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

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WORK PACKAGE 3: ANALYSIS OF POLICIES AND STRATEGIES FOR FOOD INNOVATION

D3.4- Recommendations for Food innovation policy formulation

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ERDF PP1	Federation of Industries of Northern Greece	SVVE	Greece
ERDF PP2	National Research Council- Institute of Sciences of Food Production	CNR/ISPA	Italy
ERDF PP3	Agricultural University of Plovdiv	AUP	Bulgaria
ERDF PP4	Pazardzhik Regional Administration	OAP	Bulgaria
ERDF PP5	National Institute of Research & Development for Food Bioresources	IBA	Romania
ERDF PP6	Constanta Chamber of Commerce, Industry, Shipping And Agriculture	CCINA	Romania
ERDF PP7	Development Agency of Idrija and Cerkno	ICRA	Slovenia
ERDF PP8	European Food Chain Parliament-Foodlawment	EEPF	Hungary
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Contents:
D3.4- Recommendations for Food innovation policy formulation

Abstract: a report that outlines basic directions for the development of food innovation policies and the introduction of food innovation in the industry of the participating regions.

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List of Acronyms and Abbreviations

Acronym/abbreviation	Resolution

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EXECUTIVE SUMMARY

This report outlines basic directions for the development of food innovation policies and the introduction of food innovation in the industry of the participating regions. The report builds upon the work of previous deliverables most notably 'D3.1- Map, analysis and benchmarking of policies' and 'D3.3- SWOT analysis for Food innovation', while employing a set methodology for the extraction of ideas for the formulation of food innovation measures.

The objective of the report is to provide preliminary directions for the development of food innovation policies (the key task in WP4 and mainly for the work in 'D4.2- Operational Plans for food RTD and innovation').

A total of 46 recommendations for measures to boost food innovation were drafted by the 6 participating ERDF countries. The majority relate to measures targeting the ***"Provision of innovation support services"*** while the presence of measures categorized as **"Public funding of science- industry research cooperation"** is also significant. Other types of measures targeting the customers or the students and researchers are also represented.

1. INTRODUCTION

1.1 GENERAL DESCRIPTION OF THE ACTIVITY

Under activity 3.4 of WP3- "Analysis of policies and strategies for food innovation", the partners prepared recommendations and suggestions for the formulation of relevant food innovation policies; based on the critical analysis of the existing food innovation policies (D3.1) and the SWOT analysis (D3.3), the partners prepared the current report that outlines basic directions for the development of food innovation policies and the introduction of food innovation in the industry of the participating regions.

The 'Recommendations for Food innovation policy formulation' will be subject to further elaboration in the framework of WP4 and more specifically for the drafting of the 'Operational Plans for food RTD and innovation'.

1.2 ROLES AND RESPONSIBILITIES

The Federation of Industries of Northern Greece (FING) led the activity and was responsible for setting up the appropriate methodology and tools for monitoring, integrating and homogenizing the deliverables.

Each partner contributed to the development of the deliverables- outputs that refer to its region/ country. In countries which are represented by 2 partners (e.g. a University plus an SME association) the partners cooperated for the development of the report and the roles are distributed according to the institutional role and the connection/ relation of each partner with the local stakeholders, e.g. the research entity or academic department focuses on policy recommendations relevant to research and the business association or regional authority focuses on policy recommendations relevant to the food industry.

2. METHODOLOGY

2.1 BASIC SOURCES OF INFORMATION AND INPUT

In order to reach to *'Recommendations for Food innovation policy formulation'* the partners will make use of two sets of information and input derived from previous project activities:

a. The critical analysis of the regional and national policies for food innovation performed under *D3.1- Mapping, analysis and benchmarking of policies,*

plans and initiatives relevant to food innovation in the South- East Europe area; and

b. The correlation of S, W, O and T factors, i.e. the exercise performed under *D3.3- SWOT analysis for Food innovation* and the subsequent Strategic Orientation Rounds for the elaboration of policy recommendations.

2.2 POLICY ANALYSIS

Under D3.1 the partners have resulted in particular key findings from the examination of the regional and national innovation policy framework and the preliminary description of the type of measures that could be applied. This was presented in particular in section 'Preliminary Assessment of National and Regional Innovation Policies and Plans'. An example from the policy analysis in the Region of Central Macedonia is presented below:

Public investment in knowledge is much below EU average and the public financing mechanisms are considered cumbersome and not regular	•Increase public investment of RTD programmes •Improve the public funding procedures and mechanisms in support of RTD
The **quality of research** is of EU and OECD comparable standards although probably food related research is not as much developed	•Place more emphasis on food specific research by introducing specific measures for the food industry given its importance for the national and regional economy •Emphasise and suppport international RTD cooperation
The **private sector** does not sufficiently invest in RTD and the **interaction** between knowledge entities and the industry is lagging	•Provide tax and other incentives for the industry to invest in innovation •Reinforce the mechanisms for enhanced RTD cooperation and interaction
Commercialization of research results as evident from IPR indicators and patents is coming short of international standards	•Built and reinforce IPR support and other innovation enabling mechanisms such as incubators, technology consultants
The number of **highly skilled personnel** in industry is not sufficient; lifelong learning indicators are falling back	•Introuce more incentives for SMEs to hire highly skilled personnel that will enhance their innovation profile and support the adoption of research resutls to their operations
Significant drawbacks are evident in **Innovation Finance** and **Market Conditions**	•Introduce more subsidies and tax incentives for R&D •Introduce pre-commercial procurement procedures in government practices •Remove open competition barriers

These results were further enhanced by the results of the SWOT analysis and SOR methodology (D3.3).

2.3 SWOT ANALYSIS AND SOR METHODOLOGY

SWOT analysis Matrix		External Environment	
		Opportunities	***Threats***
Internal Environment	***Strengths***	How do you leverage your strengths to the benefit of your opportunities?	How do you use your strengths to minimize the impact of threats?
	Weaknesses	How do you ensure your weaknesses will not stop you from opportunities?	How will you fix weaknesses that can make threats have a real impact?

Under activity 3.3, the partners with the help of the regional and national stakeholders have identified the following key aspects that should allow them to focus on their policy recommendations:

a) The most important Strengths, Weaknesses, Opportunities and Threats (S, W, O and Ts) that refer to the regional/ national food SME base and food RTD system;
b) The strongest correlations of S, W, O and Ts;
c) The type of strategy they should follow, (i.e. Attack, Defence, Clean Ship/ Reorientation and Crisis) and how this should be implemented.

Below is an indicative example of how the strategic objectives derived from the SWOT analysis/ SOR methodology can be phrased:

"Exploiting the leading role of the regional Food industry in the wider geographical market and the improved physical infrastructure and EU integration procedures and investing more in innovative food products and processes to retain and expand this competitive advantage".

2.4 METHODOLOGY- SYNTHESIS

The partners **synthesized** the results from the two previous steps (*4.1 Policy analysis* and *4.2 SWOT analysis/ SOR*) in order to arrive to regional/ national food innovation support policy recommendations. Essentially the partners **merged** the results of the two steps and

focused and elaborated on approximately 10-12 food innovation support policy recommendations. The following structure was used for the presentation:

Policy recommendation	*(use a short inclusive phrase to describe the policy recommendation, e.g. Updating of academic curricula to match current food innovation trends)*
Type of Policy	*(chose between the following options:* • *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*
Rationale	*(describe why there is a need for such a policy, what kind of problems it could address, etc.)*
Description of Policy recommendation	*(elaborate on the policy objective, content, measures, etc.)*
Responsibilities	*(provide suggestions as to who should be involved in the formulation and the elaboration of the policy)*
Time horizon for the implementation	*(short term, medium term or long term)*
Geographical scope of the Policy	*(i.e. regional, national, etc.)*
Funding necessary	*(if funding is necessary for the implementation of the policy, please provide a rough estimate)*
Similar Policies implemented elsewhere	*(provide some examples of similar policies and measures that have been implemented elsewhere)*

3. REGION OF CENTRAL MACEDONIA, GREECE

3.1. BRIEF PRESENTATION OF THE EXISTING INNOVATION SYSTEM

3.1.2 RESEARCH AND INNOVATION GOVERNANCE AT A NATIONAL LEVEL

With regard to innovation policy, the Greek General Secretariat for Research and Technology (GSRT) is responsible mainly for supply side policies, the strengthening of the public research sector, the development of technologies in priority areas and the transfer of research results, technologies and knowhow to industry. Demand side policies are mainly under the aegis of the General Secretariat for Industry, which is responsible for policies stimulating the demand for new technologies by firms. The Ministry of Economic Development, Competitiveness and Shipping (MEDCS) manages the National Strategic Reference Framework (NSRF) which is the main funding source for research and innovation.

The ***"Strategic Plan for the Development of Research, Technology and Innovation under the National Strategic Reference Framework 2007-13"*** [1] is the key national research and innovation policy document. Drafted by GSRT in 2007, it details the national research and innovation strategy with the main the main objective of **restructuring the Greek economy, gearing it towards high value added products and services and achieving the transition to the knowledge economy and society**.

3.2.2 INNOVATION GOVERNANCE AND FUNDING AT A REGIONAL LEVEL [2]

Until the Kallikratis plan of January 2011 (aiming at the restructuring of the decentralised administration and the reduction of the number of municipalities), regions in Greece had limited administrative and budgetary autonomy. The latest reform increases the autonomy of the region by transferring powers from central government to the regional authorities. The scope of the powers transferred has not yet been fully determined but is almost certain to include the overall development strategy of the Regions and potentially the RTDI sector.

Until now the common practice has been for regional authorities to cede part of the regional budget to GSRT, which launched common calls for more regions, under the precondition that

[1] http://www.gsrt.gr/ContentManagement/Files/ContentFiles412/%CE%A3%CE%A4%CE%A1%CE%91%CE%A4%CE%97%CE%93%CE%99%CE%9A%CE%9F.doc

[2] Adapted from "Mini Country Report/ Greece", December 2011, INNO Policy TrendChart/ ERAWATCH, http://www.proinno-europe.eu/sites/default/files/page/11/12/Greece_TC_final.pdf.

an equal amount of money would be directed to the regions for funding RTDI actions through GSRT's programmes. However, the problem with the involvement of the region's innovation policy making was not mainly the lack of authority and of financial resources but the lack of capacity and capability in policy making. Thus, in practice the design of RTDI measures is actually done by General and Special Secretariats of the corresponding Ministries, while the monitoring of the measures of the Regional Operational Programmes (2007-2013) for the 13 Regions is the responsibility of the Intermediate Managing Authority (IMA) of the corresponding Region.

It is important to note that the **Operational Plan Macedonia- Thrace 2007- 2013** sets the *Priority Axis 4- Digital Convergence and Entrepreneurship* also features the following special **objectives** that are relevant to the promotion of innovation in the food industry:

- **Strengthening the regional fabric of research, entrepreneurial and innovative structures** (Thessaloniki Innovation Zone, Innovation Pole of Central Macedonia, system of Incubators, spin-off companies, and clusters of technology companies).
- **Strengthening regional business clusters** that have positive prospects or have strong needs.
- **Strengthening the competitiveness of enterprises** in the secondary and tertiary contributing to regional competitiveness. Focus on quality improvement, standardization and certification of products and services.
- **Promoting the regional linkages with the international markets** and establishing cooperation with international companies, focusing on areas of comparative advantage.

Indicative **activities** are as follows:

- Development of the infrastructure of Research, Technology and Innovation centres necessary for the deployment of the National RTD Strategy;
- Development of National Sectoral Poles for Research and Technological Development;
- Development of Thematic Networks of advanced RTD and reinforcement of cooperative schemes of enterprises with support mechanisms;
- Increase of the competitiveness and internationalisation of enterprises, employment and quality of life through research projects in sectors and activities that are important for the Greek industry;
- Reinforcing the transformation of knowledge to innovative products, processes and services and the transfer of knowledge and technology to enterprises (establishment

of Spin-offs, supporting the demand and offer of RTD for SMEs, support of incubators, support for the acquisition of commercial patents, pre-incubation, etc.).

3.2.3 RESEARCH AND INNOVATION FUNDING AND MEASURES

EU Structural Funds remain the most important funding source for the Greek National Innovation System. In terms of allocated budgets, the bulk of funding is distributed through horizontal research and innovation measures and through measures aiming at the promotion, creation and growth of innovative enterprises, as in the recent past. Less attention is given, both in terms of funding and number of measures, to sectoral or thematic policies. Until the recent past, demand side innovation policy measures have constituted only a fraction of innovation related measures. This situation appears to be gradually changing as a result of the recognition of the need to increase the absorptive capacity of the Greek economy and the need to restructure the production model. At the same time, the ineffectiveness of the large number of supply side measures, launched in the past to improve the overall innovation performance of the private sector, acts as a catalyst towards the gradual introduction of demand side measures, as does the influence of the wider policy debate and corresponding EU initiatives.

In practice the **design** of RTDI measures is actually done by General and Special Secretariats of the corresponding Ministries, while the **monitoring** of the measures of the Regional Operational Programmes (2007-2013) for the Regions is the responsibility of the Intermediate Managing Authority (IMA) of the corresponding Region. Below are presented the particular measures/ funding lines already launched provided under the Strategic Plan for the Development of Research, Technology and Innovation (by April 2012). As evident they were not particularly focused to food but they were certainly open to this domain. The measures cover research cooperation between industry and RTD entities, scientific excellence, employment of researchers in industry, clustering of innovative businesses, innovation coupons and bilateral RTD cooperation with other countries. Measures under the Strategic Plan will continue to be launched until the end of the OP Development II (end of 2013).

3.2. POLICY ANALYSIS

The main findings from the examination of the innovation policy framework conditions in the Region of Central Macedonia are presented below along with a preliminary description of the type of measures that should be applied:

Public investment in knowledge is much below EU average and the public financing mechanisms are considered cumbersome and not regular	•Increase public investment of RTD programmes •Improve the public funding procedures and mechanisms in support of RTD
The **quality of research** is of EU and OECD comparable standards although probably food related research is not as much developed	•Place more emphasis on food specific research by introducing specific measures for the food industry given its importance for the national and regional economy •Emphasise and suppport international RTD cooperation
The **private sector** does not sufficiently invest in RTD and the **interaction** between knowledge entities and the industry is lagging	•Provide tax and other incentives for the industry to invest in innovation •Reinforce the mechanisms for enhanced RTD cooperation and interaction
Commercialization of research results as evident from IPR indicators and patents is coming short of international standards	•Built and reinforce IPR support and other innovation enabling mechanisms such as incubators, technology consultants
The number of **highly skilled personnel** in industry is not sufficient; lifelong learning indicators are falling back	•Introuce more incentives for SMEs to hire highly skilled personnel that will enhance their innovation profile and support the adoption of research resutls to their operations
Significant drawbacks are evident in **Innovation Finance** and **Market Conditions**	•Introduce more subsidies and tax incentives for R&D •Introduce pre-commercial procurement procedures in government practices •Remove open competition barriers

3.3. KEY POINTS FROM THE SWOT ANALYSIS AND ROUND- TABLE SYNTHESIS MEETING

The key points from the **SWOT Analysis** and the **Round- Table Synthesis meeting** are as follows:

Key Findings related to the regional Food Industry Environment:

- The food industry is a "traditional" industry with modest investments in RTD; it is **not considered a hi-tech industry**, most solutions are at the level of implementing best practices and techniques;
- The majority of the food industries in the Region of Central Macedonia are focusing on innovation techniques and results related to **New Product Development**; **Consumer trends drive innovation in the food industry**; New Product Development and **"marketing" innovation** is considered to provide more immediate results than **"technological" innovation**;
- Food companies are in particular interested in **"synergistic" innovation**, i.e. one that serves different purposes at the same time, e.g. packaging of products that a) serves the practicalities of food preservation, transport, hygiene, etc., b) acts as a marketing and promotional tool to the consumer and c) has a minimal environmental and energy footprint;
- It was suggested by food industry representatives that significant problems exist with regards to the **non- availability of raw materials for food production on a national level**;
- In most cases the **key "source" of innovation for the food industry are the suppliers of equipment and particular food experts/ technicians** that support companies e.g. in the setting up of a new production line; cooperation with research entities is less frequent as in most cases they do not exhibit the level of flexibility and reactiveness requested by the industry;
- **Public administration** bureaucratic procedures and constant changes often hinder the positive forward- looking initiatives of the private sector.

Suggestions to improve the regional Food Industry Environment

- It is important that **each region specializes in the food production** in which it has a competitive advantage and to differentiate with high quality, specialty foods, e.g. **Protected designation of origin** (PDO) products;
- Research and academia should focus on the **accreditation** of their innovation and analytical **services**, the delivery of services for the **training of personnel** to new innovative techniques, etc.
- The implementation of **pilot units and infrastructure for the testing** and development of new food products was also highlighted;
- **Market conditions** should improve, e.g. **state regulations** about different industry sectors create problems in the implementation of various project ideas;
- Incentives for the implementation of RTD and innovation projects, e.g. **tax deductions and exemptions** are significant; however this regime should be clarified so that more companies take advantage;
- Schemes for the **mobility of researchers towards the industry** should be a key instrument in linking the academic community with the industry;
- The research community should focus more to the development of **services** specially designed for the needs of the national food industry;
- **Technology brokerage** should be reinforced; it is important to **systematically map** the **innovation capacities** of the regional research institutes and **innovation needs** of the industry;
- Food companies consider **in- depth food market surveys** as very valuable and significant for their needs;
- Food companies are of the opinion that it is not necessary to develop a standard-typical research project in order to reach to the objective, i.e. tangible new products, improvements, etc. **Smaller in focus and targeted initiatives** are perhaps more suitable for the needs of the particular companies;
- It was suggested that food SMEs and research units are combined in various **"thematic" and "technological" groups** in order to set the basis of a systematic and regular cooperation among them;

- A **systematic and professional approach** is necessary on order to reach to tangible results as it is quite usual that similar cooperation efforts between research and industry are not being systematically followed up;
- It was suggested that **a forum of regional stakeholders from industry, research-academia, agencies and authorities, consumers and special groups, consultants, etc. focused to food innovation is created**; this should convene regularly and systematically push the agenda for cooperation; it should act as a platform for the exchange of information and opinions and as an opportunity for technology transfer based on request and offer;
- **Educating the customer** is very important; it should start from the very early ages; it is important because it highlights the importance of **quality of local foods, their originality and traditional character** and promotes quality- traditional- local food to a growing clientele;
- It is important that more food companies' staff is **actively involved** in the **entrepreneurial innovation discovery process;**
- It is important that the "food innovation forum" that emerges from this initiative pushes forward particular measures to be included in the forthcoming programming period 2014- 2020; the process of developing the new **regional Operational Programmes** and the related **smart specialization strategy** is underway; primary agricultural production and food processing are traditionally among the key regional priorities;
- It was suggested that the regional Operational Programmes are more **focused and pragmatic** (in comparison to the national- wide ones); the priorities should be relevant to the regional needs and capacities (smart specialization strategy).

3.4. SYNTHESIS OF POLICY RECOMMENDATIONS

Below we present a number of policy recommendations for boosting the food innovation potential of the Region of Central Macedonia:

Policy recommendation	***1. Food Innovation Forum***
Type of Policy	• *Cluster policies*
Rationale	*Although all regional stakeholders recognise the necessity of innovation and the value of cooperation between research and academia, it is quite usual that cooperation efforts between research and industry usually start up but are not systematically followed up. A systematic and professional approach is necessary on order to reach to tangible results.*
Description of Policy recommendation	*A forum of regional stakeholders from industry, research- academia, agencies and authorities, consumers and special groups, consultants, etc. focused to food innovation. The forum acts as a platform for the exchange of information and opinions and as an opportunity for technology transfer based on request and offer.* *Food SMEs and research units are combined in various "thematic" and "technological" groups, they set objectives, scope of work, activities, responsibilities and timeframe and in general they set the basis of a systematic and regular cooperation.*
Responsibilities	*FING and CERTH- INEB coordinate the activities, definition and mobilisation of thematic groups, follow- up and monitoring, facilitation of cooperation. The thematic groups are then practically run with the initiative of the members (industry, RTD entities, etc.) on the basis on common interest to proceed with particular actions that will bring positive results for all.*
Time horizon for the implementation	*Short term in terms of the setting- up, long term in terms of the results*
Geographical scope of the Policy	*The scope is regional; however it should not exclude national or even international involvement.*
Funding necessary	*Funding is not necessary per se for the mobilisation of the forum. As for the research projects that may arise, companies and research*

	entities can of course look for national and international funding opportunities
Similar Policies implemented elsewhere	*The development of the various food clusters that can be found in the Netherlands, Britain, France, Italy, etc. have started more or less in such a fashion which is necessary to "test" the readiness and feasibility of various cooperation opportunities.*

Policy recommendation	***2. "Reinforcing Regional Technology Brokerage Performance"***
Type of Policy	• *Provision of innovation support services (advisory, innovation management, technology transfer and training)*
Rationale	*In the majority of cases the food industry does not know what the regional RTD entities can offer while at the same time the RTD entities do not know the exact needs of the industry. It is important to systematically map the innovation capacities of the regional research institutes and innovation needs of the industry.*
Description of Policy recommendation	*Build if possible on the existing Technology Brokerage structure (Enterprise Europe Network? University Liaison Office? CERTH Liaison Office?) while putting a specific focus to agrofood innovation capacities and needs. This activity could be fed with the particular results of the Food Innovation Forum (see above).*
Responsibilities	*Enterprise Europe Network? University Liaison Office? CERTH Liaison Office?*
Time horizon for the implementation	*Medium term in terms of the setting- up, long term in terms of the results*
Geographical scope of the Policy	*Regional*
Funding necessary	*This is mainly a coordination activity of things that the brokerage entities undertake on an everyday basis; no particular funding is necessary.*
Similar Policies implemented elsewhere	-

Policy recommendation	***3. Mobility scheme for food science researchers***
Type of Policy	• *Public funding of science- industry research cooperation;*
Rationale	*Mobility of researchers towards the industry is a key instrument in linking the academic community with the industry.*
Description of Policy recommendation	*To subsidise enterprises for the employment of researchers and technicians in implementing particular research projects for a period of 1- 3 years.*
Responsibilities	*General Secretariat for Research and Development, Regional Intermediary Managing Authority.*
Time horizon for the implementation	*Medium term; it should be included in the next programming period (2014- 2020) structural funds programmes.*
Geographical scope of the Policy	*Regional; however previous programmes were implemented by GSRT on a national level.*
Funding necessary	*A similar 15M€ researcher mobility programme was implemented in the framework of the previous GSRT 2007-2013 programming period.*
Similar Policies implemented elsewhere	*The previous GSRT 2007-2013 researcher mobility programme: Supporting businesses in employing personnel of high research profile: The measure covers 70% of the salaries for the employment of a maximum of 2 researchers and technicians per enterprise for implementing research projects for them for a period of 18-36 months. Scientific areas cover: natural sciences, engineering sciences; space, life sciences; information and communication sciences and technologies; human and social sciences; energy, environment, transport*

Policy recommendation	***4. Accreditation of the services provided by the research entities***
Type of Policy	• *Provision of innovation support services (advisory, innovation management, technology transfer and training)*
Rationale	*Research entities should become more extrovert and open to look into the actual needs of the companies; they should focus more to the development and implementation of services for the companies. Research and academia should focus on the accreditation of their innovation and analytical services, the delivery of services for the training of personnel to new innovative techniques, etc.*
Description of Policy recommendation	*Provide funding to research entities in order to proceed to the accreditation of their innovation and analytical services, the delivery of services for the training of personnel to new innovative techniques.*
Responsibilities	*Regional Intermediary Managing Authority for the design and funding of the measure*
Time horizon for the implementation	*Medium term.*
Geographical scope of the Policy	*Regional and national*
Funding necessary	*???*
Similar Policies implemented elsewhere	-

Policy recommendation	***5. Internationalisation of regional food SMEs***[3]
Type of Policy	• *Funding of innovative industries (grants, loans, guarantees, equity, etc.)*
Rationale	*The benefit of access to foreign markets is still beyond the reach of many small and medium-sized companies (SMEs), which represent the majority of the food and drink sector of the region of Central Macedonia.*
Description of Policy recommendation	*Various measures could be applied:* *1. Create favourable export conditions by eliminating barriers to trade;* *2. Facilitate access to trade finance (export credit and insurance);* *3. Ensure a legal framework favourable to export-oriented clusters and consortia;* *4. Support export promotion based on public-private collaboration;* *5. Collect information about import requirements in third countries and convey it to the direct interlocutors of SMEs; and* *6. Support non-profit organisations directly assisting SMEs where gaps in services provision are identified.*
Responsibilities	*Ministry of Economy, Regional Authorities, FING, Federation of Exporters of Northern Greece*
Time horizon for the implementation	*Medium to long term*
Geographical scope of the Policy	*Regional and national*
Funding necessary	*Difficult to estimate*
Similar Policies implemented elsewhere	*The FoodDrinkEurope 2012 Competitiveness Report promotes this particular idea on a European level. It is suggested that this particular FoodDrinkEurope initiative is closely followed in order to assess how the region can benefit.*

[3] Adaptation from a similar policy recommendation included in the "2012 FoodDrinkEurope Competitiveness Report", CIAA.

Policy recommendation	***6. "Branding of regional Agrofood production"***
Type of Policy	• *Other types of measures*
Rationale	*The regional agrofood products of Central Macedonia miss the distinctive branding of other Greek regions such as Crete, Peloponnese, etc. although there are products of high quality which could be better promoted at a national and international level.*
Description of Policy recommendation	*To create a brand of Central Macedonia agrofood production. A well- designed strategy should take into account issues such as the right food product mix, the right price, the right consumer target group, the consumer perception of food products and their recognition, the food products image, their packaging, advertisement, distribution channels, market share strategy, building of consumer trust and loyalty, etc.*
Responsibilities	*FING, key food enterprises, food branding experts.*
Time horizon for the implementation	*Short term initiation, long term scope*
Geographical scope of the Policy	*Regional*
Funding necessary	*The cost of the branding and promotional campaign depends on the scope and size. It is suggested that synergies with the local "Creativity Platform" or CPPD the is pursued as they are already active in similar activities.*
Similar Policies implemented elsewhere	*Italian and French food provide excellent examples of branding.*

Policy recommendation	***7. "Educating the customer"***
Type of Policy	• *Other types of measures*
Rationale	*Educating the customer is very important; it should start from the very early ages; it is important because it highlights the importance of quality of local foods, their originality and traditional character and promotes quality- traditional- local food to a growing clientele.*
Description of Policy recommendation	*A series of promotional and educational activities, combined with the idea of gastronomic and wine tourism to educate the customer in the importance of good and authentic food* *Activities may include the organisation of food academy cooking classes, the development of a gastronomic library with traditional authentic recipes from the region, food tours, a certification program for restaurants and food shops, etc.*
Responsibilities	*FING, selected companies, tourism organisations, etc.*
Time horizon for the implementation	*Medium to long term*
Geographical scope of the Policy	*Regional*
Funding necessary	*Funding is necessary for such an activity, it could be the objective of a project but it has to be designed in such a way so as to remain sustainable after the project ends.*
Similar Policies implemented elsewhere	*Academia Barilla is an excellent example of a similar activity.*

Policy recommendation	***8. Agrofood labour market improvement***
Type of Policy	• *Other types of measures*
Rationale	*In order to remain competitive the regional food industry should be in a position to attract talented graduates as well as experienced personnel with high skills in food science, marketing, management, etc.*
Description of Policy recommendation	*Develop a series of activities* • *to highlight the importance of the agrofood industry for the regional economy* • *to promote the employment opportunities in the sector* • *to match the skills of talented graduates with the needs of the industry*
Responsibilities	*FING, research entities*
Time horizon for the implementation	*Short term initiation, long term impact*
Geographical scope of the Policy	*Regional*
Funding necessary	*A relatively small budget is necessary for the promotional activities; it is suggested that these activities are included in a project of wider scope targeting the food industry.*
Similar Policies implemented elsewhere	*See p. 31 of the "2012 FoodDrinkEurope Competitiveness Report", CIAA for a similar activity in the framework of a project titled "Matching skills and jobs" , a EFFAT and FoodDrinkEurope's research project.*

4. REGION OF APULIA - ITALY

4.1. BRIEF PRESENTATION OF THE EXISTING REGIONAL FOOD INNOVATION SYSTEM

The Apulian Regional food innovation system is based on the general policy for innovation issued at regional and national level. The framework of this system is represented, at national level, by the multi-annual plans – Economic and Financial Planning Document - DPEF enacted through annual budget cycles established by the Financial Law (public budget) of the State. In this plan the main guideline supporting research and innovation for the strategic sectors are defined, with a remarkable role of national public funding. Innovation themes are supported also by MIUR - the Ministry of University and Research (MIUR), which is the hub of this national research system. MIUR coordinates national and international scientific activities, distributes funding to universities and research agencies, and establishes measures and schemes for supporting public and private research and technological development (RTD) funding. The Ministry for Economic Development, strictly with MIUR, supervises innovation policies for industries and plays a primary role in research policy as long as the oriented and applied research is concerned, having a closer connection with innovation-oriented research.

Other actors playing a relevant role in R&D policies are the Health Ministry, with its **ISS** Higher Institute for Health, the Ministry for Agricultural Policies (**CRA**-Council for Research and Experimentation in Agriculture, **INEA**-National Institute for Agrarian Economics), the Ministry of Cultural Heritage, and the Ministry for the Environment. The strategies and objectives of these ministries are coordinated by the MIUR within the framework represented by the National Research Programme.

Apulia Regional key entities are supporting the development of the agro-food sector, composed by public and private entities, operating at different levels to create synergies concurring at the creation of an integrated system. In particular, the Apulia Region has been carrying on a **global strategy** to enforce the integration and to favour the communication and interaction among different players supporting them in a common and unique process of sustainable innovation. In this framework very important has been the Region authority role and the creation of a dedicated Agency, named **ARTI – Regional Agency for Research, Innovation and Technological Transfer**, with the institutional function to gather all academic and research players in strict conjunction with territory and

local industries. In this way this Agency is representing a natural bridge to facilitate exchange of experiences, becoming also pole favouring the links with SMEs and local or productive initiatives, supporting the economic growth of the agro-food sector.

The academic and research entities play an active role in developing new process and products useful for innovative and competitive SMEs in the agrifood sector.

In Apulia there are 4 main public Universities: University of Bari “Aldo Moro”, Polytechnic of Bari, University of Salento (Lecce), University of Foggia and one private university, the Jean Monnet LUM, located in Bari.

Considering the Academic institutions, the main Universities offering academic curricula in the field of agrofood and supporting the sector are **University of Bari**, with 2 specialized faculties: Agronomic Faculty (covering all the main food chains, such as dairy products, meat, vegetables, cereals), Biotechnology, Animal safety and wellbeing, the **University of Foggia** has the Agronomic Faculty and the Food Technology Faculty. These are the big poles where research groups work in strict conjunction with enterprises and other international institutions to develop new processes and support innovation.

The **Polytechnic of Bari** and **University of Salento** participate at this process too developing collateral curricula such as process engineering, managing engineering, electronic engineering, developing knowledge on industrial processes or applications useful to the agrofood transformation and industry (i.e. develop of finger print, RFID applications, etc.). The economical faculties belonging to University of Bari and University of Foggia and University of Salento complete this system providing economic analysis or studies on the sector, developing economic topics also related to agro-food innovation, and providing academic curricula useful in this sector. The same role is being played by the private university, the LUM, which develops curricula in the economic and management area.

CNR ISPA - Institute of Sciences of Food Production - is the Italian institute for research in food sciences belonging to the most important national public research centre and has its head office in Apulia. CNR ISPA is a centre of excellence, worldwide renowned, acting in the fields of scientific research, innovation and technology transfer aimed to improve safety and quality of agro-food products. By creating synergistic actions between scientific research and production sectors with the transfer of scientific knowledge, ISPA-CNR fosters technological innovation paths of small, medium and large national and foreign agro-food enterprises. In particular, in the field of food and feed safety, innovative

methodologies for detection of mycotoxins, toxigenic fungi, microbial pathogens and allergens in cereals, wine, pasta, milk, baby foods, dried fruits, are being developed in national and international projects.

In this framework, an important contribution to the system is given by **D.A.RE.** is the Apulian agrifood technological district, with the role of boosting innovation among its partners, bringing together 60 enterprises and many academic and research institutions.. It represent the main interface for funding between Italian Ministeries and local enterprises, transferring technological research. It provides services to foster technological innovation, managing complex projects on industrial research and precompetitive development, disseminating research results, favoring the internationalization of product and process innovation.

4.2. POLICY ANALYSIS

The recent Apulian innovation policy has reinforced the technological and productive districts system, to strengthen the economic future perspectives, focusing on the promotion of industrial clusters as a powerful way to boost local development and competitiveness. In the agro-food sector the Region recognized 2 agri-food productive districts (involving 870 partners and 2 technological ones (Agri-food, Biotech).

The policy is oriented to boost innovation process in the agrifood sector, that is one of the major strategic economic sectors in the region, and for this reason several policy documents (i.e. "**Guidelines for research and experimentation in agriculture 2012-2014"** issued by Regional Agrifood Resources Department) are focused on the consolidation of links and connections between agrifood Apulian enterprises and scientific research system and knowledge promotion, in order to create an integrated system including research, testing, demonstration and innovation transfer process as a competitive key factor for economic development of agrifood productive chains. Three main programs make operative this policy (the Operational Program PO 2007-2013, the Apulian Rural Development Programme (PSR) 2007-2013; Apulia Region Framework Programme Agreement).

Although these policies, considering a preliminary assessment of the Innovation Framework Conditions, the region of Apulia is positioned under the average levels of from indicators at national and EU level. Some indicators have been considerated, as follows:

i) Public investment in knowledge: Total R&D expenditure (GERD) for Apulian Region was 0.8% of GDP in line with the Italian South regions average at 0.9% and below the national score. R&D expenditure in Italy is 1.26 of total national GDP (2009, Eurostat). Business enterprise sector accounts for more than 50% of total GERD. EU average for the same years was up to 2% with businesses contribute to R&D going around 1.23 % of GDP. OECD average was 2.27% of GDP. Apulia Region shows investment in research and development scoring 3 times less than that of EU average and this may probably have a negative effect in knowledge production. Unfortunately no breakdown of the GERD to food RTD is available.

ii) Relevance and Quality of research: a number of key statistical information taken from the SJR & Country Rank is used to provide some quantified and verifiable information about this topic in Italy, and Apulian situation could be assimilated to.

The Italian R&D resources significantly lag behind those of other major economies, its output, in terms of scientific publications, is one of the most prolific in the world, and highly

recognized in several fields. In recent years, Italy's annual R&D spending, has scored low, compared with the European Union average. With 48%, the public sector is a large contributor to R&D funding, with private sector only recently leading–an uncommon occurrence in major world economies.

Finally, the Italian scientific production stands at high better position in comparison to other innovation metrics both in terms of volume as well as quality (impact). As to relevance, it is noted that agricultural sciences scientific production is quite less than in other scientific areas, nevertheless of significant quality. In particular food related scientific production with almost 20% of the overall agricultural and biological science ranks at the seventh position worldwide and fourth in Europe.

4.3. SWOT ANALYSIS AND SOR METHODOLOGY

The main output coming from SWOT analysis and SOR methodology applied to the Apulia region system of RTD entities and SMEs shows that it can count on strong assets represented by existing research entities in the region and emerging food companies oriented to markets abroad, with good market position and products with a strong quality brand identity.

Apulian agrifood companies are potentially oriented to and attracted by innovation, indicating a sort of business dynamism and attention at integrating new technological knowledge into existing organization. Also RTDs players are oriented towards innovation, key factor to be competitive and Regional institutions are supporting this process by issuing specific funding measures and carrying out actions to create and enforce research infrastructures.

The good market position may allow SMEs to seize opportunities represented by a strong product identity, at regional and/or national level and by a positive and increasing **exports** trend. These favorable elements are strengthen by the SMEs ability to produce high **quality products** by implementation of effective operational processes. Moreover, the adoption of innovative technologies by SMEs together with the presence of high experienced human resources, can help to seize another good opportunity represented by ongoing and future **RTD and innovation programs** addressing the sector.

The **cooperation** between SMES and the research public or private system seems quite developed, even if efforts should be made to make this cooperation effective and valuable, and to enlarge it in the sector. These collaborations have been usually asked or pushed by researchers, who need business partners to develop and complete their research projects, while many companies need actually to be guided to develop own knowledge of potential public financing measures.

At the same way, it seems important push the food industry towards innovative - market driven technologies in order to respond to the real demand in the region, but also to facilitate contacts between industry and the research world.

The enforcement of this cooperation could allow RTD entities to address research and strengthen their position, giving value to the high-potential human capital. In the same

time this union could allow and guide SMEs to reinforce internal skills and competencies, supporting them in the accession to funding programs able to sustain innovation and enforce or improve the existing processes and products. The problem represented by long bureaucratic processes, that could keep far companies from funding application or requests, should be taken into attention, being sometime an obstacle.

This strategy could be also supported by setting **new incentives** for those researchers committed into cooperation between SMEs and RTD entities on innovative and application themes, thus overcoming the strong gap with basic research. In fact, the basic research, even if considered a strength, really limits the possibility to participate at those funding programs considered attractive by industries and SMEs.

On the SMEs side, interventions should be made to address some problems that don't favour the innovation streaming. The **absence** of operating/organization **units dedicated to research** and development represents is the main factor preventing SMEs to take the opportunity of participation at programs of RTD and innovation and to use the reduced funds.

These challenges are compounded also by :

- SMEs inability to create network with EPR and private individuals,
- high costs to manage a patent process or for patents acquisition,
- bureaucracy / regulatory barriers and lack of time on the part of firms.

In conclusion, the main pillar to develop a **regional strategy for innovation** is represented by ***enhancing the existing path***, founded on *a* ***strict cooperation*** and collaboration between ***public and private*** sector. This objective could be achieved also by improving an open exchange of experiences in R&D and by consolidating existing **networks**. All these factors are being also favoured by the opportunity of **new R&D EU and regional programmes** and availability of **high-skilled personnel**.

APULIAN SWOT analysis/ SOR Matrix for RTD

		External environment	
		(O)	***(T)***
Internal environment	***(S)***	An open exchange of experiences in research and technological development may allow the region to take the opportunity of Networking creation (20). This matching could be supported by a positive trend resulting from existing public-private cooperation	The strong basic research, although considered a strength point, is not really able to counteract the threat shown by the financial support. This support seems to be more addressed to strong applicative research, with a specific content resulting far from current interests of researchers (also oriented to a basic-independent research). The lack of incentives for public researchers for cooperation with SMEs can be minimized by the existing growing number of collaborations with SMEs coming out by regional system efforts.
	(W)	The small budget allocation for R &D (generally by public funds) can be counteracted by participation at EU and regional programs. The lack of connection between companies and research institutions may limit the use or/and the creation of networking.	The weaknesses (lack of start-ups, small size of budget) does not allow to prevent the brain drain, nor to attract or let international researchers come back in their country, factor really representing threats towards the system. On this aspect public authorities invested in the past. In addition, the limited connection between companies and research institutes can be compounded by the lack of incentives for public researchers to collaborate with SMEs.

APULIAN SWOT analysis/ SOR Matrix for SMES

		External environment	
		(O)	***(T)***
Internal environment	***(S)***	The strong identity of high quality regional and/or National product together with a good market position could seize the opportunity given by a growing trend of exports of products. The high skilled personnel and the adoption of innovation could be valorized in existing RTD and innovation programmes.	The funding shortage dedicated to R & D activities by system represents the major threat for the SMEs capacity to adopt new technologies and to pull innovation. The expensive costs to manage an entire patent process or only its acquisition represents a consistent threat for the innovation process.
	(W)	The lack of dedicated units to R&D in the SMEs could take the opportunity to mind the gap by the existing or potential networking possibilities. The actual weak link with RTD entities could be removed by enforcing the possibility to improve networking (possibilities).	A potential big threat represented by the limited availability of resources for R&D that aggravates the lack of dedicated units to R&D within companies. The relevance of bureaucratic barriers and the lack of time available to devote to R & D represent a problem to be solved or addressed, because the threat makes worst the weakeness.

4.4. SYNTHESIS OF POLICY RECOMMENDATIONS

Herewith the proposed policy recommendations are listed:

1. *Strengthening public-private cooperation -> by exchange and share of projects*
2. *Improving awareness and knowledge on innovation and competitiveness*
3. *Bridging knowledge from R&D system to SMEs -> available skills for markets*
4. *New incentives for researchers for cooperation with SMEs*
5. *Updating of academic curricula to match current food innovation trends*
6. *Improving skills for innovation in SMEs*
7. *Favoring the creation of R&D department in SMEs*
8. *Funding SMES for adopting innovative technologies, also by patent applications*
9. *Bureaucracy simplification (times and rules) and more efficient project administration*

These recommendations arose from the results of SWOT analysis and SOR and have been thought to be realistically adopted in the local or national context.

Policy recommendation	***1. Strengthening public-private cooperation***
Type of Policy	*Provision of innovation support services (advisory, innovation management, technology transfer and training);*
Rationale	*The cooperation between SMES and the public or private research system is being developed in Apulia Region, by creating a network of labs involving private sectors and food SMEs. The regional project "Networks for enhancing the potential of regional technology" aimed at upgrading infrastructure of laboratories and public research centers in Apulia, addressing regional productive sectors considered as points of reference for the diffusion of technological innovation. The aim of the project was to create high-technological based "nodes" distributed in different areas, integrated and equipped with advanced instruments, knowledge and skills "frontier" accessible and usable by the regional productive system for relocation of traditional industries and the development of innovative strategic sectors.The next step is to drive these efforts to make the cooperation more effective and valuable, and to enlarge it in the sector.*
Description of Policy recommendation	*Objective: The policy should be realized at regional level by integrating the Apulian private-public laboratories network with new services able to support the enhancement and promotion of these assets with sustainable initiatives and demonstration activities involving SMEs.* *The objective is to make operational the network, create an active context realizing a structured guided system for innovation with a strong commitment of research and industries in joint projects.* *Content: provision of advisory services to network members on innovation processes and technology transfer, planning of common paths and develop national and international innovation projects, with attention to collaboration along food chains, also by joint presentation of proposals, assistance during the implementation of projects, transfer and exploitation of research results, network promotion activities.* *Measure: No. of services requested and used by networks participants, No. of new joint proposals presented, No. of intervention plans for innovation presented by networks participants, No. of promotional*

	events realized.
Responsibilities	*ARTI - Regional Agency of Technology and Innovation of Apulia. It is an operational body of Region Apulia.*
Time horizon for the implementation	*medium term*
Geographical scope of the Policy	*Regional*
Funding necessary	*The funding could be included in the next PON R&C with coverage from the ERDF- Rotation fund.*
Similar Policies implemented elsewhere	

Policy recommendation	***2. Improving awareness and knowledge on innovation and competitiveness***
Type of Policy	*Provision of innovation support services (advisory, innovation management, technology transfer and training)*
Rationale	*The need to enlarge and consolidate existing regional networks orientated towards integration between research and industry comes out from the good signals from recent experience carried out by ARTI by funding several labs networks. At the moment a hard basis of capability has been created, through the acquisition of new plants, technology systems, devices and instruments, and it is necessary to put into force these new assets by supporting a parallel growth of personnel in terms of soft skills to share knowledge and work constantly with SMEs. Operational plans to stimulate networking towards innovation and competitiveness are needed to make this process operative and concrete.*
Description of Policy recommendation	*Objective: The policy should be addressed to researchers, technicians, entrepreneurs, technology consultants to improve their ability to innovate.* *Content: provision of training services to acquire skills and tools to improve innovation processes, project management, technology transfer, creation of a web platform to exchange contents, experiences, sharing projects and skills, provision of direct information to access forms of public funding aimed at encouraging innovation processes, opportunity to participate in regional, national and international prizes for innovation, also through social network and communities.* *Measure: No. of funded services according to an intervention plan for innovation presented by networks participants.*
Responsibilities	*ARTI - Regional Agency of Technology and Innovation of Apulia. It is an operational body of Region Apulia.*
Time horizon for the implementation	*medium term*
Geographical scope of the Policy	*Regional*

Funding necessary	*The funding could be included in the next PON R&C with coverage from the ERDF- Rotation fund.*
Similar Policies implemented elsewhere	

Policy recommendation	***3. Bridging knowledge from R&D system to SMEs -> available skills for markets***
Type of Policy	• *Public funding of science- industry research cooperation;* • *Provision of innovation support services (advisory,innovation management, technology transfer and training);* • *Other types of measures: exchange of best practices*
Rationale	*The existing professional assets of high skills in research could represent a real resource for agrifood system in Apulia, to strengthen SMEs and support their innovation processes, but this assets seems to be confined to the research environment and framework, with evident difficulties to transmit advances in research useful for industry.*
Description of Policy recommendation	*Objective: The policy aims to create and strengthen links between researchers and SMEs, in order to generate a model of "research for the competitiveness", able to generate kind of innovation with a clear definition: the transfer of new ideas to market with the right profit for all stakeholders (from those who have and use the idea, to whom transform it into product and distribute it on the market).* *Content: the main content of this policy should be represented by actions of technology transfer (TT) that should flush where innovative ideas are generated and identify areas and industrial enterprises with a real perspective to turn them into new and successful products to be launched on the markets. These actions should be carried out by TT professionals (existing or to be formed or trained), result oriented, able to capture the essence of the scientific idea, project it in one or more "business" with all their dangers and their opportunities and, finally, able to find also entrepreneurs (existing or to be formed) and help them, as long as needed, for the launch of the new adventure.* *Measure: No. of TT actions and No of TT experts.*
Responsibilities	*ARTI Puglia, in cooperation with Technological Districts, Universities and Research centers.*
Time horizon for the implementation	*medium term*

Geographical scope of the Policy	*Regional*
Funding necessary	*No funding could be necessary, this policy could be supported by ordinary funds or included into ongoing projects*
Similar Policies implemented elsewhere	*In response to the increasing regional demand for innovation, AREA Science Park – Trieste, Italy created the Innovation Network® , the first Italian network for technology transfer, cited as a European "best practice". Divided into specialized Competence Centres, and active throughout the territory in collaboration with entrepreneurial companies, Innovation Network® operates in areas of transversal interest (energy, production efficiency, new materials) as well as specific production sectors (wood and furnishings,agro-industrial, shipbuilding and boating).* *In the same Park, since 2006 INNOVATION CAMPUS, resulting from the need to create a new professional figure, the technology broker, works at the first Italian technology transfer school. It offers continuing education courses to the employees of national organizations and institutes, providing deeper knowledge of specific specialized areas and a support laboratory for assistance and guidance on topics relating to technology transfers.*

Policy recommendation	***4. New incentives for researchers for cooperation with SMEs***
Type of Policy	*Public funding of science- industry research cooperation*
Rationale	*The creation of incentives for researchers should be addressed to engage scientists in collaboration between research institutions and enterprises on innovative and practical themes and area, in order to overcome the gap with basic research. The basic research, despite being considered a strength, in fact seems to limit the possibility of access to programs interesting for industries.*
Description of Policy recommendation	*The policy should be included in the next PNR - National Research Programme (PNR), which defines the objectives and models for implementation of specific interventions in priority areas, disciplinary sectors, involved parties, projects.* *Objective: stimulate research cooperation with SMEs.* *Content: funding public researchers to realize Industrial research and pre-competitive research. These funding actions should give incentives (bonus) directly to those researchers able to obtain tangible results by integrated research with SMEs. Actually in Italy Beneficiaries eligible for financial assistance from the FAR are: Industrial enterprises producing goods and/or services, Transport companies, artisan enterprises, Consortia and consortium companies (limited access), Science and technology parks.* *Measure: No. of incentives applied and received by researchers; No. of formal cooperation signed.*
Responsibilities	*Ministry of Education, Universities and Research (MIUR), after extensive consultation of the scientific and academic communities, economic powers and industry associations.*
Time horizon for the implementation	*Medium term*
Geographical scope of the Policy	*National*

Funding necessary	*1% of FAR annual fund - Research facilitation fund*
Similar Policies implemented elsewhere	

Policy recommendation	***5. Updating academic curricula to match current food innovation trends***
Type of Policy	*Other: educational strategic guidelines to improve academic curricula on innovation themes*
Rationale	*The analysis on Apulian academic curricula showed the need to include new topics, in order to transfer advanced knowledge on emerging research themes in the field of biotechnology, food processing, food safety and security, health aspects, management and innovation, research policies. All these topics should be complementary to basic disciplines.*
Description of Policy recommendation	*Objective: The policy aims to update academic curricula by including new emerging topics relevant to food innovation, according to a multidisciplinary approach, with the objective of update skills useful for innovation management.* *Contents: the contents are represented by a common set of food innovation topics, approved by Ministry, including management, emerging technologies and demand-side and by introduction of contribution innovation* *Measures: No. of new topics included in academic curricula.*
Responsibilities	*MIUR (at strategic level) and Universities (in terms of implementation, according to their own independence to define curricula)*
Time horizon for the implementation	*medium term*
Geographical scope of the Policy	*National*
Funding necessary	*Ordinary funds for University*
Similar Policies implemented elsewhere	

Policy recommendation	***6. Improving skills for innovation in SMEs***
Type of Policy	*Other measures: Fondimpresa (the most important inter-fund for continuing training in industries in Italy)*
Rationale	*The current collaborations between R&D entities and SMES have been usually asked or pushed by researchers, who need business partners to develop and complete their research projects. Many companies need to be guided to develop own knowledge on potential access to innovation, represented by public financing opportunities and measures. The need for SMEs to improve their competencies and knowledge is driven by the lack or insufficient skills on main innovation topics: innovation management, development of internal research projects in cooperation with institutions or research organizations, proposal preparation, project management, networking and communication, ICT and emerging technologies, smart specialisation and EU policies and strategies for innovation, funding opportunities.*
Description of Policy recommendation	*Objective: The policy aims to improve skills in SMEs by supporting the growth of innovation capability trough training on the job and creation of a network of SMEs innovators.* *Content: the main content of this policy could be represented by specific and compulsory training actions to enhance skills related to organisational performance, innovation capability, reactivity to market changes and business competitiveness. In addition, the skilled people should take part to the EUWIN initiative, to share experience and participate at an international policy, being stimulated to apply innovation into their SMEs.* *Measure: No. of employed trained; No of registrations at EUWIN; No. of participations at EUWIN initiatives.*
Responsibilities	*MIUR, Industries associations, Labour Ministry and Fondimpresa*
Time horizon for the implementation	*Long term*
Geographical scope of the Policy	*National*
Funding	*50 % of current Fund to be addressed to innovation training .*

necessary	*(Companies adhering at Fondimpresa monthly pay per employee a contribution of 0.30% devoted exclusively to training Fund).*
Similar Policies implemented elsewhere	*A similar policy – addressed to workplace innovation – has been launched this year by the European Commission, who made workplace innovation a priority in the reinforced EU Industrial Policy Communication approved on the 10th October 2012. The European Workplace Innovation Network (EUWIN) has been launched to support this priority in this year.* *The Network will disseminate evidence at the European level that modernising the workplace leads to both better working conditions and increased organisational performance in terms of productivity, innovativeness and competitiveness.*

Policy recommendation	**7. *Favoring the creation of R&D department in SMEs***
Type of Policy	*Provision of innovation support services (advisory,innovation management, technology transfer and training)* *Other Measures: funding for innovation in SMEs*
Rationale	*One big problem emerging from studies and analysis on Apulian agrifood sector is represented by the small dimension of the most part of SMEs, that really constitutes an obstacle or difficulty to the development of internal operating unit dedicated to research and development at company level.*
Description of Policy recommendation	*Objective: enforce the capability of SMEs to address innovation through a direct commitment towards research and innovation, favouring link and communication by a simpler and direct interface with research entities and institutions.* *Contents:* *Fundings or fiscal incentives for investment in R&D structures (laboratories) in SMEs.* *Fundings for the creation of shared centers (laboratories) able to sustain several or common requests by companies of a certain food chain for advanced technological services.* *Measures:* *No. of investments realized, No of R&D depts. And labs realized*
Responsibilities	*Ministry for Economic Development*
Time horizon for the implementation	*Medium term*
Geographical scope of the Policy	*National*
Funding necessary	*Using FIT (Found for Technology Innovation)*
Similar Policies implemented elsewhere	

Policy recommendation	***8. Funding SMES for adopting innovative technologies, also by patent applications***
Type of Policy	*Funding of innovative industries (grants, loans, guarantees, equity, etc.);*
Rationale	*SMEs should be encouraged to adopt innovative technologies by a guided participation to calls to receive funding for the implementation of technologies. In Apulia a small number of patents in agrifood sector are recorded and the region shows a big potential to improve this position, also taking advantage from the relevance of the agrifood sector at economic level and from the availability of advanced research skills.*
Description of Policy recommendation	*Objective: The policy should address directly SMEs to facilitate the financing of innovative projects based on the industrial exploitation of titles of industrial property (patents, drawings and models). It should be extended also to funding the preliminary phases leading to the industrial property, as incentive to apply research to discover/improve new methodologies or create new processes and/or products, thus increasing the number of patents.* *Content: operating line of credit given to SMEs intended to apply for domestic patent applications and extension of national patents abroad. Operating line of credit granted to SMEs for the exploitation of patents, design and models.* *Measure: No. patents required; No of outputs achieved by innovative processes.*
Responsibilities	*Ministry of Economic Development*
Time horizon for the implementation	*Medium term*
Geographical scope of the Policy	*National*
Funding necessary	*20/30% of National Fund for Innovation (FNI) to be assigned to patent applications*
Similar Policies implemented elsewhere	

Policy recommendation	***9. Bureaucracy simplification (times and rules) and more efficient project administration***
Type of Policy	*Other types of measures: regulation and framework for funding measures*
Rationale	*The bureaucracy complexity represents an obstacle to the access to public funds and a criticity during the implementation of a funded project. This is claimed by the majority of SMEs involved in the INNOFOOD SEE profiling survey, as well as recognized as problem by the Research side. Selection, admission, implementation, monitoring and final verification times for a proposal are too long to support an innovation initiative, that naturally requires rapid cycles for implementation and short duration.* *Too many and severe regulations sometimes don't fit with SMEs needs to dedicate a fair time and effort to administration.*
Description of Policy recommendation	*Objective: the policy has the objective to stimulate all bodies managing consistent programmes addressed to research and innovation to limit the bureaucracy complexity in fund accession and management.* *Content:the policy will develop new simplified rules to be applied in this field, with particular attention to more accessible and sustainable financial requirements for grants, means of verification and documentation needed as proof of implementation of projects.* *Measures: No, of new rules, expeted time reduced (%) per administration process.*
Responsibilities	*MIUR, Ministry for Economic Development, body in charge of planning, implementation and management of Funding Programme (i.e. for PON is MIUR - Ministry of Education, Universities and Research), Regional Authority or Department.*
Time horizon for the implementation	*Short term*
Geographical scope of the Policy	*National*
Funding necessary	*No funding necessary*
Similar Policies implemented elsewhere	

5. DISTRICT OF PAZARDZHIK, BULGARIA

5.1. BRIEF PRESENTATION OF THE EXISTING REGIONAL FOOD INNOVATION SYSTEM

The regional innovation system in the District of Pazardzhik is shaped and influenced mainly by the research policy formulated at national level. The private sector R&D and innovation structure remains immature. The average size of the Bulgarian enterprise is smaller compared to the European, and their resources for innovation and R&D are insufficient. Public initiatives specifically targeting RTD and innovations at regional level can be found in two types of documents relevant to regional policy – the Regional Plan for Development of the South-central planning region, the Regional Development strategy of the district of Pazardzhik and the Regional Innovation Strategy for the South-central planning region. However, no mechanisms at national or regional level support their implementation. The main obstacle is the fact that funding through EU Structural Funds in the country is coordinated at national level with little or no authority of regional administrations in the distribution of funds. Financing for innovation is not distributed according to needs but to the regions with the largest number of research institutions (national budget funding) or active applicants (EU competitive funding). Research performed in the regions of Bulgaria is mostly concentrated around the local branches of the two largest public research organisations - the Bulgarian Academy of Sciences and the Agricultural Academy, which have their headquarters in the capital of the country. This contributes to the fact that research and innovation performance is highly concentrated in the South-West Planning Region and in particular in the capital city of Sofia. There are 3 particular priority measures at national level specifically in support of food innovation which are implemented or have been implemented also in the district of Pazardzhik funded by the Rural Areas Development Programme and the Competitiveness Operational Programme – both at national level. These are: Priority axis 1 Improving the competitiveness of the agricultural and forestry sectors and Priority axis 4 LEADER of the rural OP; and Priority axis 1 Development of knowledge based economy and innovation activities of the Competitiveness OP.

In terms of governance there are no structures in place at regional level to implement the research and innovation-related measures in practice. The primary bodies for implementation of government policy at NUTS 2 level are the Regional Councils for Development and the Directorates for Technical Cooperation, and at NUT 3 level – the regional administration. They report on the implementation of the regional development plans and strategies to the Minister of Regional Development and Public Works and their

initiatives are planned with resources from the EU Structural Funds managed by the ministry. Similarly, Regional Councils or similar coordination and advisory bodies were planned to be established in the framework of the Regional Innovation Strategy (RIS) and chaired by a regional governor while the development of RIS was funded by the 6th framework programme. Although its aim was to enhance the successful absorption of EU funds for innovation at local level by 2010 it has largely remained on paper due to insignificant capacity and resources at regional level for its implementation.

Bulgarian national research programmes do not have a regional dimension. Regional research activities are usually funded through EU sources and the main source of financing for regional research and innovation related projects is expected to come through the national Operational Programmes but these are managed at national level and have no specific regional dimension or targets.

Key players of the regional research and innovation system, focusing on food are university departments/faculties, other educational institutes, research Institutes/centres, business support entities and public authorities since food covers various scientific domains such as agronomics, biology, biotechnology, food processing technology, water and wastewater management, chemistry, production planning and control, medicine, etc. More specifically, in the Region of Pazardzhik these players include the regional structures of the Agricultural Academy within the Ministry of Agriculture and Food; the National Council on Innovation, as a consultative unit to the Ministry of Economy and Energy; the National Council for Scientific Research assisting the Ministry of Education and Science; the Bulgarian Academy of Sciences; the Agricultural University – Plovdiv and the University for Food Technologies in Plovdiv; the regional structures of the Union of Scientists in Bulgaria, the National Centre of Public Health Protection, the Bulgarian Chamber of Commerce and Industry, the Bulgarian Industrial Association, the Confederation of the Employers and Industrialists in Bulgaria, and the Federation of the Scientific Engineering Unions; also, Pazardzhik Regional Administration.

5.2. POLICY ANALYSIS

The framework used for the assessment of innovation policies is based on the following national policy documents: the National Strategy for Scientific Research for the period 2005-2013 and the National Inovation Strategy. Indicators used in the former to measure scientific trends and results include efforts to build knowledge-based economy in the areas of creation and dissemination of new knowledge, and the achieved concrete results measured by labour

productivity, number of patents and publications, development of e-commerce and effectiveness of the education system. Other indicators are financing of scientific research, human resources, and results from scientific activities (number of patents, PhD candidates, successful projects in the EU framework and other scientific programmes, spin-offs, number of scientific knowledge transfer units, etc.). The second document employs indicators such as R&D expenditure based on data from national sources and Eurostat and also forecasts for the share and size of R&D expenditures (public and private) until 2013, including budget financing from the National Innovation Fund.

The National Innovation Strategy envisages that R&D spending should reach 1.15% of GDP by 2013. Also, in 2010 the Government declared an ambitious national GERD goal for 2020: 1.5% - 2% of GDP. These targets however are out of line with the current level of R&D financing. Although R&D expenditures in Bulgaria have been increasing with BGN20-30m (€10.2-15.3m) annually for the 2006-2010 period, they are still four times lower than the EU-15 average and remain at levels less than or around 0.50% of Bulgaria's GDP. The 2010 forecasts indicated a decline of the R&D intensity down to 0.35% which is the lowest value since 2000 (Ministry of Finance, 2010).

On the other hand, the share of public financing is twice as higher as that of businesses or higher education, which is the exact opposite of the Lisbon-recommended ratio of 1:2. Still, in the last 15 years the structure of the R&D financing has been showing a stable trend of increase of the private funding and decrease of the public funding in terms of shares in the overall GERD. Public institutional subsidies predominate in the national budget distribution. Until 2005 the share of the competitive project budget financing (of the National Science Fund) was less than 2% of the science budget line. Since 2007 however, the project-based funding has gained higher significance. Most of the competitions of the National Science Fund are "top-down" research programmes, which provide distribution of the funds according to the Law on Scientific Research Promotion and the National Strategy for Scientific Research for the Period 2005-2013. Some "bottom-up"/"free funding" projects and grants with no predefined theme and deadline are available for young researchers. In addition, tax incentives for RTD (allowances for the annual RTD expenditures) are applied in the form of decreasing the income before taxation with the value of the asset subject to R&D activities and the asset is not depreciated. Research public entities, state universities, state and municipal schools are given a reduction of 50% of their income tax for their core or secondary activities. Personal income tax is reduced by 5% for donations for scientific exchange under international contracts.

In conclusion, the innovation policy of the country is highly underdeveloped and poorly structured with a generic research policy of no specific thematic focus. Although policy documents outline visions and contain specific thematic areas, the available financing is

scarce and cannot cover all proposed actions and no targeted innovation in specific areas is provided, nor combined existing policy initiatives relating to innovation (e.g. ICT, regulation, standardisation, procurement, etc.). There are separate measures being implemented by separate institutions and no differentiation between demand- and supply-driven innovations. There is evidence of increasing cooperation and coordination between the Ministry of Economy, Energy and Tourism and the Ministry of Education, Youth and Science. For example, the National Strategy for Scientific Research 2020 has incorporated for the first time important science, technology and innovation policy guidelines under one heading.

5.3. SWOT ANALYSIS AND SOR METHODOLOGY

The SWOT analyses and Strategic Orientation Rounds carried out in the course of the project for food SMEs and RTD entities in the region of Pazardzhik derived from the profiling of the food SMEs and RTD entities and collection of their opinions through the use of dedicated profiling questionnaires, complemented by key statistical information to ensure normalisation. Additionally, the opinion of 10-15 selected experts from the region representing the project partners, regional authorities dealing with food, regional food businesses, and regional RTD entities complemented the opinions of the representatives of food SMEs and RTD entities and the regional statistics data. As a last step of the process a Strategic Orientation Round was carried out for food-related RTD actors and for food SMEs with specific RTD needs as a method to prioritise strategies and to assist strategy formulation. The SOR is a participatory and consensus building exercise among a representative group of actors from food SMEs, research entities and policy-makers based, on the voting principle. Results were subsequently interpreted in order to extract strategic objectives and policy recommendations by identifying which strategic options best match the region's strengths and weaknesses in order to face the opportunities and threats in the future.

The recommended strategy to be pursued for food SMEs with innovation needs and food RTDs is to concentrate efforts on fighting threats to be faced in the future since regional food SMEs and regional food RTD entities have the strengths to grasp opportunities and deal with the external threats identified. In more concrete terms this details into the following conclusions for regional food SMEs with innovation needs:

- The regional food business is strong in quality of products and processes and this should be exploited in order to take maximum benefit from the external opportunity factors which are expected to be present in the future. The same goes for traditions in

the production and processing of food products and good economic relations with EU and international.

- Highest priority when considering future possibilities should be given to dealing with some serious weaknesses: lack of funds to invest in modern equipment, know-how and production diversification; poor interrelations between the food business, RTD entities and political decision-makers; and insufficient innovation commitment and innovation mindset among entrepreneurs and managers in the food sector.
- On the other hand opportunities will be available to face these weaknesses such as EU funding for investment in production modernization; targeted support for food sector innovations in the new programming period; and initiatives for clustering networks between business, research and policy makers. Increased competition from third countries; insufficient national and European funding for investments in RTD; and insufficient incentives targeted specifically for the food sector are externalities that threaten food innovations in the future.

The picture for food RTD entities is the following:

- Strengths of the food RTD entities lie in the highly skilled personnel; in the growing number of collaboration activities between R&D entities and companies in the food sector; and the developed network of RTD units in the sector with established system of research, training, teaching and advisory bodies.
- Extremely low size of the state budget for scientific development and out of date research infrastructure and equipment not managed effectively for implementing of precise and profound scientific research are the most serious weaknesses of the innovation supply side.
- Opportunities are available for access to European and international organisations' and research infrastructure and involvement in international research networks with available EU funds for research and exchange of knowledge; establishment of partnerships, networks, clusters, technology transfer units and other forms of cooperation; launching of new European and regional programs for scientific and technology development. Major threats comprise inadequate governmental concern for developing science and research; corruption and bureaucracy barriers; poor correspondence between funding programs and current research interests and innovation needs with slack market of scientific products and low absorption capacity.

5.4. SYNTHESIS OF POLICY RECOMMENDATIONS

Policy recommendation	***1. Provide targeted political support to improve research and innovation in the food sector in the region***
Type of Policy	*Innovation Strategy for the food sector in the region of Pazardzhik*
Rationale	*Make the transition to an economic model based on knowledge diffusion and innovation, by exploiting the opportunities offered by research and technological development for improving the competitiveness of the region in the food industry*
Description of Policy recommendation	*Enhance technology-based economic development and the innovation performance of companies through spreading the trend to innovative activities, supporting industrial research and R&D and innovation projects within enterprises.* *Support leading-edge research and the invention of new production methods by strengthening scientific and technological areas of strategic importance and infrastructures of public scientific research institutions* *Support networking activities and cooperation among companies and research institutions to respond better to the innovation needs of the industry.* *Improvement of human resources in research and innovation*
Responsibilities	*Ministry of economy, Ministry of science, Ministry of agriculture*
Time horizon for the implementation	*long term*
Geographical scope of the Policy	*Regional/national*
Funding necessary	*25000 EUR (external expertise for the development of the strategy)*
Similar Policies implemented elsewhere	*Innovation Strategies of the regions of Central Macedonia and Puglia*

Policy recommendation	***2. Provide targeted political support to improve innovation in the food sector based on intelligent specialisation***
Type of Policy	• *Strategic research programmes and research infrastructure;*
Rationale	Current policies do not distinguish between research and innovation activities. Therefore, strategic planning is necessary in the field of innovation based on intelligent specialisation to determine the long-term political vision for enhancing the development of innovation processes and facilitating scientific knowledge and results in reaching the business
Description of Policy recommendation	Measures to enhance the innovation capacity of the country and increase investment in research and innovation in key sectors with development and growth potential and of high added value to the economy, the food sector being a priority among them: -increase research and innovation expenditure and ensure high-quality national scientific potential; -modernisation of research and scientific infrastructure; -enhanced cooperation between scientists and researchers, both within the country and internationally; -support to innovative entrepreneurs through targeted public measures and establishment of financial instruments -stimulate private investment in innovations; -stimulate the adoption of modern technologies; -human resource development; -support for the internationalisation of the innovation processes
Responsibilities	*Ministry of economy, Ministry of agriculture, Ministry of science*
Time horizon for the implementation	*long term*
Geographical scope of the Policy	*national*
Funding necessary	*funding for external expertise for drafting the strategic document (approx. 20000 Eu)*
Similar Policies implemented elsewhere	*Region of Central Macedonia-Greece and region of Puglia - Italy*

Policy recommendation	***3. Provide targeted political support to SMEs in general and food sector SMEs as priority industry***
Type of Policy	*Strategy for promoting SMEs*
Rationale	*The number of SMEs in the production sector have decreased in the past 3-4 years and SMEs are 99.8% of all companies in the country. On the other hand food sector SMEs are second in significance with the second highest number of newly started businesses in the industrial production field but however, food companies are lagging behind EU SMEs in terms of technological development and knowledge-intensiveness. Therefore, political support for measures for starting new companies and for encouraging entrepreneurship should be taken, along with measures for promoting exports, innovations and green technologies.*
Description of Policy recommendation	*Encourage entrepreneurship in the food sector and improve training and educational background.* *Encourage SMEs to introduce innovations (including "green" solutions), train in-house personnel and cooperate with RTD entities.* *Facilitate access to all kinds of targeted SME funding.* *Provide a second chance for companies in insolvency.* *Simplification of regulatory requirements and reduction of administrative burden.* *Encouragement of state aid with simplified procedures and payment deadlines for more innovative and entrepreneurial business environment.* *Encourage SMEs to make better use of the single market by providing better information and support for introducing production standard requirements and also to expand outside the EU single market through internationalisation.*
Responsibilities	*Ministry of economy; State agency for promoting SMEs*
Time horizon for the implementation	*long term*
Geographical scope of the Policy	*national*
Funding necessary	*30000 EUR external expertise for the development of the*

	strategy
Similar implemented elsewhere	**Policies**

Policy recommendation	***4. Provide targeted public funding to improve research and innovation as a factor for competitiveness of the economy***
Type of Policy	• *Public funding of science- industry research cooperation;* • *Provision of innovation support services (advisory, innovation management, technology transfer and training);* • *Cluster policies;* • *Funding of innovative industries (grants)*
Rationale	*Innovation is a key factor to competitiveness. However, in the period 2010-2012 only 0.6% of the GDP was dedicated to innovations. The majority of SMEs have no capabilities to develop their own innovative solutions. The relations between RTD entities and the businesses are poor. Therefore, concentrated actions are necessary in innovation-generating fields of the economy in order to boost competitiveness..*
Description of Policy recommendation	*Stimulate clustering in specific sectors of high growth and export-oriented sectors (based on traditions and market positions and relative to the territorial specialisation of innovations and innovative centres (Sofia, Plovdiv, Varna)* *Provide support to build and boost the capacity of SMEs for developing and implementing in-house RTD and innovation activities* *Create favourable conditions for innovation activities and establish cooperation between the business and RTD entities through support for: high-tech parks, technology transfer offices, thematically focused laboratories, incubators, innovation vouchers, innovative business support services, technology extension programmes.*
Responsibilities	*Ministry of economy*
Time horizon for the implementation	*long term*
Geographical scope of the Policy	*national*
Funding necessary	*250 000 EUR*
Similar Policies implemented	

elsewhere	
Policy recommendation	***5. Provide targeted public funding to improve the quality of science, research and education***
Type of Policy	• *Public funding of science- industry research cooperation;* • *Strategic research programmes and research infrastructure;*
Rationale	*No targeted EU funding through an operational programme was given in the current programming period to science, research and relevant infrastructure while national funding was too low and even decreasing. However, in view of the 2020 priority to develop knowledge as a factor for a competitive economy and given the poor quality of scientific research and innovation activities and education there is specific need to introduce such an OP for the next programming period utilising the innovative approach of providing joint funding from both the European Social Fund and the ERDF.*
Description of Policy recommendation	*Objective: Stimulate investment in RTD to reach 1.5% of the GDP by 2020 through improving the quality of science and of research and innovation infrastructure.* *Measures: -Modernisation of R&D infrastructure and equipment and improve the capacity of RTD entities to apply research results;* *-Technological improvement through introducing modern IT solutions;* *- Establishing of centres of excellence in priority scientific fields including food;* *- Total digitalisation of scientific and document content;* *- Encourage relations between educational centres and the economy through updating curricula to specific needs and breeding entrepreneurial culture among students, as well as improving entrepreneurial and intellectual property capacity of researchers and innovators;* *Establish a system for registration and protection of intellectual property rights resulting from projects of public funding*
Responsibilities	*Ministry of science and education*
Time horizon for the	*long term*

implementation	
Geographical scope of the Policy	*national*
Funding necessary	
Similar Policies implemented elsewhere	

Policy recommendation	***6. Establishing a Joint Technology Transfer Center /JTTC/ as a new stage of the Research and Development activities the Agricultural University in Plovdiv /AUP/ and RTD organizations***
Type of Policy	*Public funding of science - industry research cooperation; Strategic research programmes and research infrastructure;*
Rationale	*Organization of the JTTC at AU and RTD organizations seeks to develop and transfer the latest Bulgarian technological achievements in Food, Agriculture and related value-adding areas through elaboration and implementation of innovative technological products, transfer of information and support services for technological change. Through these it allows the individual researcher and research teams to get recognition, the Food , Agricultural and related businesses to increase their competitiveness, and the Agricultural University in Plovdiv to strengthen its position as a leading institution and desired partner*
Description of Policy recommendation	*In order to achieve the above stated mission and vision of the JTTC the following strategic objectives are set:* **To become the leading organization in the transfer of Food, Agricultural and connected value-added technologies in Bulgaria.* **To from a network of recognized specialists in Plovdiv region bringing together researchers from AUP, the University of Food Technologies and the research institutes of the National Center of Agricultural Sciences offering high quality products and services for technological change.* **To increase the motivation of staff from AUP and the partnering research institutes to engage in technology development and transfer activities, and to allow them to exploit new opportunities by supporting the development technologies.* **To make a contribution to the development of the Food, Agricultural and connected value-adding business in Bulgaria by introducing new technologies in companies.* *The overall objective: Improving the competitiveness of*

	Bulgarian Food, Agricultural enterprises and related area business through enhancing the innovation and technology transfer infrastructure. *The specific objectives include:* **Establishment of JTTC at AUP.* * *JTTC acting as information and contact point for enterprises that need innovation service.* * *JTTC acting as a promoter of the potential innovations of AUP and other PROs in the area of Food and Agriculture.* * *JTTC acting as intermediate body between providers and adopters as agricultural and value-added related technologies.*
Responsibilities	*Ministry of science and education and the Ministry of economics*
Time horizon for the implementation	*long term*
Geographical scope of the Policy	*Regional and national*
Funding necessary	
Similar Policies implemented elsewhere	

Policy recommendation	***7. The inclusion of entrepreneurship and the subjects connected to it in the students curriculum***
Type of Policy	*Public funding of science- industry research cooperation; Strategic research programmes and research infrastructure;*
Rationale	*Development of entrepreneurial, management and innovation skills should become an integral part of education, research, training and lifelong learning strategies.* *Bulgarian universities and RTD organizations would be able to respond better and faster to the market demands and* *develop partnerships with the business community, recognizing that their relationship with them is of strategic importance and from a part of their commitment to serving the public interest.*
Description of Policy recommendation	*These partnerships bring opportunities for universities to improve the sharing of research results, intellectual property rights, patents. They can also increase the relevance of education and training programs. Links with business can bring additional funding.*
Responsibilities	*Ministry of science and education*
Time horizon for the implementation	*medium term*
Geographical scope of the Policy	*Regional and National*
Funding necessary	*35 000 EUR*
Similar Policies implemented elsewhere	*(provide some examples of similar policies and measures that have been implemented elsewhere)*

6. REGION OF ROMANIA

6.1. BRIEF PRESENTATION OF THE EXISTING REGIONAL FOOD INNOVATION SYSTEM

The research-development and innovation system in Romania is a centralised system, based on the financing of the R&D&I programmes, especially those of the National Authority for Scientific Research (ANCS/NASR), which is in the coordination of the Ministry of Education, Research, Youth and Sports (MECTS/MERYS).

INNOVATION GOVERNANCE AND FUNDING

(i) Political level

It belongs to the Commissions for Education, Science, Youth and Sport from Senate and The Chamber of Representatives, which are submitting to the Parliament the law proposals and other legal documents related to science, education, youth and sport.

(ii) Operational level

The National Council for Science & Technology Policy is the governmental body at high level, to establish the priorities and the legal framework of the National Strategy of Research-Development and Innovation 2007 – 2013, accordingly with the Governmental Programme and the sectorial strategies, in consultation with the stakeholders.

The Ministry of Education, Research, Youth and Sport (MECTS/MERYS) is the central piece of the system, prepare and implement specific policies through the National Authority for Scientific Research (ANCS/NASR).

(iii) Advisory Commissions

MECTS has several advisory commissions such as: Advisory Commissions for Research, Development and Innovation, National Council for Ethics, National Council for Scientific Research, Romanian Committee for Research Infrastructure, Council for Innovation and National Council for Development and Innovation.

(iv) Implementing units

MECTS implements and operates the financial execution of the National Plan for Research-Development and Innovation 2 through the Executive Unit for Financing the High Education, Research, Development and Innovation (UEFISCDI).

MECTS is in permanent contact with the European Commission concerning the research-development and innovation programmes by the support of the Romanian Office for Science and Technology (ROST), located in Brussels, which has the mission to promote the romanian researchers participation in specific programmes of the EU and to improve the links with partners from other member countries.

(v) Academic research system

This includes the Romanian Academy and the sectorial academies: Academy of Medical Sciences (ASM), Academy of Agricultural Sciences and Forestry (ASAS), Academy of Technical Sciences (AST) .

(vi) Coordinating Agencies in strategic areas

Romanian Association for Standardisation (ASRO), Romanian Association for Certification (RENAR), Nuclear Agency and Romanian Space Agency (ROSA).

(vii) Research-Development and Innovation Units

There are 264 research-development and innovation units (168 of national interest: 48 national R&D institutes, 56 certified public universities and 52 institutes, 14 centers of research of the Romanian Academy, 32 certified private universities and 17 institutes and R&D centers in agriculture and 51 R&D agricultural stations belonging to the Academy of Agricultural Sciences and Forestry.

There are about 2,000 organisations with R&D activities, out o which 850 in the private sector (accordingly with the ANCS statistics of 2009).

The network of the technology transfer centers and innovation institutes (RENITT) includes 47 specific entities (13 centers of technology transfer, 19 centers of technological information, 15 business and technology incubators) and 4 S&T parks (accordingly with ANCS statistics of 2010).

(viii) Research-development personnel:

At end 2009, 42,420 people have been registered in the R&D system, out of which 30,645 (72.2%) researchers, out of which 14,916 having PhDiploma (43.6% women). The most numerous researchers were in technical and engineering sciences (46%), in natural sciences (14.1%).

85% of the employees of the R&D system are graduated of high education bodies and majority (56%) work full-time in the system.

(ix) Regional/National entities which act to support research-development,

technology transfer and innovation

Out of the 6 specific programmes, included in the National Plan for Research-Development and Innovation 2, the programmes called „Partnering Priority Areas" and „Innovation" are closer to the report subject. The created consortia to run the projects are done by:

- research-development units (including academic entities and universities);
- industrial partners (companies);
- supporting organisations for innovation and businesses;
- entities for technology transfer and innovation.

Together with the funding bodies, they are key-players of the research, development and innovation system.

6.2. *POLICY ANALYSIS*

The Public investment in research and innovation is lower then the European average and far from the 2020 EU target.	• Allocated public funds for research and development were around 0,50% of GDP. • The European Union is establishing a target of 3% of GDP in 2020 for each european country, • It is less probable to happen in Romania in the next years (still affected by the world crisis) because it was not able to pass over 1% in the years of accelerated economical development (2000 – 2008).
No specific measures for agricuulture and food are expected in the close future, but agriculture and food will remain **one of the priority** area of the Romanian R&D and innovation system	• Romania has a centralised system of financing the research and development; • Romania has a low degree of autonomy for its development regions. • The main support still is the central public funds (Governmental) and managed by the National Authority for Scientific Research (ANCS/NASR) and the Executive Unit for Financing the High Education, Research, Development and Innovation (UEFISCDI). • These two agencies has a general R&D overview, by launching and financing innovation programmes for all economic sectors.

The project may be **a tool** for generating a national **dedicated strategy** on agrifood sector and **proposing incentives** for the investing private sector	• A specific programme for agriculture and food may be launched by the Ministry of Agriculture and Rural Development. This ministry doesn't have a direct responsibility in the D&R system, but in collaboration with the ANCS/NASR it may be possible. • The partial and the final results of Innofood project may represent proposals to both national authorities for a future common R&D programme for the sector

The dialogue between research units and industry it is still at a lower level. It is **a need for creating tools** to increase and to stimulate this dialogue.	• The relation between the research units and the companies in the agrifood sector is still at a lower national level; • More, in the european Eureka initiative, out of the 25 european projects with Romanian participation, it is only one running project in food sector and one running project in agriculture sector. • The increasing and the stimulation of the research-industry dialogue are mandatory conditions for removal of this strong barrier in front of technology transfer and innovation. • More, the existing situation occur the private investment in research-development and a more significant contribution of the food private sector in innovation projects.

There is a gap between high qualification of people from research units and the experts from industrial sector. The first ones have high qualification at European level, the second ones need common projects for **skills improvement.**	• The agrifood sector doesn't have a numerous personnel with high R&D qualification (masterate, PhD titles, post-doc studies, etc). • These qualifications may be found in universities and the research units. As long as more and more partnering projects research-industry are granted, the industrial experts may improve their R&D professional skills, benefitting of the facilities offered within these projects – training periods in high qualified research labs, the possibility of doing PhD studies, etc. • Unfortunately, for the moment, at national level, the number of projects selected for financing in agrifood sector in the last competition of call for proposals is rather small (17).

There are still channels of dialogues between research and industry which are not working properly. There is a **lack of projects framework** for multipliers of information at the national level. **The old programmes shall be reloaded again.**	• The valorisation of research results in the agrofood sector is also at the low level, for instance the small number of innovation vouchers in 2012 (only 8) and the small number of created start-ups (only 3) show a big lack and gap in the research – industry dialogue in this sector and the low intensity of this dialogue. • Here the National Technological Platform „Food for Life" may have a strong involvement, but its functioning shall be continuous financially supported. • Unfortunately, the financial measure which created the platform – the module 2 Capacities of PNCDI 2 – is no longer available since 2009. That's why the platform couldn't work at expected parameters in the last 3 years

6.3. SWOT ANALYSIS AND SOR METHODOLOGY

Based on the SOR matrix, the following observations can be made:

(i) The capacity to attract **new R&D European and regional programmes** (O=67) should be improved by using more efficiently the **strong research base** (S/O=11) and by maximizing the open exchange of experience in research and technology development. This will enable the food science community to face the **failure to attract international researchers** (T=58).

(ii) The food science community should exploit the opportunity of an intensive **networking** (O=64) by using **the highly skilled personnel** (S/O=12). In order to grasp this opportunity, the **poor linkage between firms and research entities** should be minimize (W/O=12).

(iii) The food science community should take benefit about the **availability of EU R&D funds for research** (O=61) in order to develop innovative, safety and secure food products. Currently, exists a **weak understanding between researchers and industry which complicates joint projects** (W/O=9), however, **public - private cooperation** can help in attracting European funds for research (S/O=11).

The SOR matrix suggests the following observations:

- The capacity to attract **R&D funds for research and innovation** (O= 111) should be improved by high **product diversification** (S/O=17) and by using the most valuable resource of a company, **highly skilled personnel** (S/O= 15). This will enable the food companies to face the problem of **cofinancing** (T=87).
- The food companies should take into account that the export trends are increasing (O=108) and for that they should valorise the management's capacity (S/O=17). Although, in order to take the advantage of this opportunity, the **international orientation** should be reopened (W/O=19).
- The research activity in the food sector should be supported and should take the advantage of the existing **RTD& innovation programmes tailored to the sector** (O=96) **by constantly improving product quality (**S/O=15) **and product diversification** (S/O=14). The industry should also **think of their own R&D units** (W/O=14)**,** in order to grasp this opportunity**.**

RECOMMENDATIONS AND REMARKS

(i) Both SOR analysis go for "ATTACK", showing a positive perspective for RTD units and sectorial SMEs. The strenghts could be improved, to use the newcoming opportunities:
- i.e. continuing to have high skilled personnel and strong research base in the RTD units is a guarantee that international networking and the new European and regional programmes will be accessed with applications. In the mean time, product and process quality in the industrial SMEs may support the sector to keep the strong national/regional product identity and to make possible the access at existing RTD and innovation programmes tailored to the sector;

(ii) there is a fact that it is still a poor linkage between industry and research in the country which create also a weak understanding between researchers and industry experts. Using the opportunity of the increasing networking possibilities (like professional associations, clusters, technology platforms, for a) is the most direct answer to minimize the weakness and in time the cooperation between industry and research to become a strenght.

(iii) in the country and in the country's regions there are no direct programmes for food sector (the food thematic lines are part of the general programmes). Launching such sectorial programmes will be a larger opportunity for the sectorial RTD units and SMEs and it would

be the task of the consortium to find innovative tools to propose them to public authorities in charge for RTD and innovation which may consider in the future to promote a sectorial food program.

Policy recommendations

1. strenghtening the dialogue research – industry
- brokerage events;
- incentives for R&D units to transfer their results to industry

2. udating industrial experts skills on research and innovation
- training period for industrial experts within R&D units
- training sessions for industrial experts of IPR issues

3. enhancing the innovative and managerials skills of the project managers
- R&D projects led by foreign experts

4. increasing the visibility of the innovative companies
- promoting the innovative companies and innovative results in audio/visual media
- enhancing the profile of innovative companies through IT channels

5. updating academic curricula
- staistics
- advanced food control analysis etc.

6.4. SYNTHESIS OF POLICY RECOMMENDATIONS

Policy recommendation	***1. Strengthening the dialogue research – industry by common actions***
Type of Policy	• *Provision of innovation support services (advisory)* • *Cluster policies;* • *Public funding of science- industry research cooperation;*
Rationale	**The dialogue** between research units and industry it is still at a lower level. It is **a need for creating tools** to increase and to stimulate this dialogue. There are still channels of dialogues between research and industry which are not working properly. There is a **lack of projects framework** for multipliers of information at the national level. **The old programmes shall be reloaded again.**
Description of Policy recommendation	*Organising periodical brokerage events on topics of food and agriculture sectors will increase the dialogue between the research units and the industry as well as between the members of the food chain*
Responsibilities	*National Platform Food4Life and Professional and Sectorial Associations*
Time horizon for the implementation	*Short term*
Geographical scope of the Policy	*National*
Funding necessary	*10.000 euro to prepare the terms of references and 1.000.000 euro for 10-15 annual events*
Similar Policies implemented elsewhere	*Several Governmental agencies in Europe with responsibilities on research and innovation has similar programmes. In Romania it was a such programme (for all main research areas) between 2005-2009 then it stopped.*

Policy recommendation	***2. Strengthening the dialogue research – industry by innovative vouchers***
Type of Policy	• *Funding of innovative industries (grants, loans, guarantees, equity, etc.);* • *Public funding of science- industry research cooperation;*
Rationale	**The dialogue** between research units and industry it is still at a lower level. It is **a need for creating tools** to increase and to stimulate this dialogue. The transfer of research results from R&D units to industry is still difficult, because the public financing goes mainly to R&D activities, not for valorisation of R&D results.
Description of Policy recommendation	*Launching and financing a programme for innovative vouchers for Food industry and agriculture is the best way to valorise the research results from R&D units and from innovative SMEs*
Responsibilities	*Ministry of Agriculture and Rural Development and the Ministry of Education, Research and Youth*
Time horizon for the implementation	*Short and medium term*
Geographical scope of the Policy	*National*
Funding necessary	*10.000 euro to prepare the terms of references and 1.000.000 euro for 100 -130 annual innovative vouchers (duration of max 12 months / voucher and a value of 10,000 euro + 10% cofinancing from the industrial company who benefits about it)*
Similar Policies implemented elsewhere	*Several Governmental agencies in Europe with responsibilities on research and innovation has similar programmes.*

Policy recommendation	***3. Updating industrial experts skills on research and innovation by training period for industrial experts within R&D units***
Type of Policy	• *innovation management, technology transfer and training);*
Rationale	**There is a gap** between high qualification of people from research units and the experts from industrial sector. The first ones have high qualification at European level, the second ones need common projects for **skills improvement.**.
Description of Policy recommendation	*Launching and financing a programme for training periods of industrial experts within R&D units will offer to industry of better identifying their needs and to update their technologies to the new trends in research and innovation*
Responsibilities	*Ministry of Agriculture and Rural Development and the Ministry of Education, Research and Youth*
Time horizon for the implementation	*Short and medium term*
Geographical scope of the Policy	*National*
Funding necessary	*10.000 euro to prepare the terms of references and 500.000 euro for 100 -130 annual training sessions (duration of max 6 months within 12 calendaristic months / trained industrial experts*
Similar Policies implemented elsewhere	

Policy recommendation	***4. Enhancing the innovative and managerials skills of the project managers by R&D projects led by foreign experts***
Type of Policy	• *innovation management, technology transfer and training);*
Rationale	**There is a gap** between high qualification of people from research units and the experts from industrial sector. The first ones have high qualification at European level, the second ones need common projects for **skills improvement.**.
Description of Policy recommendation	*This programme can be be useful to make a significative jump and updating from the national research to the European trends and prospectives in research and innovation. Also the expertise of recognised foreign experts, acting as Project managers in national R&D projects will improve the local experts managerial skills*
Responsibilities	*Ministry of Agriculture and Rural Development and the Ministry of Education, Research and Youth*
Time horizon for the implementation	*Medium term*
Geographical scope of the Policy	*National*
Funding necessary	*10.000 euro to prepare the terms of references and 3.000.000 euro for 10 projects (with a duration between 24-36 months for food research topics)*
Similar Policies implemented elsewhere	

Policy recommendation	***5. Increasing the visibility of the innovative companies by promoting the innovative companies and innovative results in audio/visual media***
Type of Policy	• *Provision of innovation support services (advisory,* • *Cluster policies;*
Rationale	**There is a lack** of knowledge about food companies and their effors for improving the technologies and the food products quality and safety.
Description of Policy recommendation	*This programme can be useful to increase the visibility of the food companies (mainly the SMEs) and make them better known by the general public by live emissions at public media*
Responsibilities	*Ministry of Agriculture and Rural Development and the Ministry of Education, Research and Youth*
Time horizon for the implementation	*Short term*
Geographical scope of the Policy	*National*
Funding necessary	*10.000 euro to prepare the terms of references and 500.000 euro for 2,000 media appearances per yer*
Similar Policies implemented elsewhere	*The French Governmental Agency ANVAR (now OSEO) has a similar programme for innovative SMEs (less then 20 employees) and for 5-10 minutes daily a company is having live emission at RFI (Radio France International).*

7. REPUBLIC OF SLOVENIA

7.1. BRIEF PRESENTATION OF THE EXISTING REGIONAL FOOD INNOVATION SYSTEM

In Slovenia, to a large extent, scientific research is conducted at **Universities**. Slovenia has five Universities, namely: University of Ljubljana, University of Maribor, University of Primorska, University of Nova Gorica and Euro-Mediterranean University. The first three are public universities, funded for their academic tasks mostly by the Government, while the University of Nova Gorica presents a public-private partnership. Currently prevailing funding system for higher education in Slovenia separates the educational funding (which follows the number of students enrolled, the number of staff employed and the number of programmes), from the research one. When it comes to research, HEIs are treated as any other public research unit and apply for research funds through public calls for research programmes/projects at Slovenian Research Agency, so one could say competitive funding prevails. The HEI's can also raise support for the research activity from business sector. Due to relative independence of the research units (often called institutes) it is difficult to clearly establish the amount of financing coming to HEI from different sectors (Erawatch, 2012).
The national statistics show that in 2010 the R&D funds for the HEI sector primarily came from the Government (75,7 %), followed by the business sector (11,95 %), funds from abroad (10,4%), and by the HEI sector itself (1,95 %). In 2010, HEIs performed 13,82 % of total R&D in Slovenia or 0,29 % of the total GDP (SORS, 2011).

In addition to the Universities there are 47 **Public research organisations** (PRO), non-university research institutes, which contribute to the country's knowledge base with a comparable share as the university system. PRO employ 2,036 researchers (FTE count) in 2010 (SORS, 2011). The public research institutes (15), which are having the Republic of Slovenia as their founder, are entitled to institutional funding. The percentage that institutional funding represents, varies from institute to institute, but, on average, institutes report that 10–30% of their budget is covered in this way. Institutes can apply to Slovenian Research Agency for the research programme funding with their research groups, for the applied projects if they have co-financing from business sector and for the so called Targeted research projects. The funding is obtained also through direct contracts with the business sector and through international cooperation (Erawatch, 2012). The research institutes receive most of the funding from the public funding: according to 2010 data, as much as 77 % of total funding was received from the Government, 13 % were coming from business sector and 10 % from abroad.

The third category of research performers in Slovenia is **Business sector R&D units** which have experienced a considerable growth in the last decade. Structure of the business R&D expenditure reflects the predominant role of manufacturing in the country, and within the manufacturing sector two sectors stand out: chemicals, specifically pharmaceuticals, and machinery and equipment, especially electrical equipment. Another concentration of business R&D can be found in fabricated metal products, machinery and equipment (34%; 2010), especially in TV and communication equipment. In 2010, manufacturing in total Business Expenditures for Research and Development (BERD) presented a share of 78%, and the share of services was 20%. The statistical data (SORS, 2011) shows that in the business sector 8.427 (7.056 in FTE) persons were employed; 3.887 (3.389 in FTE) classified as researchers and 3.530 (2.892 in FTE) as technicians in 2010. The research organisations in the business sector, however has a significantly lower educational level than those in the public research sector, since only 11% of all researchers holding the PhD work in the business sector (SORS, 2011). Among the types of research, the largest amount (68,5 %) of BERD in 2010 was devoted to the applied research, followed by 25 % of experimental research/development. The basic research received only 6,5 % of total BERD.

The interface between the universities, PRO and Business sector R&D are the **Public-private Research and Technology Organisations.** These institutions can be split into two categories in Slovenia: (1) bridging institutions, namely Technology Centres, Technology Platforms, Centres of Excellence, Clusters) and (2) support institutions, namely Technology parks. One of the early ideas of the bridging institutions was the formation of ***Technology Centres*** (from 1994 onwards). Technology centres are independent legal entities established by several companies for the purposes of R&D in a specific field or branch, as well as for the provision of R&D equipment subsequently made available to companies for their development projects. There are currently 28 active technology centres operating in the fields ranging from textile processing, footwear, tool-making, and electrical engineering, information and safety technologies. The mode of co-financing has changed over the years, from the co-financing of the costs of operation to financing of the programmes.

The **Cluster initiative** in Slovenia, beginning in 2000, was one of the top priority measures when introduced. **Technology Parks** is another early introduced measure (1994) and are supported by Ministry of Economy through PAEFI. Here, too, the modes of financing have changed several times since their establishment – until 2005 the services the parks offered to SMEs located within the parks were subsidised, but in 2005 and in 2006 a special public call, supported also by the European Regional Development Fund provided substantially

increased resources for construction of new premises and new research infrastructure investments. Currently, the support to Technology parks is provided through PAEFI via the programme on innovation infrastructure. Four parks are functional, the biggest being Ljubljana Technology park (http://www.tp-lj.si/en/), where close to 300 enterprises are located. And, finally there are **Centres of Excellence** and **Competence centres** which are seen as support tools, which will enable the concentration of high-quality research in priority areas and horizontally integrate all stages in knowledge development: from basic research to the development of commercial application. They aim at bringing together the critical mass of knowledge and research infrastructure to allow for the potential scientific break-through at the international level and enable participation of Slovenian scientists in the international networks of excellence. At the same time they should be concentrated in the areas where strengthening of scientific resources would also result in increased technology transfer and development of new technologies for Slovenian industry. Centres of excellence aims at strengthening academic excellence and co-operation by building critical mass and by linking up to top centres abroad. It funds high-quality multidisciplinary groups of researchers. Currently there are eight CoEs, in which 70 industrial partners participate. The centres, each of which has a budget of around EUR 10 million, represent strongholds of Slovenian science and their formation is thus the result of a de facto bottom-up process. Each CoE is required to form a distinct legal entity. Competence centres (CCs), a science-industry linkage programme, are similar to CoEs but with a much stronger role for industrial partners, applied research and industry networks. The programme is aimed at strengthening the capability to develop and use new technologies to create new products, processes and services in important technology areas. The programme has an overall budget of 45 million EUR. Seven CCs in which 46 companies and 16 research organisations are participating have been awarded EUR 6,4 million each.

7.2. POLICY ANALYSIS

Preliminary assessment of the Innovation Framework Conditions in Slovenia is presented below.

7.2.1 PUBLIC RESEARCH

i) Public investment in knowledge

The public R&D funding in Slovenia is structured under the following the institutional scheme: Slovenian Research Agency is in charge of financing basics and applied research primarily in public research sector, while Technology and Innovation Agency should be financing the

R&D activity in business sector or in projects where both public and private R&D institutions are involved. In addition, resources of the Ministry of Economy and Technology are provided through Public Agency for Entrepreneurship and Foreign Investment for measures supporting the mobility of researchers and the running of intermediary institutions (technology parks, university incubators, etc.) and through Slovenian Enterprise Fund for start-ups in innovation environment and bank guarantees for SMEs engaged in R&D projects and technological restructuring.

ii) Relevance and Quality of research

The Slovenian science system has surpassed the EU average in terms of publications per 1mn already in 2002. This number has increased from 726 in 2002 to 1637 in 2008 while EU15 average increased from 673 to 1176 in the same period. As a result, Slovenia now holds the 5th place among EU27 in terms of number of papers per capita. Taking into account the number of citations per million inhabitants in the same period, Slovenia holds the 13th position among the EU countries with 18.062 citations per million inhabitants, or 95% of the EU average. Regarding the impact factor, Slovenia is ranked 22nd among EU countries, with IF 3,09 and 61% of the EU average, which shows that Slovenian authors attract relatively poor attention. With 62 highly cited publications per million inhabitants in the period 1998–2008, Slovenia reached 151% of the EU average and the 13th place in the EU.

7.2.2 COOPERATION IN INNOVATION BETWEEN KNOWLEDGE INSTITUTIONS AND THE PRIVATE SECTOR

i) Cooperation in R&D

In the past decade, Slovenia has established a complex scheme of bridging institutions within the national innovation system to help bridge the gap between public research and industry. The measures and instruments were mostly copied from more developed countries or suggested to the government by various consultancies. The bridging institutions include technology parks and centres; incubators, clusters, technology networks, technology platforms and centres of excellence. Funding has often been insufficient and irregular and several institutions spent much of their energy on survival instead of on carrying out the tasks they were established for (Bučar and Rojec, 2009).

One of the resource mobilisation strong points/advantages in Slovenia has been the growth of business R&D investment. At nearly 60% in 2007 and 63% in 2008 (Eurostat, 2010) business funding of R&D far exceeded the EU27 average of 55% and is thus in a range typical of more advanced innovation systems.

ii) Commercialization in research

One of the cornerstones of the Slovenian R&D policy is technology transfer and commercialization of research and technology. High hopes are put into the ability of the research institutes and universities to transform their technology into business. If Slovenia is to build its strategy on a broader economic activity base and on commitment from a larger number of (small, medium sized) companies, it is very important to increase the number and size of research active companies. This requires better incentives for the research institutes to work together with non-research based companies interested in (technological) development and innovation. Experience shows that without direct incentives, the barriers will exceed the advantages seen from the point of the research institution/and the researcher. During 2001-10 Slovenia was granted patents in 35 different technological fields (OECD, 2012). The number of high-technology firms in manufacturing and services is relatively small. High-technology and service exports have remained low in international comparison

7.2.3 INNOVATION FINANCE

i) Subsidies and tax incentives for R&D:

In Slovenia a call for the more active application of fiscal policies to promote business-sector investments in R&D was answered in 2006 by the introduction of a new tax incentive, under which investments in R&D are tax deduct-ible in the amount of 20 %. In spring 2010, this tax subsidy was further increased, so now the enterprises can reduce their taxable income for corporate tax by 40 % of their investment in R&D in general and by additional 20 % if the investment was made in the regions where the development gap is more than 15 %.

ii) Access to venture capital:

The Slovene Enterprise Fund (SEF) deals with support for business R&D and innovation. It specialises – again partly with European money – in financing for small and medium-sized enterprises (SMEs), with grants for start-ups, guarantee credit lines for different growth stages and equity finance in the form of mezzanine and venture capital. The SEF reported earmarked capital at the end of 2009 of EUR 53 million and 700 projects with EUR 120 million of approved financial support in 2009, ten times more than some years ago. Besides guarantees and equity, SEF has also operated a grant scheme for the purchase of new technological equipment. From 2003 to 2009 nearly EUR 150 million were allocated in all, with a “crisis” peak in 2008.

7.2.4 MARKET CONDITIONS

The World Bank's Doing Business surveys provide information on the obstacles and barriers Encountered by Slovenian businesses. In the most recent of these international comparisons, Slovenia ranks 42nd out of 183 economies. Slovenia fares worst in "getting credit" (116), followed by "registering property" (97) and "paying taxes" (80). It performs well in "protecting investors" (20) and "starting a business" (28). A potential source of weakness in Slovenia's innovation performance is the somewhat unbalanced internationalisation of both the economy and the innovation system, which may be linked in some aspects to prevailing framework conditions.

i) Access to technology: It is estimated that Slovenia ranks somewhere at the middle of the EU27 countries.

ii) Competition policy:
Product market competition is a driver of productivity growth and spurs innovation directly or indirectly, through the processes of "creative destruction". In the Slovenian context a lack of competition in services has been identified, e.g. in some network industries and retail sectors, some of which are highly concentrated and stand out in terms of mark-ups (IMAD, 2011) with implications for productivity levels.

iii) Competencies of users and suppliers: It Is estimated that Slovenia ranks relatively moderate, somewhat below of the most developed countries.

7.3. SWOT ANALYSIS AND SOR METHODOLOGY

Based on the SOR matrix of **SMEs**, the following observations can be made:

- the food sector should take advantage of proper strengths as product and process quality as well as financial capacity in order to use all the export possibilities which are available;
- same strength, together with product market positioning, should be used in order to deal with all the threats identified

- the food sector is dealing with several weaknesses, which all together makes impossible to reach the opportunities available; we can't say one weakness is explicitly in front of the others
- the food sector should mainly focus on poor networking with public actors in order to deal with the main threats, being insufficient incentives addressed to the sector and nonexistence of political long-term commitment to the sector

Based on the SOR matrix of **RTDs**, the following observations can be made:

- RTDs seems to be in a good position to grasp the opportunities which are available, mainly using the existing open exchange of experiences and research for successful networking with all the other stakeholders, dealing with R&D
- Increasing number of collaboration activities with food companies should be also used in order to deal with the existing threats of external environment, namely no jobs available for university researchers and brain drain
- In order to be successful in reaching available R&D funds and establishing development centers RTD should focus and take care of its weaknesses, being poor linkage between them and food companies, as well as weak understanding between researchers and industry, which complicates joint projects
- Poor linkage between food companies and research entities should be also taken into consideration in dealing withthe threats, where no jobs for university researchers and brain drain are again in the front

The SOR analysis, which is focused on food industry, showed that there must be a REORIENTATION. Food industry has great export possibilities due to the position of the country, which needs to be well used. Slovenian products are known for their quality, so food industry should promote them beyond the country's borders.

Due to the increasing competition in the market, Slovene Food industry could succeed with advanced, innovative, quality products and services. The food sector should take advantage of proper strengths as product and process quality especially because there is increasing

consumer demand for more/better varieties. Supporting food industry in this production (innovation, excellent process and product quality).

Food industry has a lot of opportunities as well as some strengths – Slovenian policy should foster this strengths and with long term commitment take care of sufficient support for this strategic industry.

In SOR analysis for RTD units go for ATTACK. This indicates a positive perspective for research units to take advantage of the opportunities that are available.

In order to be successful in reaching available R&D funds and establishing development centres RTD should focus and take care of its weaknesses, being poor linkage between them and food companies, as well as weak understanding between researchers and industry, which complicates joint projects. This also have influence on development of new innovations and products. Slovenia should foster innovation in food industry – in their documents and with founds - that will help and foster RTD institutes to have more firm connections with food industry (flow of information, knowledge, experts). Collaboration between food industry and RTDs will help to transfer the knowledge from theory to practice.

Slovenian politics should establish existence of political long-term commitment to the sector of food industry – because of its strategic role (food security – self sufficient supply).

7.4. SYNTHESIS OF POLICY RECOMMENDATIONS

Policy recommendation	***1. Prioritisation and coordination of the national food R&D policies***
Type of Policy	• *Strategic research programmes and research infrastructure*
Rationale	*Slovenian agro-food sector has an obvious necessity to catch up with the ever-increasing pace of the most developed international competitors. There is no obvious understanding in Slovenia that innovativeness and business oriented R&D are the key determinants of the sector development and competitiveness. Public policies and initiatives in agro-food R&D area proved to be inconsistent in Slovenia in last decades as different ministries and other public bodies develop their own strategies without proper co-ordination. The key objective of the recommendation is to raise awareness of the need for coordinated innovation stimulating policies and introduce this principle consistently in national policy-planning process.*
Description of Policy recommendation	*The objective of the policy initiative is to clearly prioritise innovativeness and business oriented R&D in the national agro-food sector in Slovenia. Co-ordination of all the policies and public initiatives should assure that the enterprises in the food sector will evidently improve the innovativeness and intensify R&D activities. Firstly the leading ministry should carry out an inventory of all the policies and initiatives related to food industry R&D which will then be followed by a joint outline of future coordinated intervention by different public authorities and institutions in a form of Strategic government document. As a result, this policy prioritisation should advocate for changes in businesses' perceptions of innovation culture and should improve the climate for innovative entrepreneurship.*
Responsibilities	*Initiative should be given at the top policy level coordinated by the minister responsible for agro-food sector and with close collaboration from ministers responsible for industry and economic affairs, science, education, health.*
Time horizon for the implementation	*Immediate initiation – medium term implementation.*
Geographical	*National*

scope of the Policy	
Funding necessary	*No additional funding is necessary for the policy proposal – mainly co-ordination and reorganisation is needed.*
Similar Policies implemented elsewhere	*NA*

Policy recommendation	***2. Support to establishment of agro-food innovation network***
Type of Policy	• *Strategic research programmes and research infrastructure*
Rationale	*In Slovenian agro-food sector we identified a notable deficiency in concentration of innovation activities. Majority of the food companies are SME's and only poorly coordinated around innovation activities. Therefore there seems to be a clear rationale for Slovenian government to intervene in order to facilitate the establishment of agro-food innovation network (or innovation club) which will present a central entry point for interaction on the area of agro-food R&D and innovation. This set-up will, most importantly serve to facilitate communication of the business community with the public institutions however also food companies will exchange information and share experiences around specific knowledge bases or technologies and conduct activities which aim to develop common strategic visions (development foresight). For improved efficiency of the policy creation process in Slovenia a centralised and formal interaction between government and agro-food business community is required. This policy recommendation is therefore complimentary to the abovementioned 1st recommendation (Prioritisation and coordination of the national food R&D policies).*
Description of Policy recommendation	*In order to make the communication of the Government related to innovation policy in Slovenian agro-food sector with the business community more efficient and centralised a specific flexible institution should be set up. It is recommended to support the formation and operation of agro-food innovation office where all related activities will be coordinated, centralised and institutionalized. The innovation office should serve as a central communication point aiming at promoting the linkage of food companies and public institutions (government, institutes, and universities) in order to reconcile viewpoints related to R&D and innovation policy. This government activity should be oriented to overcome barriers to network formation: mainly initial financial support, but also organisational support should be ensured.*
Responsibilities	*Ministry responsible for economy, Ministry responsible agriculture and food, Ministry responsible for regional development*

Time horizon for the implementation	*Short to medium term*
Geographical scope of the Policy	*National*
Funding necessary	*150.000 EUR annually*
Similar Policies implemented elsewhere	*Many countries are running innovation office*

Policy recommendation	***3. Support to establishment of food clusters***
Type of Policy	• *Cluster policies;*
Rationale	*In order to promote sectorial competitiveness growth and stimulate innovativeness, the suitable approach seems to be to promote agro-food clusters. In Slovenia there are already some policies that might be classified into wide category of "cluster policies", however they tend to be focused on high-tech project, which is mismatching the prevailing needs of the majority of national agro-food companies. Rather fundamental objectives of the clustering policy should be defined for the Slovenian agro-food SME's if wide based effects are expected. Certainly, we are looking for a policy instrument which will stimulate coordinated activities of economic entities from food sector alone or inter-sectorial initiatives (agriculture, food retail, distribution, tourism), within a given region as well as the emphasis on networking and cooperation between companies and institutions. Therefore, one can expect a formation of several clusters composed from firms, related economic actors, and institutions that will reach a sufficient collaboration to share specialised expertise, services, resources and skills.*
Description of Policy recommendation	*Many examples confirm that the cluster policies are a vital element of building strong innovation systems, therefore the objective of the policy proposal is to stimulate establishment of specialised agro-food clusters in Slovenia. The policy should promote active co-operation among agro-food firms and associated (regional) innovation institutions based on coordinating existing infrastructure and activities. A two-step approach is recommended. First, the process of cluster proposal mapping should be initiated, where the government sponsored dialogue among different interested stakeholders will be organised and resulted in cluster initiatives. These will than prepare the strategic orientations of the proposed cluster programme which will be evaluated and selected for the government support. It is recommended that the food cluster policy is based on the classical principle of development, aiming at*

	creating, mobilising or strengthening food SME's. Therefore the cooperative projects related to technology, quality management & internationalisation. It seems that for the needs of the target group no high-tech priorities should be envisaged. Collaboration on fundamental topics would be best to be encouraged.
Responsibilities	*Ministry responsible for economy,* *Ministry responsible agriculture and food*
Time horizon for the implementation	*Medium to long term*
Geographical scope of the Policy	*National*
Funding necessary	*0,5 to 1 mio EUR annually among 4 to 5 food clusters.*
Similar Policies implemented elsewhere	*Almost all developed countries are running cluster policies.*

Policy recommendation	***4. Fiscal incentives for R&D in companies***
Type of Policy	• *Other types of measures*
Rationale	*During the last decade the in-firm R&D activities of the Slovenian agro-food companies has decreased considerably which has resulted in weaker competitiveness and market success. Therefore policy should put more weight on improving the in-firm R&D capabilities in order to increase innovativeness, particularly among the SMEs.*
Description of Policy recommendation	*The key objective of fiscal incentive for R&D is to increase business R&D expenditure in the Slovenian food industry. Undoubtedly, R&D is often a crucial investment for long-term growth and sectorial competitiveness; however for an enterprise R&D investment outcomes are often uncertain. Therefore the fiscal incentive is aimed at changing the behaviour of actors in terms of in-firm research and the way R&D activities are organised. One of the possibilities to stimulate in-firm R&D activities is to propose a change in the fiscal policy to allow for accelerated depreciation for investments which are used for R&D activities (e.g. equipment, buildings and intangibles). Even more effective might be inclusion of the tax credits which allow targeted food SME's to deduct a determined share of their R&D expenses from their tax liabilities. We propose that the definition of eligible operations for tax deductions can be quite generous in order to stimulate the attainment of the objectives.*
Responsibilities	*The Ministries responsible for finances, agriculture and food*
Time horizon for the implementation	*Medium term*
Geographical scope of the Policy	*National*

Funding necessary	*No funding is necessary, but fiscal revenue will be reduced. The level of reduction depends on specific policy design decisions (e.g. eligible operations for tax deductions, level of tax credit, maximum amount of tax reduction, businesses entitled to claim R&D tax incentives…)*
Similar Policies implemented elsewhere	*Manny countries are running such programmes (Italy, France, Spain, Netherlands).*

Policy recommendation	***5. Improvement of innovation capabilities in firms with training***
Type of Policy	• *Provision of innovation support services (advisory, innovation management, technology transfer and training);*
Rationale	*There is clear evidence that skilled workers are needed in Slovenian food processing enterprises in order to create the knowledge required for successful innovation practices. Due to the weakening of business performance in Slovenian agro-food sector during the last decade, many firms have limited resources for training provision to employees. Therefore, there is a clear need to introduce such policy instruments which will enable the companies to strengthen their human capabilities, improve skills, knowhow and in-house R&D capacities. A positive correlation exists between the level of expenditures on formal and informal training and innovativeness of a company, which more than justify the public policy to intervene in this area. This could be a successful model for competitive growth through a knowledge-based innovative agro-food economy in Slovenia. In order to provide a foundation for innovativeness to intensify within the Slovenian food sector skilled workforce is a key determinant that will create, transfer and diffuse contemporary knowledge.*
Description of Policy recommendation	*The objective of the policy measure is to mobilise additional financial resources for skills development in the Slovenian agro-food sector and to support the development of a "continuous training culture". An introduction of a "training levy" is proposed which all the registered companies in the agro-food sector above determined threshold should contribute to a "Training fund". Usually, the contribution is based on annual company turnover and amounts to several tenths of per cent. Government contribution to the raised funds is proposed in order to multiply the effects. Raised funds should than be used in sector specific training organised by the Industry association (overlooked by a Board of training fund") and available to the food companies free of charge. Furthermore a system of training grants should be established, where the funds will be directed selectively to enterprises based on proposed training plans (e.g. training for new*

	entrants, voucher…). Food companies will be therefore be able to recover determined part of their training costs. It is expected that such a policy should increase the volume of training in the food sector and have a positive impact on the skill and competencies base, particularly in the SME's.
Responsibilities	*Industry associations in agro-food sector* *Labour unions* *Ministry responsible for Economy and education*
Time horizon for the implementation	*Medium to long term*
Geographical scope of the Policy	*National*
Funding necessary	*Level of funds necessary depends on specific policy design decisions (level of budgetary contribution, level of the training levy)*
Similar Policies implemented elsewhere	*Japan, France, Netherlands, Germany*

Policy recommendation	***6. Direct support to R&D activities in SME's firms***
Type of Policy	• *Provision of innovation support services (advisory, innovation management, technology transfer and training);*
Rationale	*Many Slovenian food SME's (like in other sectors) are facing evident constraints in access to investment capital due to the credit liquidity crisis which has international scale. Consequently, the rationale for (temporary) policy instrument which directly supports R&D activity in this segment of the food industry is again topical. It is critical now to provide investment capital in the form of grants or loans, to support R&D undertaken by firms in order to mitigate the adverse financial conditions within which they currently operate in Slovenia. It is expected that R&D conducted within the food SME's will, directly stimulate innovativeness that leads to the production of more competitive products or services. All together should result in a sustainable competitiveness of the Slovenian agro-food sector.*
Description of Policy recommendation	*The objective of this policy instrument is to provide a direct funding to SME's in food sector in a form of relatively small support grants (up to 50.000 EUR). The application of the grant can be relatively diverse and can include support to undertake product development, enhancing product design, prototyping, process innovation, technology acquisition, organisational change, improvements to product marketing, etc.. Targeted companies should be those which without this support, development would be slower, if not impossible. In order to assure effectiveness of the program, strict selection procedure of the applications is required. Highly professional review process is recommended which should include the following aspects of the proposal: technological aspects, commercial financial aspects. The final decision is made by the management team of the programme.*
Responsibilities	*Ministry responsible for economy,*

	Ministry responsible for agro-food sector
Time horizon for the implementation	*Medium term*
Geographical scope of the Policy	*National*
Funding necessary	*It is proposed to finance around 20 projects per year (annual costs at about 0,8-1,0 mio EUR).*
Similar Policies implemented elsewhere	*France, Austria, Holland, Denmark*

Policy recommendation	***7. Cooperation between science and industrial actors***
Type of Policy	• *Public funding of science- industry research cooperation;*
Rationale	*In order to promote innovation and improve competitiveness Slovenia should, as one its' key priorities, strengthen the targeted collaboration between institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies. As far as Slovenian food industry is concerned, the need is not only to promote collaboration, in most cases even the institutional setup is not (anymore) existing. Therefore the basic conditions need to be supported to (re-)establish the national food innovation system. It is critically important to bridge the boundaries between the various actors (companies, institutes, universities, institutions) to interact and diffuse their knowledge, skills, capabilities and competencies. As a result, one might expect more R&D activities and their higher effectiveness and productivity, since diffusion of activities will be diminished. This rationale provides should be a strong incentive for Slovenian government to support for the promotion of R&D collaboration in food industry.*
Description of Policy recommendation	*The key objective of this policy is to support collaborative and knowledge exchange research projects that will be based on interaction between Slovenian agro-food sector and national R&D system (universities and institutes). In reality the science-industry cooperation can be organised in a diverse set of modalities, however this particular policy recommendation is focused on research projects which entail smaller timescales and scope and less resources (policy effort and time) are therefore requires. Two major sub-measures are recommended: 1) Small collaborative research projects and 2) Knowledge exchange projects. The first measure is intended to stimulate "problem-focused research" in the academia through continuous (obligatory) interaction with the industry partners from*

	agro-food sector. This will expand the total effort devoted to user-oriented research and thereby accelerate technological development in the targeted industry. The individual project should involve one or more business partners (food enterprises) with one or more public research institutions. In order to get the public support they should propose (and deliver) a clearly defined project whose results will possess intrinsic commercial value to the business partner(s). The support period might be between 1 -3 years and the public grant should cover university or public research institute costs, whilst the private partners will contribute their own costs. The second sub-measure (Knowledge exchange projects) is targeted particularly to the SME's since they will be much smaller in scale. Beside the size, the difference between the sub-measures is also in scope. The latter aims at the scientific support to a specific innovation project ruining (or planning to set-up) in the collaborating enterprise with financing of private procurement of R&D support services (so called voucher schemes) or temporary scientist placements. It is necessary this policy sub-measure to be flexible and simple to make it attractive to food SME's.
Responsibilities	*Ministry responsible for economy,* *Ministry responsible for agro-food sector*
Time horizon for the implementation	*Short to medium term*
Geographical scope of the Policy	*National*
Funding necessary	*It is proposed to finance around 5 Small collaborative research projects five years (total costs 1,0 mio EUR) and 20 Knowledge exchange projects (total costs 1,0 mio EUR).*
Similar Policies implemented elsewhere	*UK, Australia, Denmark*

Policy recommendation	***8. Commercialisation of research results***
Type of Policy	• *Provision of innovation support services (advisory, innovation management, technology transfer and training);*
Rationale	*Majority of the research activities in Slovenian academic institutions (universities and institutes) is funded via the research projects whose key donor is public budget, either national or supranational (e.g. EU programmes). Thus, most of the research ends only in reports to the funding organisations and / or scientific publications. Therefore, the research results are not presented to the business community or they are not in a format to be attractive to industry users. Transformation of a scientific result or even idea into a product for industrial use; so called commercialization, is an evident problem in Slovenia. Agro-food researchers have several barriers to engage into the commercialisation of their results. National universities have research carrier system based on scientific publications which does not incorporate and value experiences in working with business community. Therefore commercial activity is not enough stimulated in Slovenia. It is critical in this process, scientific results to be transformed into tangible business solutions that can be advantageous, efficient and profitable enough for food companies apply them in practice. For successful commercialization firstly excellent research results are needed, however also managerial and industrial competence required too. Both of the latter need additional financial sources which are not usually available to the researchers.*
Description of Policy recommendation	*It is recommended to set up the programme which will support commercialisation of research results generated at universities or institutes. The grant is to be made available to research groups with finalised research projects intended to market research, business plan development or legal services concerning intellectual property rights. The projects are rather small in financial terns. It is proposed that the maximal amount is 10.000 euro.*
Responsibilities	*Ministry responsible for economy* *Ministry responsible for research* *Ministry responsible for higher education*

	Ministry responsible for agro-food sector
Time horizon for the implementation	*Short to medium term*
Geographical scope of the Policy	*National*
Funding necessary	*It is proposed to finance around 10 projects per year (0,1 mio EUR).*
Similar Policies implemented elsewhere	*Finland*

Policy recommendation	***9. Establishment of "food technology clinics"***
Type of Policy	• *Provision of innovation support services (advisory, innovation management, technology transfer and training);*
Rationale	*Quite often Slovenian food SME's are facing similar technological or managerial challenges or are in need to evaluate specific technologies as solutions to their problems. In order to overcome this drawback some national governments are facilitating a special form of technology transfer programmes tailored to SME's for problem solving. An important distinction to other policy technology transfer policy initiatives is that the "technology clinics" represent a sophisticated supply side innovation support policy rather than a demand based response to specific problems for individual SMEs. It should be designed as a rapid and flexible way to finance relatively small problems which are (preferably) faced by many food SME's.*
Description of Policy recommendation	*The main objective of the initiative is to set up the foundation for special form of technology transfer institutions which are targeted to rapid problem solving in food SME's; so called Technology clinics. These institutions are based on the specific workflow, since the key policy characteristic is push-based intervention. The first step in forming a Technology clinic will be to select the theme which is strategically important for SME's in Slovenian agro-food sector. They are suggested primarily by research community (universities, institutes) or government institutions (ministry) but also companies or their associations might provide an important issue. The management authority (e.g. Slovenian Technology Agency) than selects the issues that will be supported in Technology clinics using, if needed, call for expression of interests among the targeted SME's. Than the coordinator (administrative issues of the TC) and service provider (executing research institution) is designated for the approved clinics and preparatory phase is initiated. The issue is further elaborated by the service provider and presented to the targeted SME's in order to raise awareness about the initiative. Than the coordinator will conduct*

	an expressions of interest call for participation by the food SME's. Further selection procedure (based on company visits, info-days…) performed by coordinator and service provider will than end-up with a list of food companies that will be willing to enter the working phase and sign the contract with the technology clinics to solve a specific and well defined problem. The service provider starts to work on the project and deliver the solution to the participating SME's. Finally the company gets the results (new technology, introduction of the organisational change…) and the technological clinic is dissoluted. The costs are shared by the managing authority and the participating SME's. It is proposed that the costs covered by the public fund represent 75% of total project.
Responsibilities	*Ministry responsible for economy, (preferably via its managing authority responsible for technology transfer-TIA)* *Ministry responsible for agro-food sector*
Time horizon for the implementation	*Medium term*
Geographical scope of the Policy	*National*
Funding necessary	*It is proposed to finance 3-5 food technology clinics in 5 year period and around 100 projects. Total budget for the period is 1 mio EUR)*
Similar Policies implemented elsewhere	*Finland, Greece (Region of Central Macedonia)*

Policy recommendation	***10. Credit guarantee scheme for food business***
Type of Policy	• *Funding of innovative industries (grants, loans, guarantees, equity, etc.);*
Rationale	*In the period of economic depression and bank crisis access to finance is aggravated even to low risk investments. Therefore if one wants to stimulate investments to projects looking at innovation and technology development, which are by its fundamental characteristic more risky, a public intervention is needed to overcome this problem. It is now clearly evident, that one of the important economic problems of Slovenia is inactive banking sector that reduces its provision of capital drastically in the last five years. Therefore enterprises are facing huge difficulties to access finances for development. It is recommended to set up a policy instrument which will make easier for food SMEs to obtain credit facilities from financial institutions since the government will share the risk with the lenders (banks) for the credit approved. This is particularly targeted to innovative agro-food SME's that can make a substantial contribution to improvement of competitiveness and economic growth, however these SME's may often have difficulties to present a robust business plan to potential creditors. Therefore a proposed public guarantee scheme can increase national banks confidence in financing investments targeted at innovation*
Description of Policy recommendation	*The Credit guarantee scheme for food SME's is proposed to address noticed inefficiencies on the Slovenian financial market which prevents food companies access the investment capital.* *Therefore it is proposed to assist viable food SME's on the margins of bank lending decisions in accessing credit. The credit guarantee provides protection to the participating bank in the event of inability by the food SME's to repay the credit. Therefore it is not insurance for the borrowing SMEs in the event of their inability to repay the credit. It is expected that providing additional level of guarantee to the banks against potential losses will*

	stimulate more credit lending to innovative and commercially viable SME's in Slovenian food sector. First the participating commercial banks should be decided by the government, since they are prime recipients of the policy instruments. Than the food SME's are approaching the participating banks with credit demand, and the standard procedure of appraisal is conducted. The bank must than first determine that the credit application is viable, but the food SME has insufficient security available to meet the bank's normal security requirements and the Credit guarantee scheme assistance is needed. The other case when banks will require participation of the Credit guarantee scheme is if there are elements of the proposed business plan (innovation risk) which are perceived as high risk under the bank's normal credit risk assessment. The application where both the bank and the borrowing food SME are included is than prepared and the managing authority (ministry responsible for finance) evaluates the eligibility for assistance. In case of inability by the food SME's to repay the credit the bank can claim up to 75% of the losses from the Credit guarantee scheme.
Responsibilities	*Ministry responsible for finance,* *Ministry responsible for economy* *Ministry responsible for agro-food sector*
Time horizon for the implementation	*Short to Medium term*
Geographical scope of the Policy	*National*
Funding necessary	*For setting up the scheme (200.000)* *Government budget reservation for the scheme (1 mio EUR)*
Similar Policies implemented elsewhere	*Ireland, UK, USA*

8. HUNGARY

8.1. BRIEF PRESENTATION OF THE EXISTING REGIONAL FOOD INNOVATION SYSTEM

The food strategy has to comply with expectations regarding the food industry, supporting the needs of innovative food entrepreneurs and promoting innovation.

8.1.1. General effects

The market, the demand for mass production and the development of world trade lead to the appearance of an industry-like, energy-intensive agricultural system that uses high amounts of synthetic material and energy. Along with this, **"industrial logic" appeared in the agricultural sector**, turning it into a kind of "biological industry". The evolution of the agricultural industry and parallel phenomena of nature and society induced a change of the expectations and the requirements the food industry has to face.

The strengths we can build on:

Hungary is traditionally an agricultural, food producing region with strong traditions. We have good quality arable lands and substantial amounts of water resources.

The so called Hungaricum products are renowned high quality food products with unique features. They are well known throughout the world and there is great demand for them on the Hungarian market.

The food strategy needs to build on these strengths to solve a multi-level social-economic problem:

„Internal weaknesses" of the food industry:

a) Concentration and centralization lead to the formation of large „homogenous" regions, while the process was followed by an inevitable **increase in the use of man-made resources (fertilizers, pesticides, machinery, fuel, etc.**).
b) As industrial agriculture became widespread, the former **hand-made character of food processing also evolved into large-scale production**. With the rise of industrial technologies, efficacy and competitiveness became the sole important parameters, with focus on low prime cost end-products. Competitiveness was measured as capital efficiency, resulting in the use of cheap raw materials and developing technologies to increase quantity rather than quality.

c) The average age of farmers and agricultural workers is increasing, **aging is becoming more and more obvious**. Today, 62% of agricultural workers are middle-aged or old. This is critical in rural regions for a number of reasons: the population ages, the rising generation of the farmer society is not sufficient. 1 out of 3 agricultural workers is older than 50 years. Without the new generation, private farms will face serious problems within years, and unless the trend is reversed, the aging process will have catastrophic effects on the agricultural sector. Almost half of the population considered to be poor lives in rural areas, while the ratio is 2/3 in the very poor segment of the population.
d) The agricultural and the food sector has a **profound impact on the environment** because of large scale production technologies, the packaging of food and transport. Our society and economic system is based on continuously increasing output, which leads to utilization of resources exceeding the biological and the regenerative capacity of the environment. The deleterious environmental effects of this have been known for decades. The per capita ecological footprint of Hungary (3,5 ha) may seem favorable when compared to developed countries (5-10 ha), but it cannot be considered sustainable, as it still exceeds biological capacity (2 ha) by 1,5 ha.
e) Agriculture – in particular the industrialized systems using chemicals and large amounts of fossil fuel (fertilizers, pesticides, fuel, etc.) – is a **significant energy consumer** also.

„External threats" that have adverse effects on the food sector

a) The effects of **climate change** are already apparent, the scale and the characteristics of the changes differ according to geographical conditions, location, land use and factors affecting water systems. Hungary is an ecologically fragile area. According to forecasts, Hungary is more likely to experience warming, extreme distribution of annual rainfall, riverine floods, accumulation of rainwater in poorly-drained environments and susceptibility to droughts than neighboring regions. This will have adverse effects on the safety of production, wildlife and biodiversity.
b) The public, entrepreneurs and farmers lack **environmental awareness**, a positive approach to environmental protection and nature conservation. Today our social and economic processes are dominated by environmentally demanding lifestyle and economic models.
c) The **migration of the rural population** has been going on for decades because of the lack of job opportunities and inferior living conditions in the rural areas. In some

cases, people from larger cities buy the properties in these emptying villages as a holiday resort or for recreational purposes. Some villages in the neighborhood of the capital have undergone suburbanization, became “sleeping villages” as their population increased and infrastructures developed. Both processes lead to a loss of traditional functions of rural small settlements.

Possibilities of development within the food sector

a) Food shortage will probably not occur in Hungary - partly because of the population trends numbers and partly because of our favorable capabilities.
b) Import has increased in the past years – for a number of reasons – and it is of strategic importance to regain our share of the Hungarian market.
c) Increasing demand for food is a good opportunity for us to increase our **agricultural and food export**. There is a global market where the products of a dynamically expanding Hungarian agriculture can find consumers for its products – mainly in a highly processed form.
d) The market has been splitting in the past years: on one hand, there is demand for a diversified, healthier food supply, on the other hand, the demand for cheap, mass produced goods has increased with the decrease of buying power.
e) There is **increased public pressure** to produce “safer” food, there are social preconceptions regarding the safety of food products, especially if novel technologies are utilized during the production process (irradiation, biotechnology, gene technology, nanotechnology, etc.).
f) Society is more sensitive to environmental issues and to GMOs, gene manipulation, biotechnology and animal welfare as ethical concerns increase and serious, unknown risks are identified increasingly.

8.2.1. Strategic plans

Two long-term strategic plans have been compiled for the industry.

1. The **National Strategy for Rural Areas 2012-2020, the “constitution of the Hungarian countryside”** was accepted in 2012 and contains the objectives and the trends of development regarding the Hungarian food industry for the period between 2012 and 2020.

The main objectives are increasing added value, security food supply and safe market. It is of fundamental interest to stabilize the whole food chain (from primary production and processing to the end products placed on the consumers' table) and increase its viability and competitiveness.

Strategic objectives:

- Food is a strategic commodity, so security of the food supply and food safety are of primary importance.
- Protection of local food markets and improving food safety are in the focus of agricultural market strategies, regulations and protection.
- Hungary is self-sufficient in providing food, and it can continue to be in the future, we even have export capacities. Regaining market positions on the Hungarian market and exploiting the export opportunities is a primary objective of the food economy.
- Decreasing the length of the food chain, significantly expanding local processing and sales with regards to environmental and health aspects.
- Promoting healthy nutrition.

Operative objectives:

- to provide most of the healthy and safe food supply from national sources;
- to optimize the food chain in order to produce the highest added value domestically;
- to improve the status of the national economy by exporting food that is in excess to domestic needs;
- to maintain and improve self-sufficiency in the rural areas by developing sustainable food producing systems at local and regional levels.

Specialty objectives:

- Producing good quality, healthy food.
- Decreasing the length of the food chain.
- Food self-sufficiency, regaining market position on the domestic market.

- Changing the direction of food production and trade to “inside outwards” (in the order of local supply – regional supply – national supply – export)
- Increasing added value, exporting high added value products.
- Increasing consumer awareness.

2. Recognizing the importance of innovation, stakeholders of the food chain (food processing companies, research institutes and universities, agricultural producers, vocational organizations, organizations active in the field of innovation, government organizations, authorities and consumer groups) established the **Hungarian National Food Technology Platform**, based on the initiative of The Federation of Hungarian Food Industries (ÉFOSZ) in 2005. 125 research and industrial enterprises participate in its activities.

   The objective of the platform is to coordinate efforts of its members in order to enhance innovation within the food industry and related fields of the food chain. To bring the results of research and development to a practical level as soon as possible, to promote development of the Hungarian food economy and to improve its competitiveness as well as promoting a better supply of consumer demands.

The platform elaborated the Harmonized Innovation Strategic and Innovation Implementation Plan to provide a vision for the Hungarian food industry (2009-2024) and the Harmonized Innovation Strategic Plan of the Hungarian Food Industry (2009-20024).

The Strategic Plan includes research, development and innovation programs as well as knowledge and technology transfer activities that:

- Will result in novel, innovative products, technologies, services, systems and organizational solutions that take the needs and recommendations of parties involved in the food industry and food economy into consideration,
- comply with consumer demands and expectations, help improve consumers' quality of life, promote health-awareness in nutrition and lifestyle,
- promote growth of the national economy and employment through increasing competitiveness and productivity of the food sector, fulfill the requirements of sustainable development.

The following areas of research, development and innovation are the main areas according to the harmonized Hungarian R+D+I strategy:

- food quality and food processing;
- sustainable development;
- and technology and knowledge transfer that makes the above useful in practice and promotes their spread.

The following research fields support the above areas:

- • food and the consumer;
- • food safety;
- • public health implications of nutrition and health;
- • food chain management.

The Innovation Implementation Plan was elaborated as a sequel of the strategic plan, that described the most important framework programs in 2011-2016, defined their timing as well as the human and financial resources needed for their implementation.

8.2. POLICY ANALYSIS

It is difficult to analyze the effect of long term policies regarding the sector, since only a short time has elapsed.
Long term strategic plans have highlighted real problems.
Results so far:

- regulations have been implemented regarding ownership of land and local, family enterprises;
- banks have elaborated various financial programs to help agricultural enterprises and to a lesser extent food businesses;
- financing of research and development is still at a low level, particularly at the SME level: mainly product developments are implemented based on local traditions and characteristic products;
- demand for healthy and safe food and consumer awareness has increased.

8.3. SWOT ANALYSIS AND SOR METHODOLOGY

Based on the results of the SWOT analysis the focus of the future activities aim to founding the competitiveness of the sector.

1. **Strengthening and improving the business skills of SMEs**
2. **Improving awareness and knowledge on innovation and competitiveness**
3. **Strengthening and improving the cooperation between multinational and local entrepreneurs**
4. **Create the application and credit possibilities to finance the sector's innovation activity**
5. **Favoring the creation of R&D department in SMEs**
6. **Strengthening and improving the cooperation between R&D entities to SMEs - create knowledge sharing platforms adopting ICT tools**
7. **With regulation promoting the increasing and development possibilities of the sector**

Results of the SWOT Analysis focusing on the needs of the SMEs

The SWOT analysis for SME's emerged from the early three steps described in the methodology is:

STRENGTHS	***WEAKNESSES***
• *Product and Process Quality* • *Attractive natural environment (fine countryside, thermal waters, Danube)* • *Strong presence of creative industries and copyright activities* • *Transport the region, especially Budapest, has good accessibility* • *Management capacity*	• *SME's inadequate business skills, innovation ambitions, ICT facilities and access to finance* • *Dual economic structure, with multinational and local businesses working in uncooperating isolation* • *Low financial capacity* • *No dedicated R+D unit* • *Weak cooperation between businesses and researchers*
OPPORTUNITIES	**THREATS**
• Significant internal innovation and R+D capacity • Existing R+D and innovation programs tailored to the SME sector • Increasing export trends	• Insufficient incentives addressed to the sector • Bureaucracy / Regulation barriers • Scarce funding resources for R&D available

• Networking possibilities • Attraction of multinational companies' research centers into the region Innovation transfer role towards Eastern and South –Eastern Europe	• Social cohesion is getting weaker • Competitor regions (Vienna, Bratislava, Prague)

The result of the SWOT analysis focusing on RTD's :

STRENGTHS	***WEAKNESSES***
• *Hungary's higher education, RTD as well as innovation potential are concentrated in the Region* • *Strong research base* • *Highly skilled personnel* • *The Region is a multifunctional center (finance trade and services)* • *Open exchange of experience in research and technology development Public-private cooperation*	• *Low size of budget for R+D* • *Transfer of entrepreneurial knowledge is weak* • *Not enough start ups* • *Regionally uneven economic development level* • *Weak understanding between researchers and industry complicates joint projects*
OPPORTUNITIES	**THREATS**
• New R+D European and regional programs • There is a strong networking between the actors of the research system • Significant internal innovation and R+D capacity • Major growth potential for the knowledge-based economy and innovative enterprises • Surplus of well-educated researchers	• Social cohesion is getting weaker • Brain drain • Few incentives for university researchers to engage in collaboration with the industry • Bureaucracy barriers • Funding programmes to support research with content far from current research interests

8.4. SYNTHESIS OF POLICY RECOMMENDATIONS

A The Hungarian food industry can only restore its competitiveness and increase its presence in domestic and export markets if innovation is promoted and becomes more effective. The table below summarizes the solutions that might improve weaknesses in 7 points.

1.	
Identified problem	SME's inadequate business skills RTD: Not enough start ups RTD: Transfer of entrepreneurial knowledge is weak
Policy recommendation	***Strengthening and improving the business skills of SMEs***
Type of Policy	Provision of innovation support services (advisory, innovation management, technology transfer and training);
Rationale Description of Policy recommendation	At the moment, enterprises have only partial knowledge regarding the maintenance of their enterprises, while the economic conditions are constantly changing.
Responsibilities	
Funding necessary	The funding could be included in the next EU supporting period
Time horizon for the implementation	medium term
Geographical scope of the Policy	Country

2.	
Identified problem	SME's inadequate innovation ambitions, ICT facilities RTD: Transfer of entrepreneurial knowledge is weak
Policy recommendation	***Improving awareness and knowledge on innovation and competitiveness***
Type of Policy	Provision of innovation support services (advisory, innovation management, technology transfer and training);
Rationale	The decrease of food production and the loss of market shares on the Hungarian market implies that production/manufacturing and the marketing of products has to be prioritized. Good ideas and successful research at the site of manufacture are not sufficient for the successful implementation of innovation projects. To place a product or a procedure successfully on the market, project management, marketing and in many case knowledge of intellectual property rights are needed. SMEs play an important role in the supply of safe, nutritious and wholesome food. Increasing innovation activities in SMEs is advantageous for consumers, society as a whole and the enterprises themselves. It might provide competitive advantages to strengthen cooperation between the players of the food chain, from the partners active in agricultural activities up to sales forces, as well as partner sectors. Getting to know and adapting research results of nanotechnology, microelectronics, information and communication technologies as well as joint research projects might yield good results.

	SMEs need information on methodology and tools. • how to start an R&D project, what possibilities they have, how to decrease risks associated to research; • how technology transfer works, how to join international networks and what are the international experiences in this field.
Description of Policy recommendation	Create the form of technology transfer and the exchange of best practices
Responsibilities	interest groups, chambers, product boards???
Funding necessary	The funding could be included in the next EU supporting period
Time horizon for the implementation	medium term
Geographical scope of the Policy	Country

3.	
Identified problem	SME: Dual economic structure, with multinational and local businesses working in uncooperating isolation
Policy recommendation	***Strengthening and improving the cooperation between multinational and local entrepreneurs***
Type of Policy	Helping to introduce products on the market
Rationale	Maintaining and strengthening local small and family businesses will result in a decrease of migration from rural areas. Meanwhile these small enterprises are unable to find sales channels, are not present in multinational supermarket chains, leaving them to produce on a very reduced local scale.
Description of Policy recommendation	Promoting the establishment of regional food processing centers that will make the use of resources efficient based on a common infrastructure. This will promote marketing of products through investment in logistics and trade development in micro enterprises and SMEs.
Responsibilities	interest groups, chambers, product boards???
Funding necessary	The funding could be included in the next EU supporting period
Time horizon for the implementation	medium term
Geographical scope of the	Country

Policy	

4.	
Identified problem	SME: Low financial capacity - SME's inadequate access to finance RTD: Low size of budget for R+D funding for innovation in SMEs
Type of Policy	funding of science- industry research cooperation; credit possibilities in the bank sector, guarantees,
Policy recommendation	***Create the application and credit possibilities to finance the sector's innovation activity***
Rationale	Smaller enterprises face a disadvantage compared to larger or multinational food enterprises because they lack capital. Their existence and innovations depend largely on available funding.
Description of Policy recommendation	Widen loan possibilities for processing companies, perhaps support them with governmental guarantees.
Responsibilities	government, interest groups, chambers, product boards???
Funding necessary	The funding could be included in the next EU supporting period
Time horizon for the implementation	medium term

Geographical scope of the Policy	Country

5.	
Identified problem	SME: No dedicated R+D unit - SME's inadequate innovation ambitions, ICT facilities
Policy recommendation	***Favoring the creation of R&D department in SMEs***
Type of Policy	Provision of innovation support services (advisory, innovation management, technology transfer and training); Public funding of science- industry research cooperation; Funding for innovation in SMEs Funding of innovative industries (grants, loans, guarantees, equity, etc.);
Rationale	While large companies employ experts in these fields, larger multinational companies even having dedicated research groups and centers, SMEs generally need help in this aspect.
Description of Policy recommendation	Provision of advisory services to network members on innovation processes and technology transfer, planning of common paths and develop national and international innovation projects, with attention to collaboration along food chains, also by joint presentation of proposals, assistance during the implementation of projects, transfer

	and exploitation of research results, network promotion activities.
Responsibilities	interest groups, chambers, product boards???
Funding necessary	The funding could be included in the next EU supporting period
Time horizon for the implementation	medium term
Geographical scope of the Policy	Country

6.	
Identified problem	SME: Weak cooperation between businesses and researchers RTD: Weak understanding between researchers and industry complicates joint projects
Policy recommendation	***Strengthening and improving the cooperation between R&D entities to SMEs***
Type of Policy	Public funding of science- industry research cooperation; Provision of innovation support services (advisory, innovation management, technology transfer and training); Exchange of best practices Create knowledge sharing platforms adopting ICT tools
Rationale	Competitive knowledge can be gained by adapting the knowledge and the best practices of competitors, while truly innovative solutions arise from initiatives in the wider business environment, creative ideas and alliances. This is why cooperating with related sciences and border fields is of great importance along the food chain in decreasing competitive disadvantages. Particularly SMEs are unable to take the risks associated with innovation by themselves, for them it is vital that joint research activities of companies, groups or sectors is funded and innovation is supported by the government. Professional knowledge should be improved and innovation should

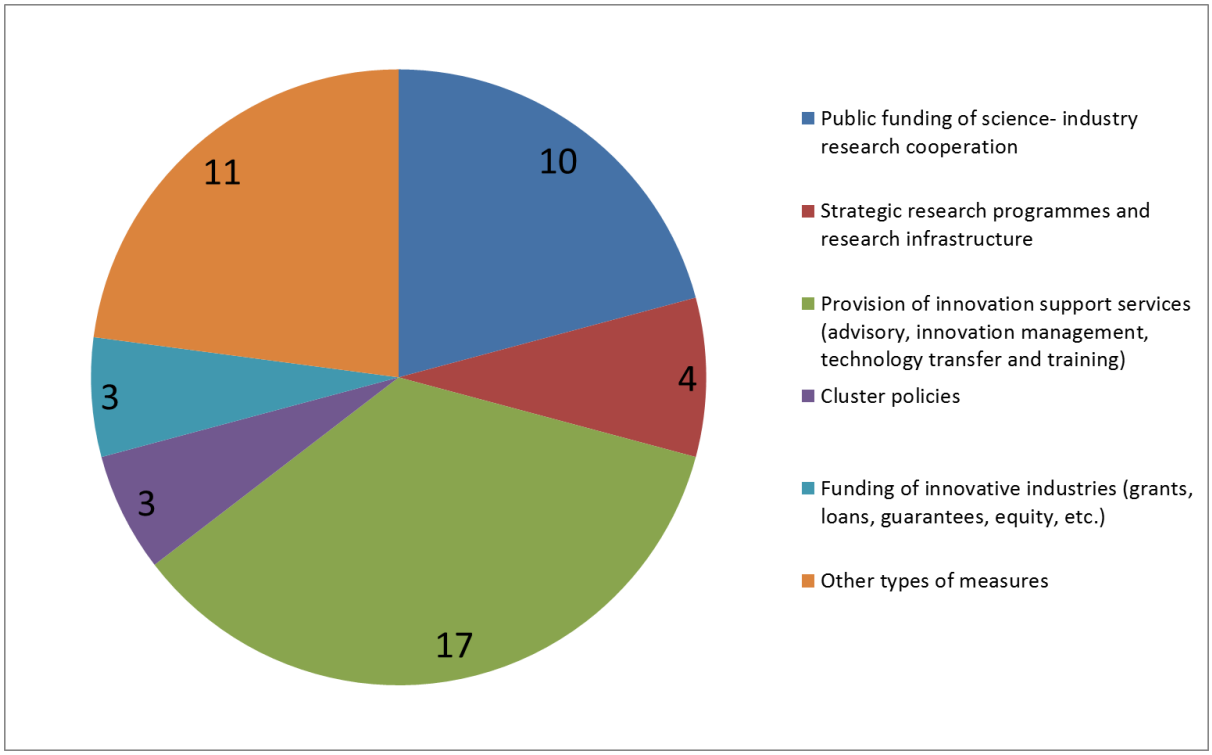
	be extended to all levels of the food chain and the enterprise. Cooperation and joint research with related sciences is of high importance, collaboration between professions and the stakeholders of the food chain as well as technology transfer in the field of innovation should be encouraged.
Description of Policy recommendation	Provision of advisory services to network members on innovation processes and technology transfer, planning of common paths and develop national and international innovation projects, with attention to collaboration along food chains, also by joint presentation of proposals, assistance during the implementation of projects, transfer and exploitation of research results, network promotion activities.
Responsibilities	interest groups, chambers, product boards???
Funding necessary	The funding could be included in the next EU supporting period
Time horizon for the implementation	medium term
Geographical scope of the Policy	Country

7.	
Identified problem	
Policy recommendation	***With regulation promoting the increasing and development possibilities of the sector***
Type of Policy	Provision of innovation support services (advisory, innovation management, technology transfer and training); Regulation and framework for funding measures
Description of Policy recommendation	Promoting local and regional food production and trade by providing economic and legal framework. 2. Review of legislation affecting food producers, particularly family farms, SMEs and small scale producers, achieving fair distribution of loads with respect to food chain safety surveillance. 3. Developing local small scale processing and related direct and local sales activities in order to shorten the food chain.
Responsibilities	Government
Funding necessary	The funding could be included in the next EU supporting period
Time horizon for the implementation	medium term
Geographical scope of the	Country

Policy	

9. SUMMARY OF RECOMMENDED MEASURES

A total of 46 recommendations for measures to boost food innovation were drafted by the 6 participating ERDF countries. The majority relate to measures targeting the ***"Provision of innovation support services (advisory, innovation management, technology transfer and training)"*** while the presence of measures categorized as **"Public funding of science-industry research cooperation"** is also significant. Other types of measures targeting the customers or the students and researchers are also represented. The graph below list the typology of measures:



In general it is important to note that the stakeholders are suggesting a great number of measures that relate to the provision of innovation support services, i.e. they take a step beyond the standard request for more public funding to be made for research cooperation.

Also training of industry personnel, mobility schemes of researchers to the food industry, upgrade of the academic curricula to match emerging industry needs, etc. were pinpointed as effective measures to improve the industry- research cooperation environment and prepare the ground for the easier adoption of innovation by companies.

The complete list of the proposed measures is annexed.

10. ANNEXES

	Name of measure	Type of measure	Region/ Country
1	Food Innovation Forum	Cluster policies	Region of Central Macedonia
2	"Reinforcing Regional Technology Brokerage Performance"	Provision of innovation support services	Region of Central Macedonia
3	Mobility scheme for food science researchers	Public funding of science-industry research cooperation;	Region of Central Macedonia
4	Accreditation of the services provided by the research entities	Provision of innovation support services	Region of Central Macedonia
5	Internationalisation of regional food SMEs	Funding of innovative industries (grants, loans, guarantees, equity, etc.)	Region of Central Macedonia
6	"Branding of regional Agrofood production"	· Other types of measures	Region of Central Macedonia
7	"Educating the customer"	Other types of measures	Region of Central Macedonia
8	Agrofood labour market improvement	Other types of measures	Region of Central Macedonia
9	Strengthening public-private cooperation	Provision of innovation support services	Region of Puglia
10	Improving awareness and knowledge on innovation and competitiveness	Provision of innovation support services	Region of Puglia
11	Bridging knowledge from R&D system to SMEs -> available skills for markets	· Public funding of science- industry research cooperation; · Provision of innovation support services; · Other types of measures: exchange of best	Region of Puglia

	Name of measure	Type of measure	Region/ Country
		practices	
12	New incentives for researchers for cooperation with SMEs	Public funding of science-industry research cooperation	Region of Puglia
13	Updating academic curricula to match current food innovation trends	Other: educational strategic guidelines to improve academic curricula on innovation themes	Region of Puglia
14	Improving skills for innovation in SMEs	Other measures: Fondimpresa (the most important inter-fund for continuing training in industries in Italy)	Region of Puglia
15	Favoring the creation of R&D department in SMEs	Provision of innovation support services Other Measures: funding for innovation in SMEs	Region of Puglia
16	Funding SMES for adopting innovative technologies, also by patent applications	Funding of innovative industries (grants, loans, guarantees, equity, etc.);	Region of Puglia
17	Bureaucracy simplification (times and rules) and more efficient project administration	· Other types of measures: regulation and framework for funding measures	Region of Puglia
18	Provide targeted political support to improve research and innovation in the food sector in the region	Innovation Strategy for the food sector in the region of Pazardzhik	District of Pazardzhik
19	Provide targeted political support to improve innovation in the food sector based on intelligent specialisation	· Strategic research programmes and research infrastructure;	District of Pazardzhik
20	Provide targeted political support to SMEs in general	Strategy for promoting SMEs	District of Pazardzhik

	Name of measure	Type of measure	Region/ Country
	and food sector SMEs as priority industry		
21	Provide targeted public funding to improve research and innovation as a factor for competitiveness of the economy	• Public funding of science- industry research cooperation; • Provision of innovation support services (advisory, innovation management, technology transfer and training); • Cluster policies; • Funding of innovative industries (grants)	District of Pazardzhik
22	Provide targeted public funding to improve the quality of science, research and education	• Public funding of science- industry research cooperation; • Strategic research programmes and research infrastructure;	District of Pazardzhik
23	Establishing a Joint Technology Transfer Center /JTTC/ as a new stage of the Research and Development activities the Agricultural University in Plovdiv /AUP/ and RTD organizations	Public funding of science - industry research cooperation; Strategic research programmes and research infrastructure;	District of Pazardzhik
24	The inclusion of entrepreneurship and the subjects connected to it in the students curriculum	Public funding of science- industry research cooperation; Strategic research programmes and research infrastructure;	District of Pazardzhik

	Name of measure	Type of measure	Region/ Country
25	Strengthening the dialogue research – industry by common actions	• Provision of innovation support services (advisory) • Cluster policies; • Public funding of science-industry research cooperation;	Romania
26	Strengthening the dialogue research – industry by innovative vouchers	• Funding of innovative industries (grants, loans, guarantees, equity, etc.); • Public funding of science- industry research cooperation;	Romania
27	Updating industrial experts skills on research and innovation by training period for industrial experts within R&D units	· innovation management, technology transfer and training);	Romania
28	Enhancing the innovative and managerials skills of the project managers by R&D projects led by foreign experts	· innovation management, technology transfer and training);	Romania
29	Increasing the visibility of the innovative companies by promoting the innovative companies and innovative results in audio/visual media	• Provision of innovation support services (advisory, • Cluster policies;	Romania
30	Prioritisation and coordination of the national food R&D policies	· Strategic research programmes and research infrastructure	Slovenia
31	Support to establishment of agro-food innovation network	· Strategic research programmes and research infrastructure	Slovenia
32	Support to establishment of	Cluster policies;	Slovenia

	Name of measure	Type of measure	Region/ Country
	food clusters		
33	Fiscal incentives for R&D in companies	· Other types of measures	Slovenia
34	Improvement of innovation capabilities in firms with training	· Provision of innovation support services (advisory, innovation management, technology transfer and training);	Slovenia
35	Direct support to R&D activities in SME's firms	· Provision of innovation support services (advisory, innovation management, technology transfer and training);	Slovenia
36	Cooperation between science and industrial actors	· Public funding of science-industry research cooperation;	Slovenia
37	Commercialisation of research results	· Provision of innovation support services (advisory, innovation management, technology transfer and training);	Slovenia
38	Establishment of "food technology clinics"	· Provision of innovation support services (advisory, innovation management, technology transfer and training);	Slovenia
39	Credit guarantee scheme for food business.	· Funding of innovative industries (grants, loans, guarantees, equity, etc.);	Slovenia
40	Strengthening and improving the business skills of SMEs	Provision of innovation support services	Hungary
41	Improving awareness and knowledge on innovation and competitiveness	Provision of innovation support services	Hungary

	Name of measure	Type of measure	Region/ Country
42	Strengthening and improving the cooperation between multinational and local entrepreneurs	Funding of innovative industries (grants, loans, guarantees, equity, etc.);	Hungary
43	Create the application and credit possibilities to finance the sector's innovation activity	Provision of innovation support services	Hungary
44	Favoring the creation of R&D department in SMEs	Provision of innovation support services	Hungary
45	Strengthening and improving the cooperation between R&D entities to SMEs	· Public funding of science-industry research cooperation; Provision of innovation support services	Hungary
46	With regulation promoting the increasing and development possibilities of the sector	Provision of innovation support services	Hungary