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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

*Project Code: SEE/B/0028/1.3/X*

**WORK PACKAGE 4: SETTING UP MECHANISMS FOR BOOSTING FOOD INNOVATION**

## **D4.2- Operational Plans for food RTD and innovation**

<b>Partner</b>	<b>Official name (in English)</b>	<b>Abbreviation</b>	<b>Country</b>
LP	Centre for Research and Technology Hellas- Institute of Agrobiotechnology	EKETA- INA	Greece
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	EFPF	Hungary
10% PP1	Odessa National Academy of Food Technologies	ONAFI	Ukraine
10% PP2	Chamber of Commerce and Industry of the Republic of Moldova	CCIRM	Republic of Moldova
10% PP3	Institute for Food Technology	FINS	Serbia

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## Project Document Information

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## List of Acronyms and Abbreviations

<b>Acronym/abbreviation</b>	<b>Resolution</b>





## ***EXECUTIVE SUMMARY***

***(to be compiled by CERTH- INEB)***

## **1. INTRODUCTION, SCOPE AND METHODOLOGY**

**(to be compiled by CERTH- INEB)**

*In the framework of this activity, the partners will develop Operational Plans for supporting food innovation in their regional context with a view to promoting knowledge- based economic development in the agrofood sector. The idea is that these Operational Plans will be presented and suggested to regional and national authorities as a part of the debate for the development of the various instruments introduced in the upcoming Programming Period 2014-2020.*

### **How to draft the Operational Plans**

**Phase 1:** *The Inno- Food SEE partners will use the results of D3.3 and D3.4 and develop a set of suggestions for the measures that could be included in the Operational Plans. The partners will use a standard template for drafting the measures (to be provided at a later stage), this will enable presenting the measures in such a manner that would be easy for the stakeholders and decision makers to utilise and comment upon in the 2nd phase.*

**Phase 2:** *A meeting with the selected stakeholders and decision makers per region/ country will be organised to feed the consultative process for the development of the Operational Plans. The stakeholders and decision makers should receive the suggested measures beforehand, thus the meeting will be dedicated to discussing the measures.*

**Phase 3:** *One (or two- see below) meeting/-s of 2-3 stakeholders and decision makers from each region/ country will be organised in order to feed the consultative process for the development of the Operational Plans and to propose measures on a SEE/ regional level.*

*One meeting is already described under act. 2.5; it is part of the final Conference that will take place in Budapest. In the possible event of securing a 6-month project extension and a consequent organisation of the next project meeting in Plovdiv in September, it is also suggested that a meeting of regional stakeholders is organised adjoined to the meeting in Plovdiv as a preparatory step for the finalisation of the Operational Plans.*

**Phase 4:** *In this final step the Inno- Food SEE partners will synthesise the feedback from the previous phases and finalise the measures.*

## **2. REGION OF APULIA**

### **2.1 DESCRIPTION OF THE REGIONAL CURRENT STATE OF PLAY**

The agrofood sector represents one of the key economic sector of the Apulia region. The most recent sector studies highlight a situation with several aspects: nevertheless some food products classes have a significant sale rate (with a positive growing trend) many traditional Apulian productions are not included as recognized quality labels, due to an insufficient process and products characterization. Moreover, the typical and traditional products, already known by public, require the upgrading of transformation manufacturing process to increase their competitiveness. Many SMEs are investing their efforts to improve the safety and typical products assurance, to promote the development and the valorization of agro-food sector as entire system, to define the requirements for process and products certification.

The Apulian agrofood industry system in this way is moving towards the creation of food products supply based on specialization as key factor to play in a large competitive market, being guided by market drivers enhancing and adding value to critical factors already existing differently in each chain.

The potential competitive food chains seem to be those having a strong distinctive specificity, such as the traditional chains of wine, olive oil, and vegetables, wheat based products , cereals, dairy products. For these chains the companies may use existing competitive advantages arising from product characteristics (quality, diversification), organization (production and marketing), brand recognition and ability to evoke "Made in Puglia". According to the survey carried on during the INNOFOOD SEE project, Apulian SMEs expressed demand for innovation, mainly unspoken (or latent), oriented to the improvement of the quality of products supply and to productivity increase. Moreover, they shown a deep knowledge and awareness of manufacturing processes and products in order to improve their capacities/or product characteristics, while expressing a minor capability to act really, as well as severely limited low financial resources. The analysis highlighted also the difficulties of regional SMEs to transform their request for improvement in a potential pathway (internal or external) of innovation. Companies in which it was clear what and how perform innovative actions were extremely rare and often when high skilled and specialized human resources worked inside (generally in large enterprises).

The common technological issues and needs concerned mainly the maintenance of quality standards, the higher manufacturing capacity, the food safety, the ability to product diversification to meet the -changing needs of the market and the reduction of energy and water consumption.

In terms of food chains, the Apulian Agrofood sector is particularly advanced, both in terms of the primary agricultural production as well as the food and manufacturing industry. The main agro-food production chains are: Dairy products; wheat and bakery; • meat products; olive oil; grapes and wine; vegetable and fruits (olive, almonds, figs), and livestock (sheep, pigs, cattle and goats).

## AGRICULTURE

In comparison with the country as a whole, the economy of Apulia is characterized by a greater emphasis on agriculture and services and a smaller part played by industry. The share of gross value added generated by the agricultural and services sectors in the total gross value added of the region is in fact above the national average, whereas the share of industry is below.

Agriculture in Apulia is largely modern and intensive, allowing the region to be at the first places in Italy for the production of many products, like “durum wheat” and tomatoes in the Foggia province, besides table grapes and oil, with around 50 millions olive trees. Also important is the production of salad, artichokes, fennel, cabbage, celery. The old primacy for almond production has on the contrary been lost. In specific areas fruit cultivation is also relevant, like peaches and sweet cherries.

## FOOD INDUSTRY

The Apulian food industry can count on a large variety of products and a large number of local typical and traditional products that make this manufacturing sector an important reality, having a continuous positive evolution, despite the negative cyclical dynamics that are investing production activities in the Italian country. According to the annually ISTAT studies, in 2007 the sector food industry in Puglia recorded positive production trends. The value added at Basic prices (VA) produced by Regional Food was 1.1 billion euros, equal to about 5% of the total national and 21% of the South one. In the two years considered (2009-2007), the value added showed an increase of 8, 2%, a figure far above than the national one (+2.2%) and South one (+1.2%).

In food products the region has attained a significant degree of competitiveness with foreign producers, even if the competition from emerging countries and the recent financial crisis represent a concrete risk.

In addition to the traditional sectors of wine and oil, also the mill industry and pasta production have a big role in the sector, also being Italian leader in the heavy wheat production (21 % of national total, Istat 2011), while the Apulia is the third Italian region for the pasta production. Significant roles are covered also in the diary industry, coffee and meat transformation (Bank of Italy 2011).

The Apulia Region is playing a relevant role in the “**organic sector**”, following the positive Italian trend of growth. In 2012 the Italian organic firms increased by 3%, reaching 49079 players with an area under cultivation amounted to more than a 1,100 hectares (+6.4%).

The consumption of organic products in Italy in the first four months of 2013, the spending marks a bio + 8.8% compared to the same period last year (Ismea / GFK-Eurisko) and Puglia is one of the best performer, with an increase in the number of organic farms by 20.3%, thanks to the hectares planted with olive trees and vines. This growth surely has been influenced by **investments** in the sector, supported also by specific structural policies Regional and Community for internationalization, trade and industrial processing of agricultural products. In Apulia, concerning the labor employed in the field of agri-food processing, the income from employment has increased (+23%) and gross wages too(+23%) more than in the rest of Italy (Nomisma, 2013).

The occupation is rather stable over time and characterized by a predominant use of staff employees. In the years from 2002 to 2007 units of work that is not occupied showed strong oscillations and in the complex have shown growth for the component employment by about 9%, which results to be higher than that of the South (+3%) and Italy (+5%). In the period considered, independent units, instead, after the considerable decline recorded in 2005, marked a change in total almost irrelevant (+1%) while in the rest of the nation have showed an increase, respectively 5% in the South and of 4% in Italy.

**Table 4- Food and beverage industry key statistics in Apulia, (Source, Federalimentare, Year 2009)**

Parameter		Unit	Percentage of national total	Share of employment in manufacturing total
Food manufacture	Number of companies	4898	8%	12%
	Number of persons employed	21857	6%	
Beverage manufacture	Number of companies	334	10%	0.6%
	Number of persons employed	1712	4%	

## EXPORTS OF AGRICULTURE AND FOOD PRODUCTS

The trend for exports of firms in the South working in the food and drinks are extremely positive. The Apulian food industries reached the sales of **4.8 Billion of Euro in 2011**, representing the **3.8 %** of all the total agrifood sales of Italy. The food exports are continuously growing, having reached in 2010, the 0.5 M euro, representing the 10,4% of total. The increase in exports (in the first nine months of 2010) was of 38.8% for agricultural and 22.6% for food.

In South Italy in June 2011, the beverage exports recorded for about 69 million euros (ISTAT), an increase over the first half of 2010 9 , 9%, while exports to food businesses of the South grew by 4.57%, amounting to over 761 million euros.

In the first three months of 2012 exports of food products Made in Italy grew at a rate of **6 percent** which is equal to more than triple the average of 1, 7 per cent of national exports. These results confirm the positive trend of last year, when the record amount of 30 billion of food products export was registered. In the table below the recent data about key indicators about food and beverage regional industries are indicated, showing that Apulia is the 7<sup>th</sup> Italian region for sales in this sector, as well as the 9<sup>th</sup> for the export on a total of 20 regions. This trend has been confirmed in 2013, with growing export rates of agricultural products (+19,7%) and food and beverages (+9%).

## RESEARCH AND INNOVATION

The Apulia RTD system is developing according to Italian policies and national trends, trying to

create valorisation of local products and boost enterprises innovativeness through product development programs, targeted innovation projects and human capital enforcement .

The **Apulian Agro-food Research System** registers some excellence points in the applied research well known at international level (i.e. mycotoxins, food safety, post-harvest technologies, dairy products technologies) nonetheless difficulties in project deployment with SMEs emerged and low seems to be the financial resources allocated for R&D.

The **regional policies** are playing a strategic role, coherently with the national framework, so facilitating innovation by sustaining the development of the Apulia agro-food sector based on a cluster approach, gathering together all the key players involved (Districts, SMEs, RTDs, Universities, Education and training centres, Associations, consultancy firms, etc..).

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, with the institutional function to gather all academic and research players in strict conjunction with territory and local industries. The Agency represents 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.

In addition, the Regional 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 agro-food productive districts (The Agro-food District of Food Quality “Terre Federiciane”, operating in Bari and Foggia areas with 683 partners; the Agrofood District of Food Quality “Jonico-Salentino”, operating in Lecce, Brindisi and Taranto areas with 187partners )and 2 technological ones (Agro-food, Biotech).

**26 networks of research labs** have been granted by Apulia Region to provide services to local companies by using advanced equipments, integrated methodologies and technologies and promoting joint projects, according to a massive approach.

In the past **5 years** other many **big projects** proposed by Apulian RTD entities jointly with SMEs have been awarded under the National Operating Program Research and Competitiveness 2007-2013 (NOP) for more than **40 million €**. The purpose of the Operating Programs is to promote the competitiveness of the economic system of these regions, and improve the scientific, technological and economical position of the whole country in the international context. According to a **cluster** approach, the main agro-food chains present in Apulia (diary products; wheat and bakery; meat products; olive oil; grapes and wine) were included in the NOP awarded projects together with specific training programmes entitled to create high specialised profiles in the research sectors related to agro-food and to life-sciences in general.

In addition, several measures have been managed by Apulia Region to sustain innovation and addressing the food industry, officially defined as one of the main strategic sector of Regional interest for economic development. Consequently, all the measures addressing RTD and innovation are directed also to food and agrofood system, due to its relevance in the regional scenario.

**Investments in Research for SMES** -The Apulia Region supports investments by Apulian SMEs addressed to develop research and technological progress based on industrial research and pre-competitive development. The maximum financial contribution is 1M euro for industrial

research, 799k euro for pre-competitive development, 300k euro for technical feasibility studies, 200k euro for patents. Agro-food SMEs investments represent 9% of total.

**Operational innovative enterprises** - The measure aims to support the growth of existing innovative operating micro and small enterprises who wish improve their competitiveness through the application of research results in the main strategic industrial sectors of Apulia (agro-food included). In particular the measure supports the investment projects enhancing the results of previous research. Public funding: 7ML Euro. Agro-food SMEs investments represent 5% of total.

**Network of public research laboratories** Creating and enforcing the research system in supplying innovation and technologies to facilitate and support needs and requirements by SMEs. The objective is to give Apulia a strong technological infrastructure with a breakdown structure of local points, distributed in a reticular way in all the region according to a very high level of technological specialization for SMEs innovation.

#### **Supporting new innovative SMEs**

The Apulian agro-food research system is mainly made of public entities, very few are the private RTDs active in the considered field. The profiling analysis reveal that Apulian RTDs system is at the same time internationally linked from an academic and project activity points of view and territorially embedded with knowledge services offered to third parties also at local level.

The profiled Apulian Agro-food RTDs registered **45** patents in the past 5 years. The National Institute for Nanotechnology (CNR-Nano ) based in Lecce accounts for more than 50% of the patents total amount. Even though not always directly related to it, the high number of **nanotechnologies patents** in the Apulia Region constitutes a critical mass of knowledge in a sector considered high potentially important for the improvement of the agro-food sector. The presence of an important nanotechnology scientific and academic hub at regional level<sup>1</sup>, could represents a potential **smart ability** for the Apulian territory as a whole and an important **key point** also for the agro-food sector (**cross clustering**).

The **Institute of Science of Food Production** (CNR-Ispa) registered 10 patents in the considered period (15 including the year 2006) followed by **CNR-Issia** with 6 registered patents. As easily predictable the Institute of Science of Food Production patents are the most significant for the agro-food sector, less predictable is the fact that those findings are really relevant for the Apulian territory, giving tools and methodologies to improve the food safety of cereals (important commodity in the local economy) and also input to develop new “functional” foods by processing typical products, such as olives and artichokes (innovation based on analytic knowledge). Those links represent an example of territorially **embedded regional innovation** with R&D institute providing target innovation support aligned to the needs of local industry.

**8 spin-off companies** created in last 5 years correspond to 19% of profiled RTDs. The Polytechnic University of Bari accounts for 50% of the spin-off registered including only one spin-off really operating in agro-food sector, followed by Department of Agro-Environment and Territorial science of Bari University with 2 spin-off companies.

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<sup>1</sup> CNR-Nano Institute in Lecce, CNR Institute of Photonics and Nanotechnologies in Bari, University research and degrees in the biotech and nanotech sector.

## **2.2 KEY POINTS FROM THE SWOT/ SOR ANALYSIS AND POLICY RECOMMENDATIONS REPORT**

The empiric analysis - from the survey/profiling of SMEs and RTD players to the SWOT/SOR analysis with stakeholders - has highlighted some key points useful to plan and propose a set of recommendation for the formulation of policies, programmes and measures able to sustain innovation in Apulia Region..

First of all, it should be declared that the Apulia Region as institution is strongly committed in the innovation process, sustaining the strategic economic sectors by funding technology, research and innovation based actions. This political commitment is clearly appreciated by research entities and by SMEs, even if SMEs sometime claim for more funding. This commitment represents an opportunity for the agrifood growth and generally the public intervention is considered a fundamental point to face the economic crisis. Innovation and research are also considered as important assets to strengthen competitiveness and globalization challenges.

From the political point of view, we can observe that the Apulian policy has been addressing innovation by reinforcing “system interventions”, to be intended as a series of integrated measures aiming at promotion district models, clusters, networking, synergies between industries and R&D performers. This is the way to sustain local development and competitiveness. First of all, the agrifood sector has been recognised as strategic sector for the entire regional economy, thus allowing its inclusion in all regional economic policies. Moreover, 2 agri-food productive districts (involving 870 partners and 2 technological ones (Agri-food, Biotech) represent a mean to put into action these efforts.

Thus, recent strategic 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 let this policy operative: 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 considering its indicators at national and EU level. The following indicators show a different situation:

**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.

### **Human resources in science and technology (HRST) in Apulia represents 26.3 percentage of active population (Eurostat, 2012)**

**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.

From an empirical point of view, the SWOT analysis realized in 2012/2013 during this project, through the participation of stakeholders, researchers and SMEs, highlighted some relevant points:

- **Strong asset** represented by existing research entities in the region
- Significance and distinctiveness of **food production** with emerging competitive food companies, characterized by market- oriented approach, export capability, good market position, brand identity and products with strong or high quality
- **Business dynamism** by Medium enterprises, flexibility and potential innovation leanings, to be intended as attention at integrating new technological knowledge into existing organization and potential orientation towards innovation
- **Small size** of Small and micro enterprises , with actual low inclination towards technology/innovation and low ability to apply research results
- **Human capital weakness** in Small and micro enterprises in terms of high skills availability, research and management low capability, job insecurity (temporary work), low perspective for permanent employment
- **Networking** not completely developed between SMEs and RTD entities
- RTD entities and players are innovation-oriented with strong **institutional commitment**
- **Regional Funding measures** are addressing promotion and/or enforcing research infrastructures
- **High level of bureaucracy**
- **Request for innovation** in the agrifood, particularly expressed at international level (especially with regard to safety) and emerging foodstuffs questions
- **Opportunities to create infrastructures** supporting the system, also by networks of laboratories, common and relevant **graduate courses**

- **Possibility to direct the Apulian agrifood sector versus strategic models**, enhancing competitive levers – internationalization.

It should be highlighted that the average dimension of Apulian agrofood enterprises is quite small or micro, and this factor represents a concrete difficulty to face innovation, even if the small dimension is considered a flexibility factor. Some points above illustrated seem to be in contradiction, but they are two faces of the same aspect.

Considering the overall results, it seems important to 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 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.

The conclusion that can be drawn from the analysis is the presence of a **strong set of research** in Apulia on one side and **emerging food companies** oriented to markets abroad, with good market position and products with a strong quality brand identity.

The SOR analysis subsequently pointed out the matching between strong and weakness points vs opportunities and threats. The main conclusions arising from this exercise are rather optimistic, whereas the suggested emerging strategies toward innovation both by SMEs and RTD analysis are “**attack strategies**”, showing a basic power of the Apulian agrifood sector, able to face up the challenges coming from economic crisis, change of consumer trends, globalization, by filling the gap with other economic systems, seizing opportunities and enforcing its strengths. Below the main actions for strategies implementation are listed:

- 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 strengthened by the SMEs ability to produce high **quality products** by implementation of effective operational processes.
- 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, able to create a real structural and targeted network, with the aim to enlarge cooperation and relationships in this 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. 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.

- 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.

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 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.

The problem represented by **long bureaucratic processes**, that could keep far companies from funding application or requests, should be taken into consideration, representing a real obstacle to innovation process or simply for its accession.

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**.

Both SMEs and RTDs players are oriented towards innovation, key factor to be competitive on global markets. The **strategy** to support innovation in the region should be *to improve and strengthen the ongoing path of "guided" networking and cooperation in innovation projects pushed by Regional programs.*

This union 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.

In the table below, some proposal for adopting key measures are listed:

<b>Problems to be addressed</b>	<b>Key measures proposed</b>
Public-private cooperation	<i>1. Strengthening public-private cooperation</i>
Innovation culture	<i>2. Improving awareness and knowledge on innovation and competitiveness</i>
Low innovation streaming	<i>3. Bridging knowledge from R&amp;D system to SMEs</i>
gap with basic research	<i>4. New incentives for researchers for cooperation with SMEs</i>
Traditional academic curricula	<i>5. Updating of academic curricula to match current food innovation trends</i>
Innovation management in SMEs	<i>6. Improving skills for innovation management in SMEs</i>
Innovation capability of SMEs	<i>7. Favoring the creation of R&amp;D department in SMEs</i>
Low patents applications	<i>8. Funding SMES for adopting innovative technologies, also by patent applications</i>
High bureaucracy	<i>9. Bureaucracy simplification (times and rules) and more efficient project administration</i>

### 2.3 Description of key measures

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.

Herewith the proposed policy recommendations are listed:

1. *Strengthening public-private cooperation*
2. *Improving awareness and knowledge on innovation and competitiveness*
3. *Bridging knowledge from R&D system to SMEs*
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 management 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*
10. *Promoting a demand-driven knowledge transfer approach for Mediterranean Food Products*

*The last measure has been suggested by a member of INNOFOOD SEE Apulian network of stakeholders and policy makers.*

Name of the measure	<b>Strengthening public-private cooperation</b>
Region	<i>Apulia (Italy)</i>
Timeframe	<i>Medium Term (2- 5 years)</i>
Rationale	<p><i>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.</i></p> <p><i>The next step is to drive these efforts to make the cooperation more effective and valuable, in order to create a real and structured network, with measurable and reachable objectives, able to stream into the sector by active and massive participation by different players.</i></p>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>to integrate 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</i></li> <li>➤ <i>to make operative and structured the network and create an active context in which players share objectives with definite goals</i></li> <li>➤ <i>to avoid temporary actions or networking dedicated to single or few projects</i></li> <li>➤ <i>to realize a structured guided system for innovation with a strong commitment of research and industries in joint projects.</i></li> </ul>
Core activities	<i>Provision of innovation support services (advisory, innovation management, technology transfer and training); 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.</i>
Implementing entity	<i>Region or Regional Agency</i>
Financial resources	<i>The funding could be included in the next PON R&amp;C with coverage from</i>

	<i>the ERDF- Rotation fund.</i>
Target groups	<i>Food SMEs, research entities, consumer associations, special target groups, regional authorities, investors, consultants, media, etc.</i>
Indicators for implementation success	<ul style="list-style-type: none"> <li>- <i>No. of services requested and used by networks participants</i></li> <li><i>No. of new joint proposals presented</i></li> <li><i>No. of intervention plans for innovation presented by networks participants</i></li> <li><i>No. of promotional events realized.</i></li> </ul>

Name of the measure	<b><i>Improving awareness and knowledge on innovation and competitiveness</i></b>
Region	<b><i>Apulia (Italy)</i></b>
Timeframe	<i>Medium Term (2- 5 years)</i>
Rationale	<i>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.</i>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>to improve technological ability to innovate at local level</i></li> <li>➤ <i>to create and stimulate the innovation culture and behaviour in SMEs and RTD entities</i></li> </ul>
Core activities	<i>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.</i>
Implementing entity	<i>Region or Regional Agency</i>
Financial resources	<i>The funding could be included in the next PON R&amp;C with coverage from the ERDF- Rotation fund.</i>

Target groups	<i>Researchers, technicians, entrepreneurs, technology consultants</i>
Indicators for implementation success	<i>No. of funded services according to an intervention plan for innovation presented by networks participants No. of participants at training sessions</i>

Name of the measure	
<b>Bridging knowledge from R&amp;D system to SMEs</b>	
Region	<i>Apulia (Italy)</i>
Timeframe	<i>Medium Term (2- 5 years)</i>
Rationale	<i>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.</i>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>To create and strengthen links between researchers and SMEs</i></li> <li>➤ <i>to generate a model of “research for the competitiveness”</i></li> <li>➤ <i>to generate a 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).</i></li> </ul>
Core activities	<i>The main activity 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.</i>
Implementing entity	<i>Region or Regional Agency</i>
Financial resources	<i>No funding could be necessary, this policy could be supported by ordinary funds or included into ongoing projects</i>
Target groups	<i>Food SMEs, research entities, regional authorities, consultants.</i>
Indicators for implementation success	<i>No. of TT actions No of TT experts.</i>

Name of the measure		<b><i>New incentives for researchers for cooperation with SMEs</i></b>
Region	Apulia (Italy)	
Timeframe	Medium Term (2- 5 years)	
Rationale	<p>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.</p>	
Particular sector and subsector	Agriculture, Food Processing, Food Industry, Biotechnology	
Objectives	<ul style="list-style-type: none"> <li>➤ to stimulate research cooperation between research entities and SME</li> <li>➤ funding public researchers to realize Industrial research and pre-competitive research.</li> </ul>	
Core activities	<p>Funding actions, giving incentives (bonus) directly to those researchers able to obtain tangible results by integrated research with SMEs.</p> <p>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.</p>	
Implementing entity	Ministry of Education, Universities and Research (MIUR)	
Financial resources	<p>1% of FAR annual fund - Research facilitation fund - 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.</p>	
Target groups	Food SMEs, researchers	
Indicators for implementation success	<p>No. of incentives applied and received by researchers;</p> <p>No. of formal cooperation agreements signed between SMEs and researchers</p>	

Name of the measure		<b><i>Updating academic curricula to match current food innovation trends</i></b>
Region	Apulia (Italy)	
Timeframe	Medium Term (2- 5 years)	
Rationale		

	<i>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.</i>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>to update academic curricula by including new emerging topics relevant to food innovation, according to a multidisciplinary approach</i></li> <li>➤ <i>to update skills useful for innovation management.</i></li> </ul>
Core activities	<i>Core activities will be represented by the proposal for new contents to be added as a basis set of food innovation topics, and to be approved by University, Education and Research Ministry, including management, emerging technologies and demand-side.</i>
Implementing entity	<i>MIUR (at strategic level) and Universities (in terms of implementation, according to their own independence to define curricula)</i>
Financial resources	<i>Ordinary funds for University</i>
Target groups	<i>Universities</i>
Indicators for implementation success	<i>No. of new topics included in academic curricula</i>

Name of the measure	<b><i>Improving skills for innovation management in SMEs</i></b>
Region	<b><i>Apulia (Italy)</i></b>
Timeframe	<i>Medium Term (2- 5 years)</i>
Rationale	<p><i>The current collaborations between R&amp;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.</i></p> <p><i>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.</i></p>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>to improve skills in SMEs by supporting the growth of innovation capability trough training on the job</i></li> </ul>

	➤ creation of a network of SMEs innovators.
Core activities	<i>The main activity of this policy could be represented by specific and compulsory <b>training actions</b> 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.</i>
Implementing entity	<i>MIUR, Industries associations, Labour Ministry and Fondimpresa</i>
Financial resources	<i>The funding could be supported by Fondimpresa (the most important inter-fund for continuing training in industries in Italy). 50 % of current Fund to be addressed to innovation training . (Companies adhering at Fondimpresa monthly pay per employee a contribution of 0.30% devoted exclusively to training Fund).</i>
Target groups	<i>Food SMEs</i>
Indicators for implementation success	<i>No. of employed trained; No of registrations at EUWIN; No. of participations at EUWIN initiatives.</i>

Name of the measure	<b>Favoring the creation of R&amp;D department in SMEs</b>
Region	<i>Apulia (Italy)</i>
Timeframe	<i>Medium Term (2- 5 years)</i>
Rationale	<i>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.</i>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>to provide innovation support services (advisory, consultancy for innovation management, technology transfer and training)</i></li> <li>➤ <i>to enforce the capability of SMEs to address innovation through a direct commitment towards research and innovation</i></li> <li>➤ <i>to favour link and communication by a simpler and direct interface with research entities and institutions.</i></li> </ul>
Core activities	<i>Fundings or fiscal incentives for investment in R&amp;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.</i>
Implementing entity	<i>Ministry for Economic Development.</i>

Financial resources	<i>Using FIT (Found for Technology Innovation)</i>
Target groups	<i>Food SMEs and their associations and/or districts.</i>
Indicators for implementation success	<i>No. of realized investments No of R&amp;D depts. No of realized labs</i>

Name of the measure	<b><i>Funding SMES for adopting innovative technologies, also by patent applications</i></b>
Region	<i>Apulia (Italy)</i>
Timeframe	<i>Medium Term (2- 5 years)</i>
Rationale	<i>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; 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.</i>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>Funding innovative industries (grants, loans, guarantees, equity, etc.);</i></li> <li>➤ <i>To favour patents adoption</i></li> <li>➤ <i>To enforce connection between SMEs and RTD entities</i></li> </ul>
Core activities	<i>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.</i>
Implementing entity	<i>Ministry of Economic Development</i>
Financial resources	<i>20/30% of National Fund for Innovation (FNI) to be assigned to patent applications</i>
Target groups	<i>Food SMEs, research entities, investors</i>
Indicators for implementation success	<i>No. patents required; No of outputs achieved by innovative processes.</i>

Name of the measure	<b><i>Bureaucracy simplification (times and rules) and more efficient project administration</i></b>
Region	<i>Apulia (Italy)</i>
Timeframe	<i>Medium Term (2- 5 years)</i>
Rationale	<p><i>The bureaucracy complexity represents an obstacle to the access to public funds and a criticism 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 and quite difficult to support an innovation initiative, that naturally requires rapid cycles for implementation and short duration.</i></p> <p><i>Too many and severe regulations sometimes don't fit with SMEs needs to dedicate a fair time and effort to administration.</i></p>
Particular sector and subsector	<i>Agriculture, Food Processing, Food Industry, Biotechnology</i>
Objectives	<ul style="list-style-type: none"> <li>➤ <i>to reduce the bureaucracy complexity in funding access and management.</i></li> <li>➤ <i>to stimulate towards simplification all bodies preparing or managing consistent funded programmes addressed to research and innovation</i></li> <li>➤ <i>to facilitate SMEs access at funded programs (at EU, National and Regional level), also by training employees and researchers on administration and bureaucracy</i></li> </ul>
Core activities	<p><i>The measure 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.</i></p> <p><i>Specific training on administrative procedures and bureaucracy and funding rule, addressed to SMEs employees and researchers, in order to have skilled personnel.</i></p>
Implementing entity	<i>EU COMMISSION; 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.</i>
Financial resources	<i>No funding necessary.</i>
Target groups	<i>Food SMEs, research entities, regional authorities, EU programs authorities</i>
Indicators for implementation success	<p><i>No of new rules for administrative and financial simplification</i></p> <p><i>% reduction of expected time per administration process.</i></p>

Name of the measure	<b>Promoting a demand-driven knowledge transfer approach for Mediterranean Food Products</b>
Region	Apulia (Italy)
Timeframe	Medium Term (2- 5 years)
Rationale	<p><i>A great number of knowledge transfer initiatives have failed to fulfil the objectives that the transfer officers had chosen as their targets. In a great many cases they followed a technology push approach, offering RTD services and technologies that promise impact but do not correspond to needs of entrepreneurs or larger companies. It is also extremely difficult to identify and match technology offers from different universities, failing to build critical mass without overwhelming obstacles.</i></p> <p><i>The INNO-FOOD SEE consortium has the opportunity to build critical mass in technologies related to Mediterranean food processing, make best use of experts from each region, significantly lower barriers to technology uptake and most importantly make technology transfer entirely demand driven rather than research pushed.</i></p> <p><i>The objective does not plan a whole scale reorganisation of technology transfer. This measure intends to make best use of all programmes currently operating and bring the strength of the consortium to deliver the best technologies to commercial development.</i></p>
Particular sector and subsector	Agriculture, Food Processing, Food Industry, Biotechnology
Objectives	<ul style="list-style-type: none"> <li>➤ <i>To create demand-driven technology scouting, maturation, matchmaking and transfer for the INNO-FOOD SEE consortium in order to exploit Mediterranean food processing opportunities.</i></li> </ul>
Core activities	<ul style="list-style-type: none"> <li>➤ <b>Directory of demand from sector actors and current technology offers from the consortium.</b> <i>The Partners will compile a directory of technology supply and demand, including: EEN technology offers and Technology requirements from SWOT interviewed regional actors.</i></li> <li>➤ <b>Understanding demand driven process and barriers in current system.</b> <i>In each region at least 5 entrepreneurs will be interviewed. Through the interviews with the entrepreneurs each partner analyses the future market opportunities and threats of each company. Product, service or process concepts are sketched that enable the entrepreneurs to capitalise on opportunities and ward off threats. The entrepreneurs will deliver for each product concept a set of requirements which they themselves feel that they must fulfil in order to ward off the threats and turn the opportunities into successful new PMCs.</i></li> </ul>

	<p>The analysis includes requirements such as RTD efforts, marketing, collaboration with either partners, suppliers or buyers and funding.</p> <p>➤ <b>Defining a demand driven technology transfer programme for the consortium.</b> The partners will define a programme that includes: 1) Pooling of technology offers from all research organisations within the consortium; 2) Matchmaking of technologies to build added value to commercial development; 3) Technology scouting across the consortium by experts from different regions and addition of new offers to the central pool; 4) Best practice in commercialisation awareness training for researchers and technology transfer specialists; 5) Mechanisms to bring technology offers and SMEs together – technology fairs, etc.</p>
Implementing entity	Region and Industries Associations
Financial resources	No funding could be necessary, this policy could be included into ongoing projects
Target groups	Food SMEs, Research entities.
Indicators for implementation success	<p>No. of Directories of technology supply and demand</p> <p>No. of Analysis of demand driven approach to technology generation and offer</p> <p>No. of Technology and knowledge transfer programmes</p>

### **3. TRANSNATIONAL SEE ACTIVITIES**

*To be compiled by CERTH- INEB: Identifying and planning synergies and common activities of a transnational SEE character, e.g. on how to exploit future common financial instruments in order to enhance the agrofood research and innovation cooperation in the Southeast Europe area.*

## **4. IMPLEMENTATION PLAN**

*(to be compiled by CERTH- INEB), Roles and responsibilities for the implementation of the OP measures, Financial Plan, Time Plan.*

## ***ANNEX 1 – FRAMEWORK AGREEMENT- INTENTION FOR TRANS-REGIONAL COOPERATION***

*(to be compiled by CERTH- INEB and signed by partners and stakeholders). This will provide the framework for continuous cooperation beyond the end of the project among the Inno- Food SEE partners and further stakeholders of strategic importance.*