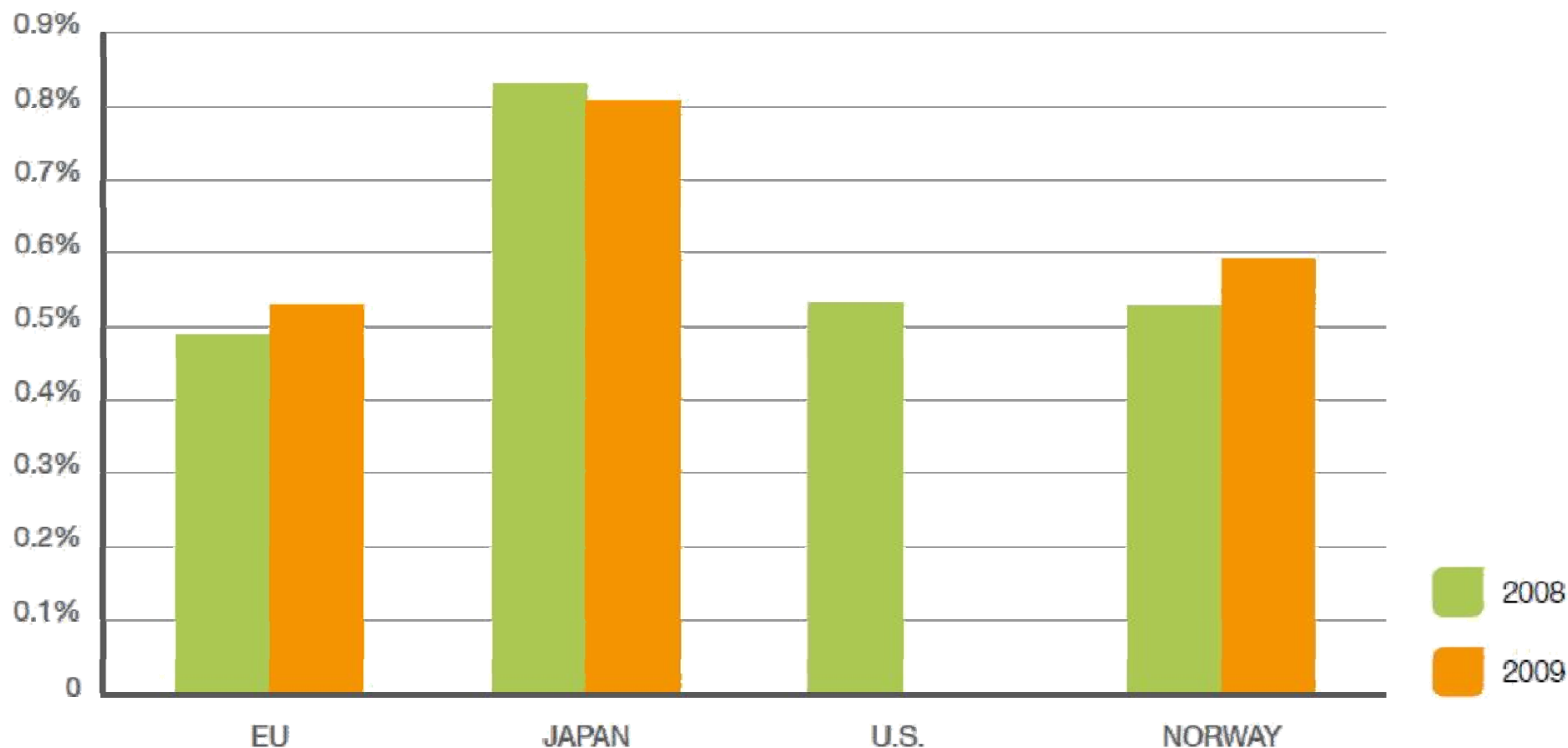


Source: Eurostat (SBS), 2009 data

International comparison of food and drink sector export market shares



Food and Drink private investment in R&D as a percentage (%) of turnover

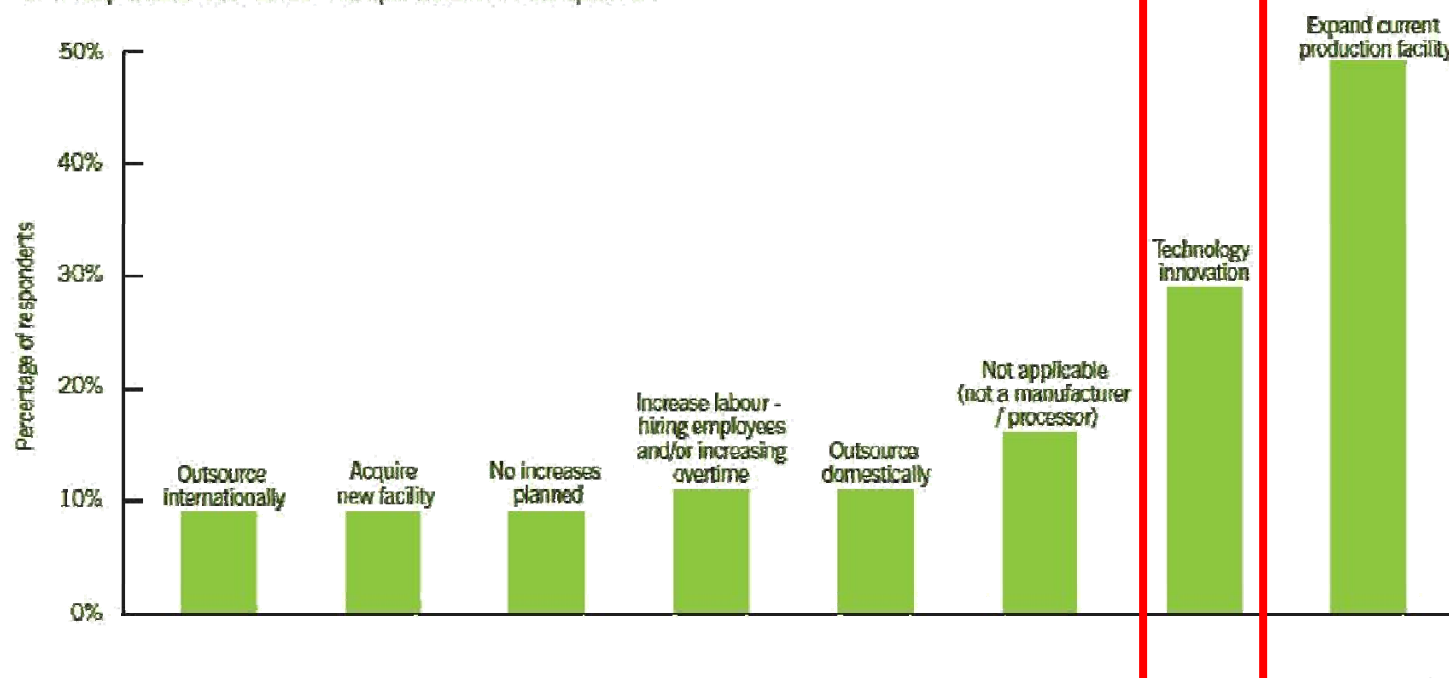


Source: OECD STAN indicators, Eurostat (SBS), FoodDrinkEurope national member federations, FoodDrinkEurope calculations.
Data refer to 19 of the 27 EU member countries.

Investments will be made by
most companies through expansion
of current facilities and technology
innovation.

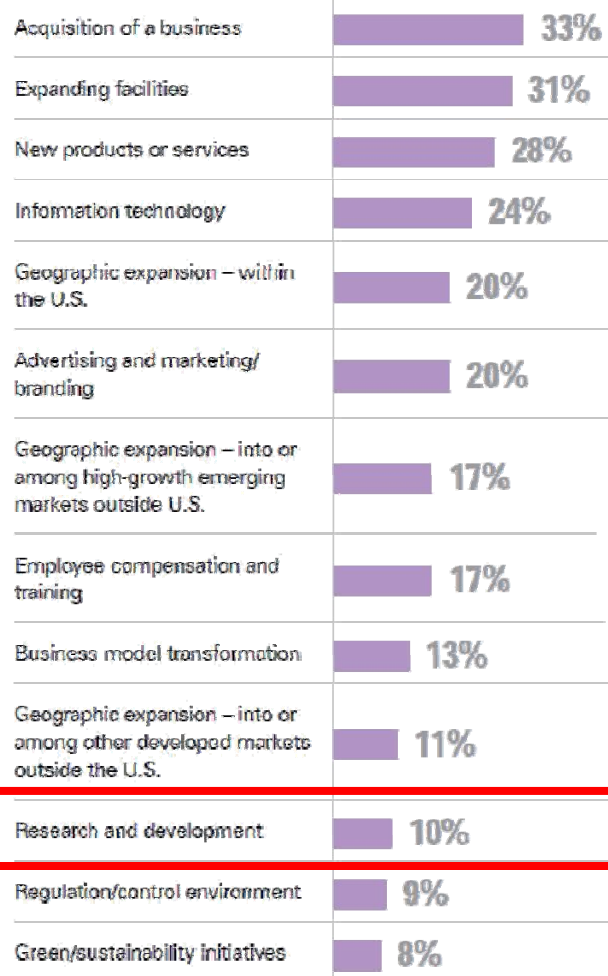
To increase production over the next two years, the group will most likely take the following actions:

NOTE: Respondents were allowed multiple answers for this question.

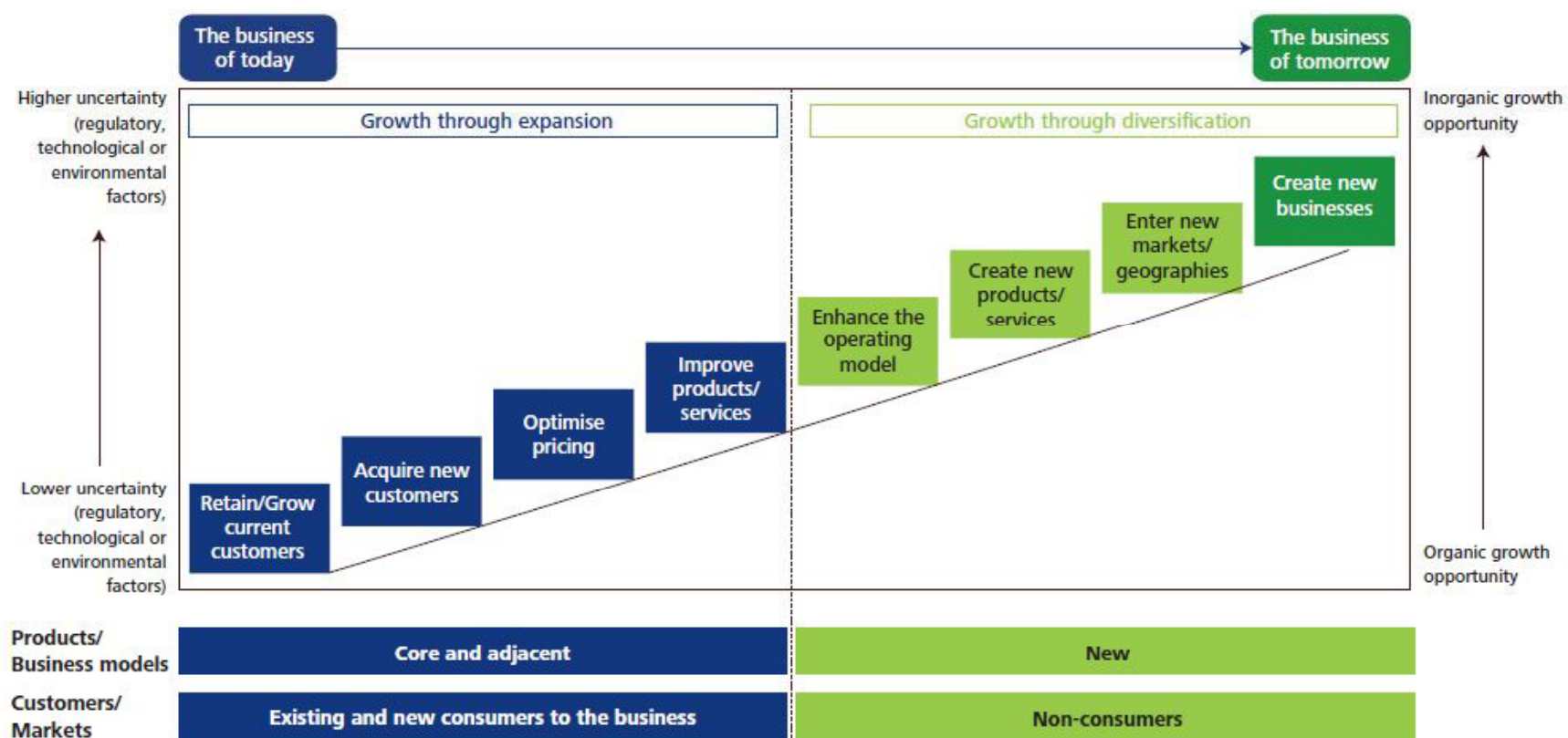


Areas of private investment in agrofood

Q: In which areas do you expect your company to increase spending the most over the next year?



Source : Deloitte "Food & Beverage 2020"



FoodDrinkEurope recommendation

- **R&D investments should have a central role** in the definition of **EU policies**, including an EU Industrial Policy and hence both private and public actors should increase their spending in R&D. Among others, **attention must be given to whether SMEs**, which represent 99.1% of the companies operating in the EU food and drink sector, **have the financial means to engage in R&D investment**, especially in the current economic climate. It is equally important that **public resources made available for investment in R&D** are widely communicated and understood by all types of companies in the sector and that procedures to access such funding are not overly burdensome.

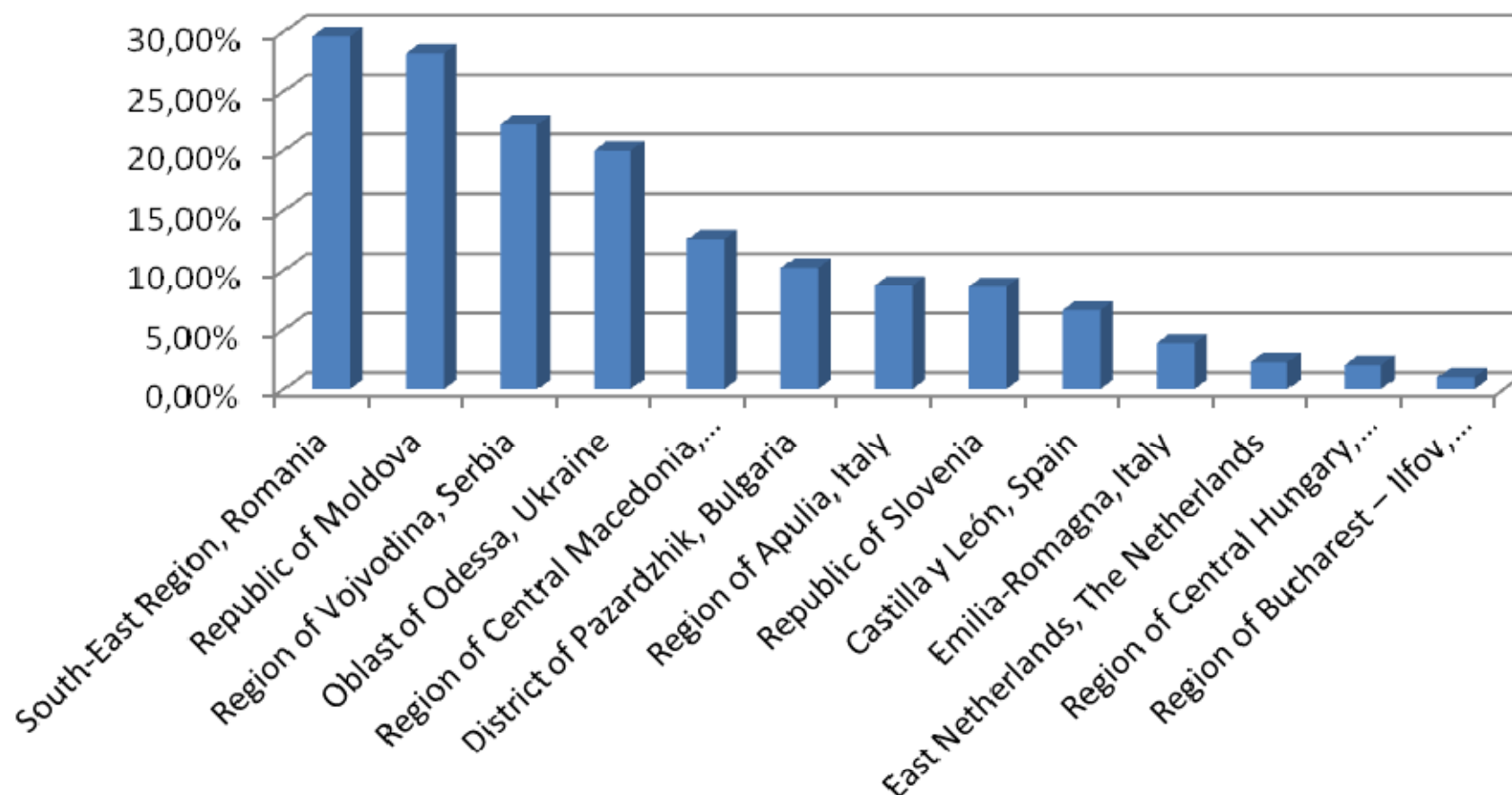
General Characteristics of InnFood SEE Regions

	Area (km ²)	Population	Population Density (inhabitants per km ²)	Total GDP (million €)	GDP per capita (€)	Unemployment Rate (15 years and over)
Region of Central Macedonia, Greece	19,147	1,956,233	102	32,285	17,900	19.5 %
Region of Apulia, Italy	19,363	4,090,402	211	68,900	16,932	13.1%
District of Pazardzhik, Bulgaria	4,456	273,803	61	906	3,089	9.4%
Region of Bucharest – Ilfov, Romania	1,821	2,226,457	1223	29,304	13,164	5.4%
South-East Region, Romania	35,762	2,848,219	80	12,542	5,368	10.1%
Republic of Slovenia	20,273	2,055,527	101	35,692	17,364	8.2%
Region of Central Hungary, Hungary	6,916	2,971,246	429	44,978	15,300	8.8%
Region of Vojvodina, Serbia	21,506	1,916,889	89	7,662	3,893	20.4%
Oblast of Odessa, Ukraine	33,310	2,387,349	71	13,846	5,800	7%
Republic of Moldova	33,846	3,559,510	105	53,000	1,489	6.7%

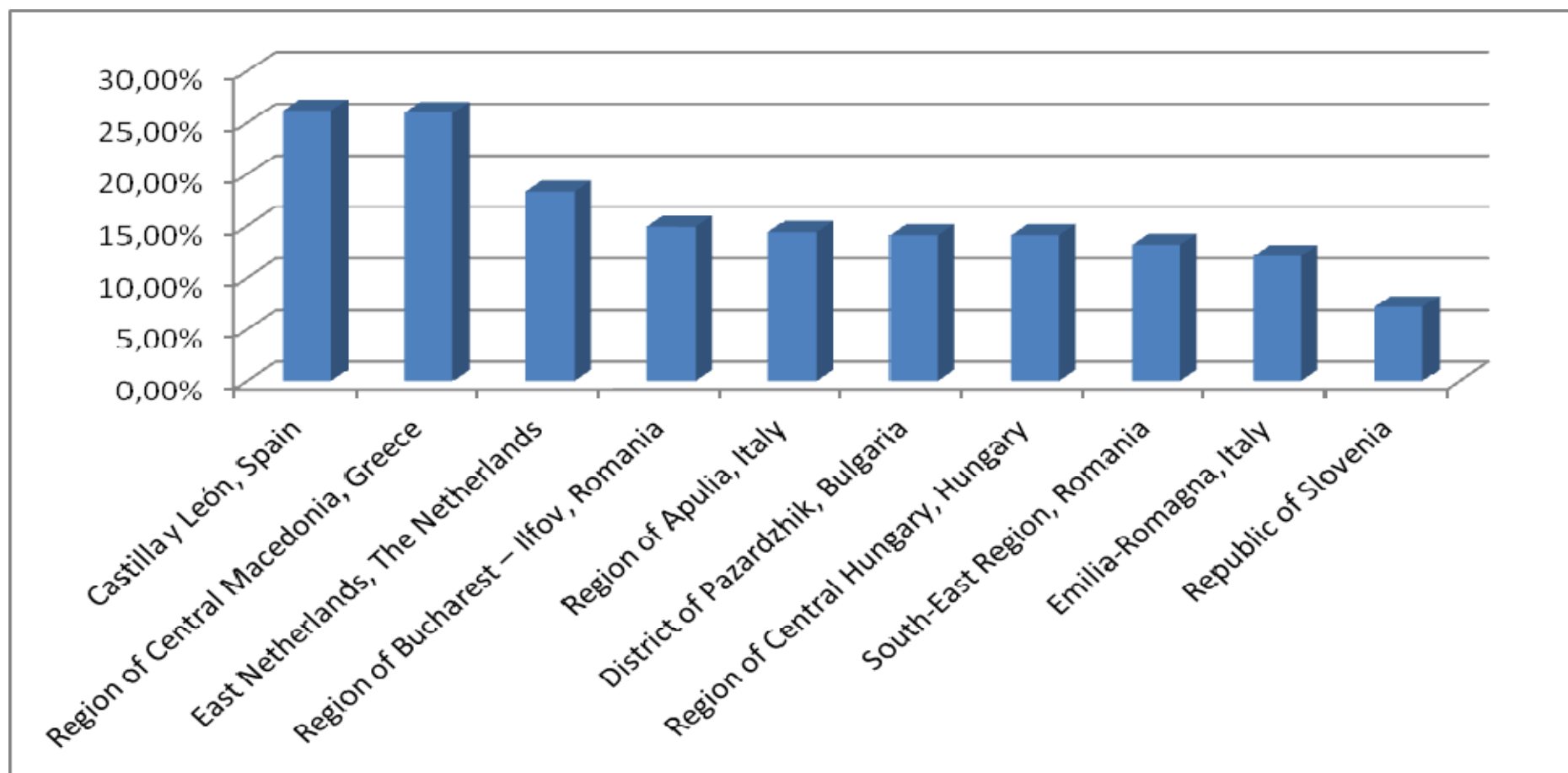
Agriculture and food industry Statistics

	Output Of The Agricultural 'Industry' (million €)	Primary sector GDP share	Exports of Food, drinks and tobacco (national figures, million €)	Specialisation in food products	Share of agriculture in total employment	Share of employment of the food and beverages industry in manufacturing total
Region of Central Macedonia, Greece	2,218.94	4.3%	3,798	Fruits, Cereals, Industrial Crops	12.6%	26%
Region of Apulia, Italy	3,063.26	3.5%	26,936	Dairy products; wheat and bakery; meat products; olive oil; grapes and wine	8.7%	14.4%
District of Pazardzhik, Bulgaria	544.68	3.8%	2,328	Cereals, seeds, vegetables, fruits	10.2%	14.1%
Region of Bucharest – Ilfov, Romania	151.04	0.3%	2,890	Cereals, oil plants, vegetables	1.0%	14.9%
South-East Region, Romania	2,045.11	22%			29.6%	13.2%
Republic of Slovenia	1,111	2%	1,145	Fruits, grapes and wine, animals and animal products	8.6%	7.2%
Region of Central Hungary, Hungary	61.94	3.5% (nation al, 2005)	N/A	Confectionery products Spices, Meat and meat products, Beverages	2%	14.1%
Region of Vojvodina, Serbia	N/A	12.7%	N/A	Cereals, industrial crops, fruits and animal products	22.2% (figure for Serbia)	N/A
Oblast of Odessa, Ukraine	N/A	9.4% (national figure)	N/A	Fat-and-oil, dairy and meat, canning, wine	19.98%	N/A
Republic of Moldova	N/A	12.2%	N/A	Wheat, maize, fruits, sugar beet and soybeans	28.18%	N/A

Share of agriculture in total employment



Share of employment of the food and beverages industry in manufacturing total



Map, analysis and benchmarking of policies, plans & initiatives relevant to Food innovation

	GRANTS FOR RTD COOPERATION	TAX & FINANCIAL INCENTIVES FOR INNOVATION	SME SUPPORT FOR THE RECRUITMENT OF RESEARCHERS	TRAINING OF RESEARCHERS	DEVELOPMENT OF INNOVATION CLUSTERS	DEVELOPMENT OF BUSINESS PARKS AND INCUBATORS
Region of Central Macedonia, Greece	■	■	■		■	
Region of Apulia, Italy	■	■	■	■	■	
District of Pazardzhik, Bulgaria	■	■	■	■		■
Region of Bucharest – Ilfov and South-East Region, Romania	■	■	■	■		■
Republic of Slovenia	■	■		■		■
Region of Central Hungary, Hungary	■	■	■	■		■
Region of Vojvodina, Serbia	■		■	■		■
Oblast of Odessa, Ukraine	■					■
Republic of Moldova	■			■		■

Map, analysis and benchmarking of policies, plans & initiatives relevant to Food innovation

Research Statistics					
		Expenditure in RTD as % of GDP	Researchers (Percentage of total employment - numerator in full time equivalents)	Employment in technology and knowledge-intensive sectors (% of total employment)	Biotechnology patent applications to the EPO (Per million labour force)
1.	Region of Central Macedonia, Greece	0.6%	0.47%	1.7%	0.604
2.	Region of Apulia, Italy	0.78%	0.3%	1.5%	1.765
3.	District of Pazardzhik, Bulgaria	0.21% (Yuzhen tsentralen region)	0.13%	1.6%	1.293 (Yuzhen tsentralen region)
4.	Region of Bucharest - Ilfov, Romania	1.09%	0.21%	5.9%	0.471
	South-East Region, Romania	0.17%		0.9%	0.066
5.	Republic of Slovenia	2.11%	0.8%	5.0%	2.4
6.	Region of Vojvodina, Serbia	0.72%	N/A	N/A	N/A
7.	Oblast of Odessa, Ukraine	0.86%	N/A	N/A	N/A
8.	Republic of Moldova	0.49%	N/A	N/A	N/A
9.	Castilla y León, Spain	1.15%	1%	2.6%	0.475
10.	Emilia-Romagna , Italy	1.37%	1.18%	3.0%	2.897
11.	East Netherlands, The Netherlands	1.84%	0.97%	3.3%	3.439
12.	European Union- 27 average (where available)	2%	1.15%	N/A	N/A

innovation performance of Inno-Food SEE Regions

Medium- High Innovators

- Slovenia
- East Netherlands

Average Innovators

- Central Hungary

Medium- Low Innovators

- Central Macedonia
- Puglia
- Bucharest – Ilfov
- Castilla y León
- Emilia-Romagna
- Serbia (Innovation Union Scoreboard for the country)

Low Innovators

- Pazardzhik
- South- East Region, Romania
- Ukraine
- Moldova

Profiling RTD entities

- The majority (~70%) of key agrofood R&D players report that they offer knowledge- based services to third parties, and thus exhibit an initial interest and drive to cooperate with the industry and engage in innovative activities with a view to exploiting their research efforts;
- The large majority (~75%) have reported participation in international research projects in the past 5 years;
- 80% of the examined agrofood R&D entities have reported international journal publications in the past 5 years;
- Approximately 35% have reported the existence of patents stemming from their research activities;
- A small number of spin- off companies has been reported

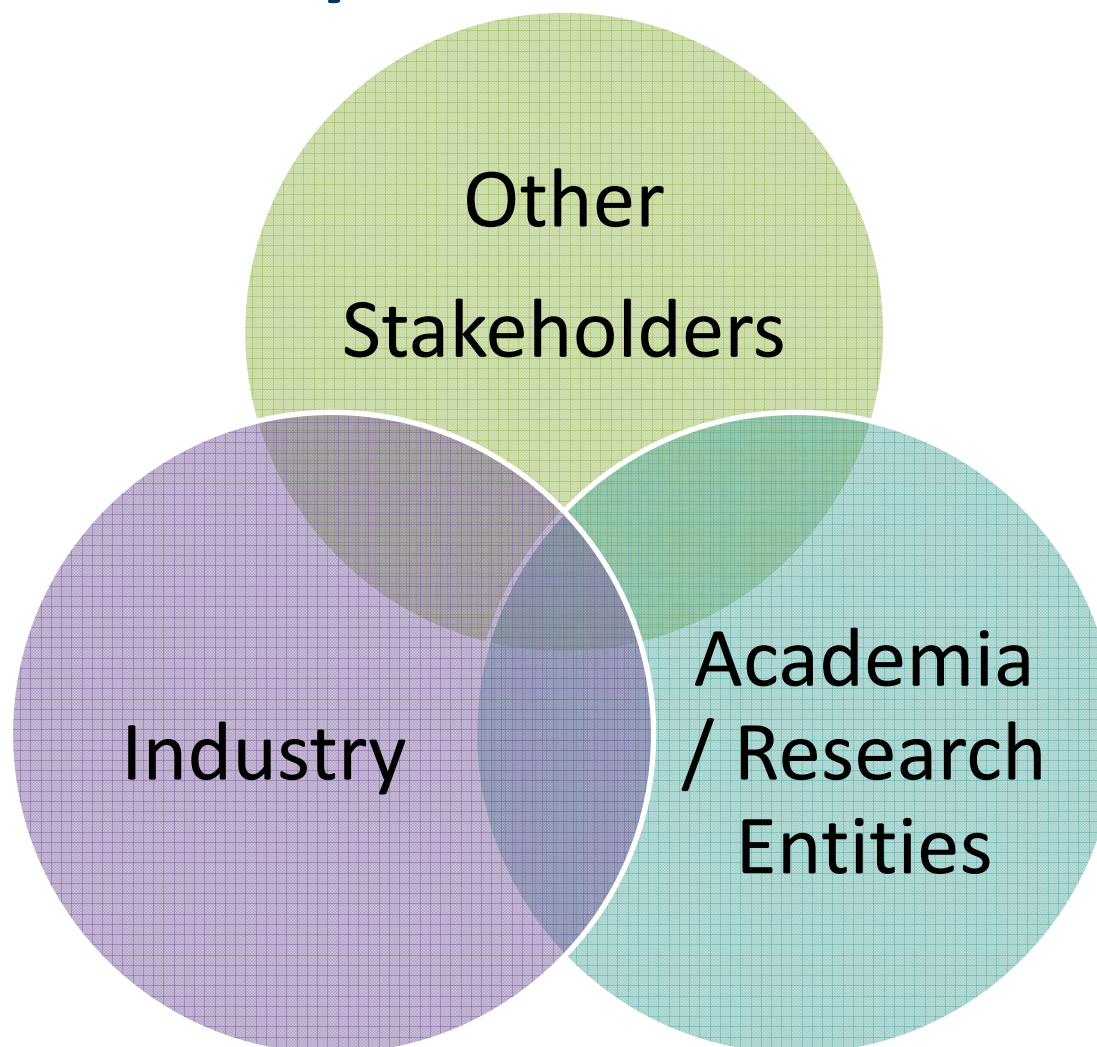
Technology Audits for the Agrofood SMEs

- The majority of the investigated food companies are either small or medium- sized. They are in business for a significant number of years; many are family- owned possibly have a rather traditional approach in their decision making, operation and approach to innovation;
- Their customer base is primarily regional and national, however a significant part is also directed to sell beyond the national borders;
- A significant portion- but not the majority- have some type of quality or food safety certification (usually HACCP and ISO9001; less frequently ISO22000, BRC, IFS, etc.);
- The majority (>80%) report that they include some reference to innovation in the company's "mission" or "vision" (with the notable exception of C. Macedonia where only 18% report such a reference);
- The main business areas where companies consider that innovation can have a significant impact are their production processes, followed by marketing and company organisation;
- Most companies consider that their own products score rather favourably in terms of their innovative characteristics in comparison to the market competition;
- The main source of innovation for companies is the acquisition of new process equipments that enhance their production capacities and allow them to develop new products. Patent acquisition, the operation of the internal RTD department and the development of external partnerships are also important sources of innovation;
- The majority of companies does not have a dedicated RTD department; the responsibility for innovation represents an additional task of existing departments, usually that of quality control;
- The companies consider themselves to be moderately depended on external technical expertise, while they consider to have an adequate level of skilled personnel to manage innovation (with the notable exception of C. Macedonia where the majority reports lack of skilled personnel);
- In most regions and countries, the majority of companies have been involved in some type of research/ innovation project relevant to their food products primarily in key areas such as product quality and process efficiency;
- In certain regions and countries the available public policies, initiatives and incentives were considered adequate for innovation support by a significant proportion of the surveyed companies; in other countries however, the majority were sceptical about their effectiveness.

SWOT analysis for Food Innovation

- "...to identify and evaluate the Strengths, Weaknesses, Opportunities and Threats that concern the development, transfer and adoption of knowledge and research results from the Food Industry and the possible obstacles and impediments for this process"
- Complemented with SOR (Strategic Orientation Rounds) methodology in order to arrive to valid strategies for strengthening Food RTD and Innovation in the Region

SWOT analysis for Food Innovation



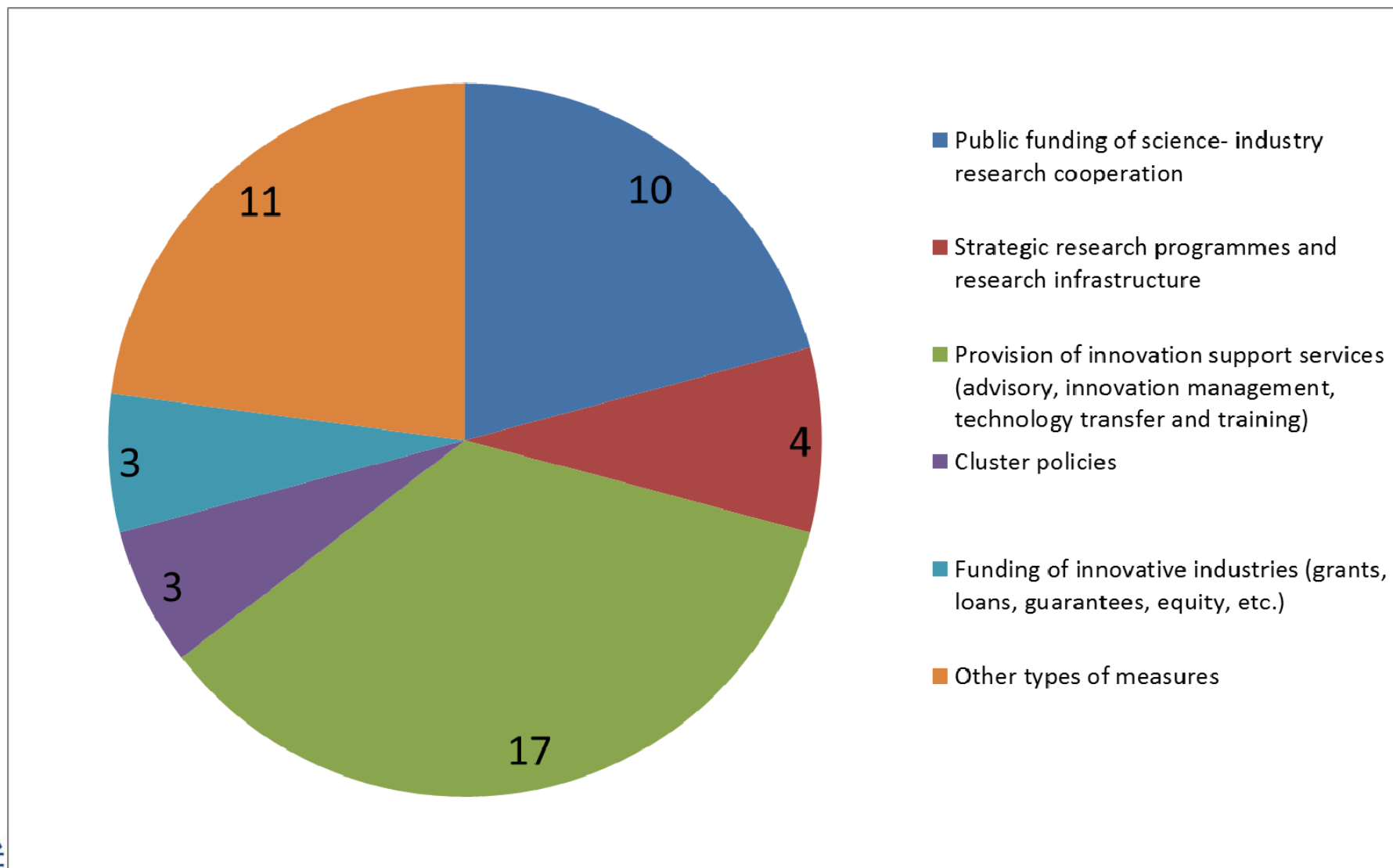
SWOT analysis for Food Innovation

STRENGTHS	WEAKNESSES
<p>Highly skilled personnel</p> <p>Strong research base - R&D system with high potential</p> <p>Public-private cooperation – Networking capability</p> <p>Increasing number of collaboration of RTDs with firms</p> <p>Importance of food sector</p> <p>Agrifood as priority sector</p>	<p>Low size of budget for R&D</p> <p>Not enough startups</p> <p>Poor linkage between firms and research entities</p> <p>Weak understanding between researchers and industry complicates joint projects</p>
Opportunities	Threats
<p>New R&D European and regional programmes</p> <p>Networking initiatives</p> <p>Availability of EU R&D funds for research</p> <p>Surplus of well-educated researchers</p> <p>Economic crisis</p>	<p>Bureaucracy barriers</p> <p>Failure to attract international researchers</p> <p>Brain drain</p> <p>Few incentives for university researchers to engage in collaboration with the industry</p> <p>Funding programmes to support research with content far from current research interests</p>

Recommendations for Food innovation policy formulation

- provide preliminary directions for the development of food innovation policies
- 46 recommendations for measures to boost food innovation
- **Type of Policy :**
 - *Public funding of science- industry research cooperation;*
 - *Strategic research programmes and research infrastructure;*
 - *Provision of innovation support services (advisory, innovation management, technology transfer and training);*
 - *Cluster policies;*
 - *Funding of innovative industries (grants, loans, guarantees, equity, etc.);*
 - *Other types of measures*

Recommendations for Food innovation policy formulation



Operational Plans for food RTD and innovation

Include measures such as:

- Supporting researcher mobility especially towards the Industry;
- Improvement and more efficient use of existing R&D infrastructure;
- Development of R&D projects (EU or National Funding);
- Matching of R&D results with R&D needs between research entities and Food SMEs;
- Networking between the involved actors and at a wider level with selected institutions and organisations from around Europe;
- Assistance to SMEs to more efficiently access business support schemes.

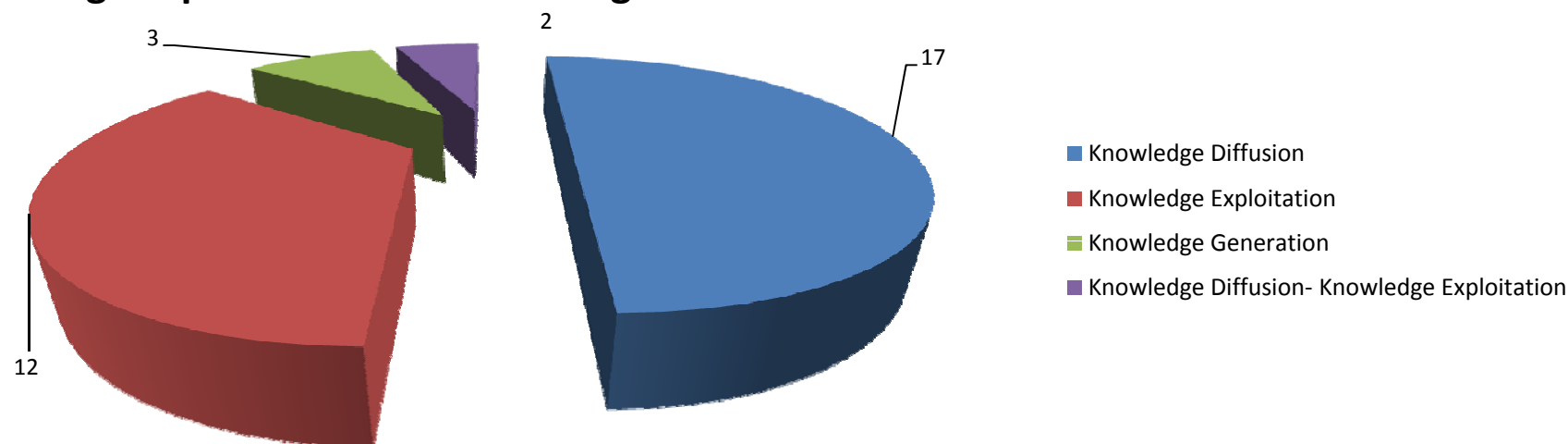
Operational Plans for food RTD and innovation

	Knowledge generation	Knowledge diffusion	Knowledge exploitation
Traditional instruments	Technology funds, R&D incentives/supports/grants Support for scientific research and technology centres Support for infrastructure development Human capital for S&T	Science parks Technology transfer offices and programmes Technology brokers Mobility schemes, talent attraction schemes Innovation awards	Incubators Start-up support Innovation services (business support and coaching) Training and raising awareness for innovation
Emerging instruments	Public-private partnerships for innovation Research networks/poles	Innovation vouchers Certifications/accreditations	Industrial PhDs Support for creativity and design Innovation benchmarking
		Competitiveness poles Competence centres New generation of scientific and technological parks and clusters Venture and seed capital Guarantee schemes for financing innovation	
Experimental instruments	Cross-border research centres	Open source-open science markets for knowledge	Regional industrial policy Innovation-oriented public procurement

Source: Nauwelaers, C. and A. Primi (forthcoming), *Innovation Policy and Regions: Policy Spaces, Strategies and Challenges*, Regional Development Working Papers, OECD Publishing, Paris.

Operational Plans for food RTD and innovation

The majority of proposed measures refer to Knowledge Diffusion, followed by Knowledge Exploitation and Knowledge Generation



Common characteristics in the Inno- Food SEE regions:

- need for awareness- raising on food innovation potential;
- practical approach to problem solving in the food industry;
- focus to widespread cooperation with all members of the agrofood value chain (clustering and development of synergies);
- Funding mechanisms at national/regional level.

Thank You!

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