EUROPEAN COMMISSION / Research & Innovation

FULL REPORT

The results of creating, developing and coordinating a European FOOD-CLUSTER

Multi-level impact assessment
of the European FOOD-CLUSTER initiative

STUDIES AND REPORTS

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2011 Regional Dimension of Innovation

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EXECUTIVE SUMMARY

Interest in innovation clusters has arisen as a result of recognition that competitive advantage can come not simply from a firm's own resources and capability but from resources and capabilities located in the firm's nearby business environment So the **pursuit of the benefits of clustering** has resulted in significant activity in public policy development relating to innovation clusters since the 1990s.

In its final recommendations the **European Cluster Policy Group**[1] set out certain principles. For example it considered that cluster programmes needed to be leveraged with vigorous efforts to strengthen framework conditions and that such programmes needed to be delivered in an integrated policy framework with clearly assigned roles and responsibilities for the Commission and EU Member States. So it is clear that *"clusters are of growing importance in the new global environment in which the Europe 2020 strategy has to succeed; European policymakers cannot afford to ignore their role and should actively explore their potential to modernise and improve economic policies"*. The Food Cluster Initiative (FCI) has been an early example of this approach.

Furthermore a new institutional configuration is emerging to promote innovation – a "triple helix" of university, industry and government in which the dynamic is a change from strong institutional boundaries to a more flexible overlapping.
The **Regions of Knowledge** (ROK) programme initiative aims to strengthen the research potential of European regions in particular by encouraging and supporting the development across Europe of regional research-driven clusters associating universities, research centres, enterprises and regional authorities through Coordination and Support Actions.
In the **Research Potential** of Convergence Regions (REGPOT) programme similar actions stimulate the realisation of the full research potential of the enlarged EU's convergence and outermost regions and help to strengthen the capacities of their researchers to successfully participate in research activities at EU level.

The **particular expectations of impact** for the different calls of the two programmes (ROK and REGPOT) were therefore taken into account in assessing the impact of those projects in the food sector funded in these programmes that constituted the FCI.

However proposals submitted as a result of the various calls in both programme areas had to be evaluated through procedures that have commonality across FP7. Those proposals that were successfully evaluated and approved for funding were then seen as candidate members of the FCI if their activities fell within agrofood areas that it embraced. At the outset of the FCI in 2008 the immediate need was to make a start and this was done with those ROK and REGPOT food-related projects for which the proposal evaluation had resulted in approval for funding.

The overall objective of the FCI was to find a way of bringing all players together so that successful and less experienced operators were integrated into a viable and successful European Food Cluster by building on the FP6 project FINE as a prototype. **A key aspect was to develop ways of involving the present and current project partners and potential successful projects under future Calls** and prepare for new coordination actions to be funded under FP7.

In operating and coordinating the FCI initially two advisors were used, one focussing on the economic and market development aspects and the other on impact and policy concerns.

[1] http://www.proinno-europe.eu/sites/default/files/newsroom/2010/09/ECPG_Final_Report_web-low1.pdf

Subsequently a third advisor had a more management-orientated remit. The Cluster typically had two meetings each year at different locations where projects could report on progress, project coordinators and partners could hold joint or individual meetings, project presentations could be made and visits arranged. Early meetings were held in Brussels but subsequently venues were selected where projects or earlier activities had taken place – Mersin (Turkey), Wageningen (The Netherlands), Thessaloniki (Greece), Gent (Belgium).

There is a **geographical diversity of involvement** in FCI with regions represented from new Member States such as Latvia, Estonia, Lithuania, Poland, Romania, Bulgaria; older ones such as France, Germany, Denmark, Spain, UK, Greece and Italy; as well as associated countries such as Turkey, Serbia, and FYR of Macedonia. At the outset there were six successful projects in the food sector as members of FCI. Later a further three joined as a result of their success in achieving funding in further Calls for proposals to the same programmes. Others have since been incorporated over time.

Although all the FCI projects are making a contribution to food sector research capability they are heterogeneous. This is an inevitable consequence of the FP7 proposal evaluation process that had to be used for project selection. So the planning, coordination and development of a growing and broader cluster needed (and will continue to need) to take all the varying features and objectives of the successfully funded projects into account. The difference between the two FP7 Cooperation programme areas also had to be recognised.

Nevertheless certain aspirations are clear in virtually all of the FCI projects. Each of the REGPOT and ROK projects that originally constituted the FCI or joined the initiative during the first two years specified objectives, outcomes and impacts that the individual project was designed to achieve. Because there are some clear similarities such stated project-level objectives can be grouped into broader categories representing a commonality (or comparability) of the aims sought from projects that were members of the FCI. These aggregated project-level objectives are useful as generic parameters for **assessing the outcomes of the Food Cluster projects** as a clustered group.

As a result of information derived from project visits and written and electronic information provided by the project coordinators and partners the **aggregated project-level objective categories** described above were verified as pragmatic aggregate outcome areas for assessment purposes as the projects close to completion showed significant involvements in achieving such outcomes from their stated objectives and newer projects are also working actively to achieve their stated outcomes. These aggregate project outcome categories were therefore confirmed as:

Mobility/young researchers
(including activities such as people-related/professional enhancement, mentoring and recruitment of both of young researchers and more experienced scientists)

Institutional facilities
(including activities such as improved technical status and capabilities of laboratories through state-of-the-art equipment)

Training/best practice
(including activities such as know-how and science/methodology experience acquisition with partners and beneficiaries)

Awareness development
(including activities such as use of communication and dissemination tools including conferences, newsletters, websites and enhanced scientific publication rates in peer-reviewed journals)

Commercial benefits
(including activities such as technology transfer with a focus on companies/SMEs and user groups generally, involvements with meetings and equipment training)

Linkage
(including activities such as improvements in collaboration and various forms of cooperation locally, nationally and Europe-wide thereby contributing to ERA capability and capacity)

Quality and safety
(including activities such as contributing innovative solutions relevant to food production, testing, processing, packaging and supply chains)

Proposal development/leverage effects
(including activities relevant to obtaining future funding using new sources and synergy with other instruments including national funding by leveraging recognition as a result of achieving EU funding)

Sectoral strategy development
(including activities such as new research positioning (in agrofood) including project/institution/sector/locality SWOT/SOR benefits)

Cluster development
(including activities such as networks and dialogue platforms for operations for research and innovation).

These outcome categories therefore formed a basis for assessing the performance and impact potential of the projects in aggregate and so make a contribution to an assessment of the outcomes and likely impacts of the FCI as a whole.

All the projects in the FCI that are nearing completion or close to it have made significant contributions in achieving their stated objectives. In aggregate therefore one can find **interesting and exciting examples of mobility**, fostering of young researchers and the ability to retain or attract their energy and expertise to the region or nationally. Training and sharing of best practice have been notable attributes in several projects. There are **good examples of linkage creation** and development or formation of regional clusters, influence on regional or national government policy (for example in the areas of food quality and safety but also in broader areas for example European and/or R&D policy) and support from such sources for further developments. There has also been a **significant effort, successful in several cases**, to collaborate in the formulation of new proposals both to FP7 and to other sources of funding both national and European. In some cases better strategic definition of the necessary research effort has been put in place sometimes at institutional level, sometimes at regional or locality level.

Certain projects have been able to attract the interest and **involvement of the commercial sector** or other types of user group. It is likely that other impacts of this sort will arise in the future as awareness increases further. Even so several projects have been able to **create significant awareness** of their work and the capabilities of the institutions involved in their regions and beyond – for example in other Member States. The resources made available through the project and more widely have gained **significant credibility for the institutions and their research groups** as a result of the enhancement of the scientific capabilities. This also has given a significant boost to morale and confidence for working at a European level where this was not particularly apparent before. Credible contributors to the European Research Area are one outcome of this change of attitude and circumstances. In particular

the impact of this improved resource capability is very noticeable with young researchers who have gained in enthusiasm and confidence as a result of the investment made.

However it can be argued that the individual projects might have achieved such successes in their own right without the support of the clustering put in place through the FCI. So the **added value achieved by having such a clustering approach in place needs to be considered also**.
So the key question for the FCI is whether the projects could have achieved the outcomes identified without being Cluster members?
Furthermore were there other outcomes that were particularly Cluster-derived from which the component projects of the Cluster **acquired benefits**?

Discussion sessions concerning **various cluster features and parameters** proved very valuable in this regard and some useful insights were obtained on the FCI, its nature and functioning and possible future direction. Even though outcomes from projects that have impact potential in different ways can indeed be aggregated into certain common areas the impact of the FCI overall looks somewhat diverse and so presents difficulties for any assessment of specific Cluster-originated impact.

So it is not possible to say for example that the FCI has increased regional commercial innovation in agrofood; or the FCI has generated new employment opportunities at a regional level; or changes in national/regional policy have been achieved. The Food Cluster objective would have had to be more focussed and targeted on particular issues to achieve such specificity of outcomes and impact for this to have happened.

However in the discussions with project coordinators and partners, areas were recognised as ones that were Cluster-generated thereby **providing some evidence of wider impacts from the outcomes** achieved than might otherwise have occurred.

Some of the FCI aims/features and their outcomes include:

"Breaking the box" by putting people together at meetings who would not usually communicate was an impact aim e.g. involving people taken from different sectors and different regions as a stimulus to new thinking and innovative ideas.

> The FCI meetings have put together professionals in agrofood areas who would not normally have been brought together because of different geographical locations or different R&D (or wider) interests. At times **new project proposals have been developed** as a result of such contact and are still being formulated. There have been successes in achieving funding.

Transfer of good practice: Researchers from different Member States learning from each other has been a feature of the FCI and its meetings.

> The movement of both young researchers to experience working in mature established institutions elsewhere in Europe and visits of senior mature working scientists to institutions in new and accession states has created further awareness and recognition of both the state of the art, best practice and the needs of users more widely. The FCI meetings sought to portray bi-directional awareness of needs on the one hand and available experience and resources on the other through presentations and more informal exchange of ideas. Training and workshops have also been an important feature of this approach.

SWOT and SOR training showing the value of self-analysis for research planning in a given situation.

Training at FCI meetings (and more widely) in the socio-economic management techniques of assessing strengths and weaknesses, opportunities and threats assisted institutions in devising **strategic positioning (orientation) of their research** within a broader politico-economic context. In several instances this benefitted not only the way in which the project itself would be delivered but also the wider positioning of the research of the institution as a whole.

Developing awareness of synergies in approaching funding possibilities showing the relevance of other funding sources and their inter-relationships. This also underlined how research academia, commercial interests and government can be necessary stakeholders in the innovation process (the so-called "triple helix" model and its derivatives).

There was a need to create awareness of the wider context of support for R&D and socio-economic development other than submitting proposals for research funding under the Framework Programme. This was achieved through presentations at FCI meetings of **funding opportunities available under other instruments** such as Structural Funds and the Competitiveness and Innovation Programme (CIP). For the Commission the **awareness of such synergies between instruments is seen as very important in the fostering of innovation.** Some project institutions have achieved successful funding from such synergistic approaches.

Creating awareness of the sector, of the region, of the innovation process, of the European dimension – all were important elements for the FCI in enhancing the impact and recognition of agrofood R&D activity.

FCI **membership is increasing** as the initiative becomes better known – for example through its new website. Some new projects have become part of the FCI as a result of achieving RoK or REGPOT funding (e.g. AFRESH; AGRISCIMONT) or sought membership earlier after **funding from other sources such as INTERREG** (e.g. REAL). Other projects and clusters are now seeking membership or association with FCI in greater numbers (e.g. FCUB-ERA; FOOD2MARKET; Baltfood; the Bioactive food plants network.)

In several cases the **successful achievement of funding a research project** under FP7 has raised awareness of an institution and what it is trying to develop in a changing economic situation - a new approach to innovation and/or an awareness of opportunities in a Europe-wide situation but from a regional standpoint.

Sometimes the recognition of this situation takes the form simply of political (or policy-related) public statements by senior government officials. In other cases it has achieved more tangible outcomes through matching or **complementary funding from national/regional sources** to further enhance what has been put in place from European funding – so the leverage of the FP funding has been an important impact component.

Creating a larger scale European activity than an individual project could achieve on its own – this was valuable in portrayals to government/regional agencies, other

research organisations and potential stakeholders and created more "substance" towards fulfilling the aim of contributing to ERA.

The FCI **achieved a presence for its component projects** that would have been difficult or impossible for each of them to achieve in isolation. For example at EU level:

- During **Open Days 2008** the FCI was the lead topic of a press conference involving Research Commissioner Janez Potočnik.
- The FCI was presented as part of a Round Table discussion ("*Clusters – a policy or a tool for a policy*") at **WIRE 2010 in Granada.**
- The FCI is cited as an example in the **European Strategy for the Danube Action Plan** (COM 2010, 715) p. 60.

The involvement of the FCI as **representing a wider platform of EU research funding** facilitated a meeting with the national Ministry of Agriculture, Tallinn, Estonia during a FLAVOURE project visit by one of the FCI coordinators.

The **FCI brought potential for enhancing contacts** through co-location of its meetings with larger professional events (Thessaloniki, Wageningen, …)

The food sector faces challenges induced by globalization and societal issues such as demographics (ageing, migration), diseases (diet-related disease, cognitive decline, obesity and allergy), lifestyles (occupation, quality of life) and sectoral competition. In addition there are **consumer demands to be taken into account for healthy, safe, environmentally sustainable and ethically produced food**. The food industry, which is a large manufacturing sector in Europe, therefore requires a good understanding of the triggers of future change and the inter-relationship between these and their impact in order to remain competitive and overcome emerging threats. The aims of the FCI were supportive of this by addressing some challenges in agrofood.

In addition, the need for **providing support to clusters and cluster formation** in general was a further important aspect of the FCI and cluster development is identified as one of the aggregate outcome areas. The EC present strategy on clustering sees it as a tool for regional economic development playing a vital role in fostering business innovation.

Optimising the impact of Cohesion Policy funding that is allocated to innovation is an important element in the regional dimension of the Europe 2020 Innovation Union - asking **regions to design "smart specialisation strategies" (S3) to unlock growth.** Clusters are an identified action to be considered in S3.

The future orientation of programmes such as RoK should be closer to these identified flagship initiatives. The **EU Strategy for the Danube Region's Action Plan might be illustrative of this approach where the FCI is cited as an example of a FP7 initiative** that can be built on (but interestingly more in relation to capacity-building - which is the thrust of the FP7 programme involved - rather than cluster creation *per se)*.

The **following conclusions are identified from the assessments** made of the FCI both on the component projects of the Cluster and the implementation of the FCI in its own right:

1. The **individual Cluster project outcomes constitute a success in virtually all instances** that are at or nearing completion. However when these are viewed in relevant aggregated categories that show commonality across the FCI projects the added value brought by having the FCI in place needs to be identified separately.

2. Many project coordinators have confirmed the view that the **FCI itself has provided outcomes or attributes that could not have been achieved effectively on a "project only" basis**.
   There were outcomes and impacts achieved by the component projects of the FCI that benefitted from and were complementary to activities embraced by the Cluster at its meetings and more widely including:
   - **Stimulating linkage** at various levels and in various ways
   - Fostering the **transfer of good practice**
   - Fostering **strategic planning** through SWOT/SOR training
   - **Developing awareness** of different funding possibilities and formulating appropriate proposals
   - **Creating broader awareness** of the agrofood sector in Europe
   - Supporting a European research effort and so **creating awareness of ERA.**

3. The **FCI is not a typical cluster** as there is no proximate geographical dimension – it is more a network and should develop as such in the future. Clusters need to be regionally - or locality - based to maximise effectiveness.

4. The FCI was a **research capacity-building pilot initiative** conceived as a tool for building research capacity for enhanced cooperation between European regions. From this standpoint alone it has been successful in the agrofood sector and increasing interest in applications for "membership" illustrate this.

5. It is envisaged that the FCI will develop further over time as a network of European regional food clusters through acquisition of future projects and associated actions. This is already happening. So the **FCI should become a European network of food-related clusters** aiming to spawn and enhance food-related regional clusters in Europe.

6. The FCI or its **successor needs a "foresight" capability** to determine where the particular focus of its effort should be over time. This will avoid dilution of resource capacity that can result from too great a degree of heterogeneity in the activities supported.

How can the FCI contribute to achieving what is needed in the future?
What should its organisation and style be like and how will this be decided?
How can it be made to perform tasks identified as forming part of its remit?
Should it be a network of regional cluster members who make a contribution to resource its functions as defined in a MOU?
In which case should projects continue to be candidates for membership or should such applicants be clusters?

> ***It is RECOMMENDED***
> ***that a working group be formed to advise on the future governance and implementation of the FCI.***

Choices will need to be made on what theme(s)/niche(s) to pursue in future so that the FCI gains a reputation for certain specific contributions e.g. food industry innovation; food and health; agrofood and the environment; farm to fork issues – what should the supply chain be like; the effect of large scale retailing on food issues; safety and quality of food; European agrofood exporting

It is RECOMMENDED
that the FCI or its successor organisation devotes effort to assessing and specifying what is needed - by whom, where, why and with what result.

It is not sufficient simply to foster cluster formation - clear and specific definition is needed on what the cluster is for and how it will make a contribution especially in relation to the Europe 2020 Innovation Union as described.

An important aspect of this process is to devote some thought to the key societal issues involved and their prioritisation. For example is the over-riding need for increased economic activity; better global competitiveness; improved health and welfare; environmental acceptability; spreading the "influence or reach" of Europe – in science/research/innovation, in the food sector, in a social context?

There is a need to stimulate more innovative activity in the European agrofood sector by brainstorming ideas in the chosen areas of activity relevant to public need rather than collaboration for the sake of collaboration.

It is RECOMMENDED
that a foresight activity be established as a key aspect of the Recommendations proposed above in order to brainstorm such societal needs.

There are other initiatives and organisations with which FCI might have a good "fit" or complementarity. For example European Technology Platform (ETP) Food for Life (See http://etp.ciaa.eu) which is an industry-driven instrument to unite stakeholders at European level with aims to enhance competitiveness of the agrofood sector in Europe and strengthen innovation and to meet the needs and expectations of society better. Further information on this was presented by Andras Sebok (Campden BRI – www.campden.co.uk; www.campden.hu) at the FCI Gent meeting in 2010.

It is RECOMMENDED
that possibilities for association or inclusion of FCI with other organisations with comparable aims are explored as part of FCI's strategic positioning for the future.

The **Food Cluster Initiative has proved to be beneficial** as its critical mass allowed it to attain outcomes that would not have been reached at individual project level. These have been discussed earlier in this document.
It allowed notable unlocking of the research potential in the European Food Research Area by bringing together regional research actors that would not have met otherwise.

For this **positive impact** to be leveraged up in the future, the FCI's objectives will need to be more focused on specific issues such as for instance **increased regional commercial innovation**.

In that respect, the **recommendation to set up a foresight activity** to identify the priority societal challenges to be addressed by the Food Cluster Initiative is '*key*' to the success of its future activities.

1 The Policy Background

1.1 Europe 2020 Strategy

Europe 2020 is the successor to the Lisbon Strategy and as such represents the overall policy background against which initiatives such as clustering should be viewed. Europe is seen as facing a moment of transformation. Long-term challenges – globalisation, pressure on resources, ageing population are intensifying. Europe can succeed only if it acts collectively, as a Union turning itself into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion. So Europe 2020 puts forward three mutually reinforcing priorities:

- Smart growth: developing an economy based on knowledge and innovation.
- Sustainable growth: promoting a more resource efficient, greener and more competitive economy.
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

The EU needs to define where it wants to be by 2020. To this end, the Commission proposes the following EU headline targets:

- 75 % of the population aged 20-64 should be employed.
- 3% of the EU's GDP should be invested in R&D.
- The "20/20/20" climate/energy targets should be met (including an increase to 30% of emissions reduction if the conditions are right).
- The share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree.
- 20 million less people should be at risk of poverty.

These targets are interrelated and critical to overall success. To ensure that each Member State tailors the Europe 2020 strategy to its particular situation, the Commission proposes that EU goals are translated into national targets and trajectories. The targets are representative of the three priorities of smart, sustainable and inclusive growth but they are not exhaustive: a wide range of actions at national, EU and international levels will be necessary to underpin them. The Commission is putting forward seven flagship initiatives to catalyse progress under each priority theme:

- "Innovation Union" to improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs.
- "Youth on the move" to enhance the performance of education systems and to facilitate the entry of young people to the labour market.
- "A digital agenda for Europe" to speed up the roll-out of high-speed internet and reap the benefits of a digital single market for households and firms.
- "Resource efficient Europe" to help decouple economic growth from the use of resources, support the shift towards a low carbon economy, increase the use of renewable energy sources, modernise our transport sector and promote energy efficiency.

- "An industrial policy for the globalisation era" to improve the business environment, notably for SMEs, and to support the development of a strong and sustainable industrial base able to compete globally.
- "An agenda for new skills and jobs" to modernise labour markets and empower people by developing their of skills throughout the lifecycle with a view to increase labour participation and better match labour supply and demand, including through labour mobility.
- "European platform against poverty" to ensure social and territorial cohesion such that the benefits of growth and jobs are widely shared and people experiencing poverty and social exclusion are enabled to live in dignity and take an active part in society.

These seven flagship initiatives will commit both the EU and the Member States. EU-level instruments, notably the single market, financial levers and external policy tools, are being fully mobilised to tackle bottlenecks and deliver the Europe 2020 goals. Stronger economic governance is required to deliver results. Europe 2020 relies on two pillars: the thematic approach outlined above, combining priorities and headline targets; and country reporting, helping Member States to develop their strategies to return to sustainable growth and public finances. Integrated guidelines will be adopted at EU level to cover the scope of EU priorities and targets. Country-specific recommendations will be addressed to Member States. The reporting of Europe 2020 and the Stability and Growth Pact evaluation will be done simultaneously, while keeping the instruments separate and maintaining the integrity of the Pact.

The European Council has full ownership and is seen as the focal point of the new strategy. The Commission monitors progress towards the targets, facilitates policy exchange and makes the necessary proposals to steer action and advance the EU flagship initiatives. The European Parliament is a driving force to mobilise citizens and act as co-legislator on key initiatives.

In the Autumn of 2010 a flagship initiative envisaged as part of the governance of Europe 2020 was put in place - The Innovation Union - setting out a strategic approach to innovation driven at the highest political level with identified benchmark elements for action. This built on the earlier report of a high level panel with a remit to advise on an indicator to measure Europe's progress towards a more innovative economy.

1.2 Cluster policy considerations

Interest in innovation clusters has arisen as a result of recognition that competitive advantage can come not simply from a firm's own resources and capability but from resources and capabilities located in the firm's nearby business environment. Geographical proximity can have positive effects on rates of new firm formation and a firm's productivity, innovation, profitability and growth (1).

So the pursuit of the benefits of clustering has resulted in significant activity in public policy development relating to innovation clusters since the 1990s. Governments at all levels have adopted the concept as a tool for promoting national and regional competitiveness, innovation and growth (2) (3) as developing clusters promised an answer to the challenges of international competition and the importance of innovation in the knowledge economy.

This approach has been adopted in a European context in a number of ways. It is also a key policy objective in the USA. The present Federal Administration in Washington D.C. is looking for ways to support competitive advantage of regions in order to drive forward

industry. Part of this effort takes the form of The White House's Regional Innovation Clusters Working Group which brings together seven US agencies.

Regional Innovation Clusters in the USA are seen as geographic concentrations of firms and industries that do business with each other and have common needs for talent, technology and infrastructure. Clusters make full use of a region's assets from infrastructure to workforce to available capital to increase collaboration and create a climate for business growth. The Working Group is developing collaborative federal funding streams in an effort to make coordinated, flexible and regionally customised investments in places in which a maximum return can be achieved from a region's unique economic assets and competitive strengths. This cluster strategy is seen as part of the bedrock to a new foundation for US prosperity. (4)

In contrast an EU articulation on clusters appears to embrace numerous operational foci and there seems to be no over-arching management locus or point of action initiation. It is worth being aware of the principal schemes and initiatives in place because of their potential relevance to the Food Cluster Initiative (FCI) and its future position/development. These include:

- European Cluster Memorandum prepared by a High Level Advisory Group under the EC Europe-INNOVA initiative – January 2008
- Presidency Conclusions European Council "through improved science-industry linkages and world-class innovation clusters and the development of regional clusters and networks" – March 2008
- Commission Decision on setting up a European Cluster Policy Group (ECPG) – October 2008
- Communication from the Commission – Towards world-class clusters in the EU – implementing the broad-based innovations strategy. (COM (2008) 652final/2) – November 2008
- Further developing the European Cluster Observatory
- Europe INNOVA –DG Enterprise and Industry (but originated in FP6)
- PRO INNO Europe – European Cluster Alliance; Cluster IP; Cluster Excellence Initiative

However the remit and final report conclusions of the European Cluster Policy Group merit particular mention in attempting to portray some coherence to the European position. ECPG was formed by Commission Decision in October 2008 as a key element in the quest to strengthen the quality of cluster programmes in Europe. Its task was stated as "to improve the Commission's and Member States' understanding of modern policy responses in support of cluster excellence" and "make recommendations on how to better design cluster policies in the Community". The Group met four times and considered particular issues such as the support for international cooperation among clusters; the role of cluster in the development of emerging industries/services; the efforts to raise the excellence of cluster policies and cluster organisations; and ways to create better synergies between Community instruments with a cluster dimension.

In its final recommendations the ECPG sets out three principles:

- Cluster programmes need to be leveraged with vigorous efforts to strengthen framework conditions
- Public support for cluster programmes needs to be based on clusters' ability and willingness to upgrade in the face of global competition
- Cluster programmes need to be delivered in an integrated policy framework with clearly assigned roles and responsibilities for the Commission and EU Member States

These principles were designed to provide an orientation for policymakers as they define specific policy actions. Eight such actions were proposed by the ECPG:

- Align funding priorities in the EU budget with competitiveness
- Enhance cluster-related framework conditions
- Review current profile of funding recipients at EU and Member State levels
- Encourage better cluster programmes at the EU Member State level
- Streamline EU funding for clusters by creating a unified set of administrative procedures
- Improve coordination of cluster programmes across DGs
- Institutionalise the provision of the cluster knowledge/data base
- Enhance European platforms for cluster collaboration

An OECD policy brief (May 2007) (5) on competitive regional clusters: national policy approaches states inter alia that:

- Most definitions support the idea that a cluster includes firms and other knowledge-producing agents in a geographically concentrated area with inter-linkages among them;
- Most programmes supporting clusters start from a common assumption about the value of agglomeration of firms and the importance of connecting resources in a given place;
- National and EU level programmes of cluster support originate from three policy families: regional policy; S&T policy; industrial/enterprise policy. The ultimate goal is to improve competitiveness and innovation capacity.

So it is clear that “clusters are of growing importance in the new global environment in which the Europe 2020 strategy has to succeed; European policymakers cannot afford to ignore their role and should actively explore their potential to modernise and improve economic policies” (6) (7) (8).

1.3 Why Clusters?

The ECPG defined clusters as “geographic agglomerations of companies, suppliers, service providers, and associated institutions in a particular field, linked by externalities and complementarities of various types” (6). It also provided definitions of cluster initiatives – “organised efforts taken by actors in a cluster to increase the cluster’s growth and competitiveness” – and cluster programmes – “organised efforts taken by government to increase the growth and competitiveness of clusters in its constituency”.

So what is the academic origination and particular context in which the Food Cluster Initiative (FCI) should be viewed? There is a rich academic literature on clusters and the various innovation models derived from the concept. Harvard Business School is generally credited with the original thinking upon which the cluster concept is based – in particular Professor Michael Porter. He defines a cluster as “a geographic concentration of competing and cooperating companies, suppliers, service providers and associated institutions in a particular field that are present in a nation or region”.

The most famous example is Silicon Valley in California where (and in other cases like this) there is frequent and strong interaction between individuals and organisations both formally and informally. However there is insufficient evidence to support the view that artificial

building of clusters of this type is truly effective. For example really effective clusters have developed over significant periods of time.

Some suggest that in a networked world the value of geographical clustering is diminished and physical co-location is less important. Others have argued that although it may be possible to simulate a number of clustering processes on the web or by other electronic means it is unlikely that all the necessary features of clustering can be simulated in this way.

Clusters increase the productivity with which companies can compete so the development of clusters has become an important agenda for governments, companies and other institutions. Cluster development initiatives are seen as an important new direction in economic policy. They are also seen as a key means of driving regional development. This involves building mutually beneficial private and public sector partnerships through government and regional investment in various ways. The so-called “triple helix model” is valuable concept in this context. There is evidence that those regions which by accident or design have achieved a clustering effect seem to be better able to achieve and sustain economic success in the global marketplace. (9)(10)

1.4 The relevance of the triple helix model

The convergence and crossing-over in recent years of the three formerly separate spheres of government, business and public research has been represented as a heuristic model in the form of a so-called triple helix. This triple helix model emerged from a workshop on Evolutionary Economics and Chaos Theory: New Directions in Technology Studies in1994 organized with the intention of crossing the boundaries between institutional analysis of the knowledge infrastructure, on the one hand, and evolutionary analysis of the knowledge base of an economy, on the other (11).

The model refers to a spiral rather than the former traditionally linear models of innovation (often known in the 1980s as technology or knowledge transfer) that captures multiple reciprocal relationships among the different institutional settings of public, private and academic components at different stages in the process of capitalising on knowledge. So a new institutional configuration is emerging to promote innovation – a “triple helix” of university, industry and government in which the dynamic is a change from strong institutional boundaries to a more flexible overlapping. Different levels, modes and interpretations of the process have been widely described in the socio-economic literature and a rich literature on the topic has resulted. See for example (12) (13) (14) and www.leydesdorff.net/index.htm.

It is worth repeating the justification for the triple helix name as described by Leydesdorff (12). “In 1953, Pauling and Corey proposed that DNA was made up of three chains, twisted around each other in rope like helices. A few months later, James Watson and Francis Crick proposed the double helix, which was then quickly accepted as the correct structure of DNA. This discovery led to a Nobel Prize. Double helices can under circumstances stabilize in a coevolution, but triple helices may contain all kinds of chaotic behaviour (see Poincaré). Triple helix models continue to be useful in studying transition processes, for example, in crystallography and molecular biology. More recently, Lewontin used the metaphor of a triple helix for modeling the relations between genes, organisms, and environments”.

In a quite different context, Henry Etzkowitz and Leydesdorff introduced a Triple Helix model for the dynamics of university-industry-government relations (13). The argument for using this neo-evolutionary model was that a knowledge-based regime of innovations can be expected to remain in transition. A Triple Helix can contain double helices as temporary stabilizations, but a system of three dynamics is meta-stabilized. Under specific conditions

the next-order system of an overlay of communications can also be globalized and then exhibit self-organization. Globalization means in this context that the next-order (emerging) overlay gains priority in determining the dynamics of the underlying ones (on which it rests). Thus, a Triple Helix model may be sufficiently complex to encompass the different species of observable behaviour in the networks under study.

2 The objectives of the ROK and REGPOT programmes

2.1 Regions of Knowledge

The Regions of Knowledge (ROK) programme initiative aims to strengthen the research potential of European regions in particular by encouraging and supporting the development across Europe of regional research-driven clusters associating universities, research centres, enterprises and regional authorities. The intention is that it will allow regions to intensify the role of RTD in economic development and invest better and more RTD through cultivating innovative research-driven clusters at local and regional level. Its purpose therefore was to enhance regions to strengthen their capacity for investing in and conducting RTD activities in a way which can contribute significantly to economic development. It was envisaged that the necessary activities would be implemented in close relationship with Community regional policy (delivered through structural funds) and the Competitiveness and Innovation Programme (CIP).

The eight Calls under ROK until 2011 have had common features but also certain distinctive specified actions. Calls with deadlines in 2008 embraced facilitation of the emergence of regional research-driven clusters and mutual exchange of information and an emphasis on transnational cooperation between such regional research-driven clusters. There have been specific activities supporting the analysis and integration of research agendas of regional or cross-border clusters and initiatives to improve such integrations by defining joint action plans. Dissemination and mentoring activities have also been a feature. Other activities specifically targeted the facilitation of emergence of new regional research-driven clusters and mutual information exchange. The activities were funded as Coordination and Support Actions. The expected impact was identified as follows:

- Improving links between regional authorities, research entities and the local business community across Europe within research-driven clusters in order to promote regional economic development and competitiveness (increased cost-efficiency, increase in jobs, additional GDP or growth in VA) in a particular scientific and technological domain or economic sector;
- Delivering more effective investments in R&D at regional level through the definition and implementation of regional strategies based on business needs, which would mobilise European, national or regional funds and promote synergies notably with the structural funds;
- Where appropriate, delivery of “guidance” solutions for technologically less developed regions, in particular convergence and outermost regions.

In 2009 (and in general in 2010 and 2011) activity focussed on transnational cooperation between regional research-driven clusters with a focus on sustainable use of natural resources with specific theme areas defined. Analysis and integration of research agendas of regional clusters was again identified as were initiatives to improve integration and definition of a joint action plan though the work involved in implementing the joint action plan

was not eligible for funding. Again these were Coordination and Support Actions. The expected impact (in 2009) was identified as:

- Developing and integrating across Europe research-driven clusters in order to promote regional economic development and worldwide competitiveness (increased cost-efficiency, increase in jobs, in FDI, in patents, additional GDP or growth in VA) in a particular scientific and technological domain or economic sector, thereby facilitating in particular the emergence of lead markets;
- Delivering more effective investments in R&D at regional level through the definition and implementation of regional strategies based on business needs, which would mobilise European, national and regional funds and promote synergies notably with structural funds and the CIP;
- Including more regions into the Regions of Knowledge initiative, into the knowledge economy and the ERA, especially through the mentoring of regions with a less developed research profile. Where appropriate, delivery of "guidance" solutions for those.

2.2 Research potential of convergence regions

The objective of the REGPOT programme is to stimulate the realisation of the full research potential of the enlarged EU's convergence and outermost regions and helping to strengthen the capacities of their researchers to successfully participate in research activities at EU level.

The eleven Calls under this programme until 2010 show certain common features. Those with deadlines from 2008 onwards have addressed unlocking and developing research potential of research entities established in the EU's convergence regions and outermost regions. Other more specific features have addressed the provision of evaluation facilities for research entities in such regions, international cooperation with a focus e.g. on the Western Balkan countries or on Mediterranean Partner Countries (MPC) and a brokerage facility for partner search. Expected impact was identified as:

- Upgrading the RTD capacity and capability (human potential: number of new researchers and training of research staff, improvement of research management, scientific equipment) as well as the quality of research carried out by the selected research entities;
- Better integration of the selected research entities in the ERA as a whole (partnerships, including twinning with research groups elsewhere in Europe);
- Contribution to regional capacity building;
- Improvement of the potential of the selected research entities to participate in FP7 projects

In 2009 a broader range of activities was stated including exchange of know-how and experience; recruitment by selected research entities of incoming experienced researchers; acquisition, development, maintenance or upgrading of research equipment; organisation of workshops and conferences; dissemination and promotional activities; evaluation facility. The principal activity of unlocking and developing research potential of research entities was now focussed on the more promising and highest quality research of significant size such as university departments and specialised research institutes active in areas of thematic priority in FP7 so that they will become more integrated into the European Research Area (ERA). This activity supports the implementation of an Action Plan as defined by SWOT analysis and with defined components but does not finance RTD joint projects as such. The funding scheme is again a Coordination and Support Action. The expected impact identified was similar to that of 2008:

- Better integration of the selected research entities in the ERA as a whole (partnerships, including twinning with research groups elsewhere in Europe);
- Upgrading the RTD capacity and capability (human potential: number of new researchers and training of research staff, improvement of research management, scientific equipment) as well as the quality of research carried out by the selected research entities;
- Improved research capacity for increased contribution to regional economic and social development
- Improvement of the potential of the selected research entities to participate in FP7 projects
- For the international co-operation activity Mediterranean Partner Countries were particularly specified.

In 2010 the approach was very similar to that adopted in 2009 for the activity of unlocking and developing research potential in research entities. However a second similar activity specifically targeted Western Balkan Countries' regions. The expected impact in the activity common to 2009 and 2010 was identical to that specified for 2009 (see above). The expected impact relating to the activity targeting the Western Balkan Countries' regions identified:

- Better integration of Western Balkan Countries research entities in the ERA and in the FP7
- Accelerate the setting up of sustainable partnerships between the most competitive RTD entities established in the Western Balkan Countries, Member States and Associated Countries whilst boosting regional cooperation contributing to socio-economic needs;
- Upgrading the RTD capacity and capability (human potential: number of new researchers and training of research staff, improvement of research management, scientific equipment) as well as the quality of research carried out by the selected research entities;

The particular expectations of impact as italicised above for the different calls of the two programmes (ROK and REGPOT) are therefore to be taken note of in assessing the impact of those projects in the food sector funded in these programmes that constituted the Food Cluster and mutatis mutandis the impact of the FCI itself.

3 The selection of projects for funding

Proposals submitted as a result of the various calls in both programme areas are evaluated through procedures that have commonality across FP7 (e.g. see COM (2008) 4617 – Rules for submission of proposals, and the related evaluation, selection and award procedures). The Call documents make this clear in Annex II – Guide for Applicants. Those proposals that are then successfully evaluated and approved for funding are seen as candidate members of the FCI if their activities fall within food areas that it embraces.

So the policy concept behind the FCI depends for research involvements on the use of funding instruments that are dependent on peer-review evaluation procedures common throughout FP7. The inclusion of particular food-related project proposals cannot in any way be pre-determined and achievement of policy objectives has to be fulfilled within the context of the usual independent proposal evaluation process and the incorporation into the Cluster of those projects that are successful – though responding to features specified in a particular

Call. In certain instances clusters figure as such features, though food has not normally been a priority activity for a Call.

Other instruments that are relevant have different features and in fact a different legal basis. Research policy focuses on promoting international excellence; innovation policy focuses on turning knowledge into business opportunity and contributing to societal needs; cohesion policy focuses on promoting regional excellence. Furthermore the first two of these target specific themes - so there is a thematic specialisation here - whereas the latter targets geographical areas and seeks to promote an integrated approach. However the situation has become more coherent recently because of the influence of policy priorities outlined above and the growing importance of the synergies approach to funding possibilities.

4 The Background to the Food Cluster Initiative

4.1 Initial concept

The food sector is economically important in Europe. Information in early 2009 from DG ENTR (15, and see also 16) stated that:

> "The food industry is one of the largest sectors in manufacturing industry and employs about 4.5 million people. It had limited but stable growth of about 1.8% p.a. over the last ten years, while its employment trends were negative, especially in new Member States. Germany, France, Italy, Spain and the UK account for 70% of the turnover of the industry. Overall consumption patterns for agro-food products are expected to remain subdued for a considerable period of time given the unprecedented degree of uncertainty facing many consumers as regards job and income prospects."

When the Food Innovation Network (FINE) project was proposed in the autumn of 2005 its features included the following:

- Shared best practices, regional strategies, policy recommendations and policy tools to stimulate regional investments in RTD in general and in the food regions within FINE in particular;
- An action programme for Europe's hotspots in the field of food RTD and innovation with ten interregional projects to increase investments in RTD.
- A long term collaboration between the regional actors in the field of food related RTD with an aim to a) benefit from each other's complementarities and b) promote the formation of the European Research Area.

FINE aimed to provide the basis for establishing a lasting collaboration of public and private partners in Europe's regional hot spots of RTD in the field of food processing and distribution. During the FINE project attempts would be made to interact with other on-going projects to improve efficiency by using each other's results.

So the FCI aim was originally conceived as building a next phase of the FINE network working towards a more complete EU network of regions with ambitions in food. Although the timing involved in achieving such ambitions was still being finalized in 2007 the process of expanding FINE to embrace this next phase of development was already envisaged then through the incorporation of FP7 Food projects thereby creating a European Food Cluster. These Coordination and Support Actions were to be funded as a result of REGIONS-1 and REGPOT-1 and REGPOT-3 2007 and subsequent Calls. At the outset of the FCI in 2008 the

immediate need was to make a start and this was done with those ROK and REGPOT food-related projects for which the proposal evaluation had resulted in approval for funding.

4.2 Objectives

The overall objective of the FCI was to find a way of bringing all players together so that successful and less experienced operators were integrated into a viable and successful European Food Cluster by building on the FP6 project FINE as a prototype. A key aspect was to develop ways of involving the present and current project partners and potential successful projects under future Calls and prepare for new coordination actions to be funded under FP7.

Other particular objectives identified during the launch period of the FCI involved:

- Strengthening EU food research-driven clusters by inter-regional cooperation
- defining Regional Food RTD policies and strategies;
- making the EU regional food RTD infrastructure landscape transparent;
- investing in the combined regional strengths to create excellence in the European Research Area (ERA) by defining a mutual strategy and developing inter-regional projects.

The above objectives of the Cluster were re-visited at its third meeting in Mersin Turkey in February 2009. On this occasion emphasis was placed on three objectives:

- promoting diversity and excellence of food production and food research of European regions to increase welfare;
- interregional cooperation and learning, between clusters, regions and projects: exchange of experiences with defining Regional Food RTD strategies and implementation through projects at regional level, together with regional policy makers, companies and research institutes to increase R&D performance, innovation and technology transfer;
- developing interregional projects to invest in the combined regional strengths to create excellence in the ERA, with use of FP7, CIP and Structural Funds, through:
  - increasing cooperation between companies and increasing participation of companies in European research and innovation programmes.
  - making the EU regional food RTD infrastructure landscape transparent;
  - inviting other food research driven regions to participate and clusters from other sectors to interact through cooperation with other European networks.

More specifically at the level of FP7 Coordination and Support Actions that fund the FCI projects the Cluster needed to demonstrate effectiveness in achieving:

- transfer of good practices through inter-regional partnerships;
- strengthening the research effort of European regions;
- reinforcing the capacity of regional actors to participate in wider FP7 activities;
- development of regional research-driven clusters that associate universities, research centres, enterprises and regional authorities;
- integration with strategies arising through other instruments;
- enhancing the full integration of the convergence regions and outermost regions into the EU RTD activities.

So funding the component projects was not just a matter of fulfilling the individual project objectives. On completion an aggregate assessment of the performance of the Cluster had

to take account of the outcomes and impacts of not only the individual projects but importantly the FCI overall in an effort to demonstrate whether or not the cluster approach has had an impact by bringing added value to the Commission's policy objectives as a result of the funding schemes put in place.

5 The approach to implementation of the Food Cluster Initiative

5.1 Coordination and management

In operating and coordinating the FCI initially two advisors were used, one focussing on the economic and market development aspects and the other on impact and policy concerns. Subsequently a third advisor had a more management-orientated remit. The Cluster typically had two meetings each year at different locations where projects could report on progress, project coordinators and partners could hold joint or individual meetings, project presentations could be made and visits arranged. One particular involvement was putting in place a structured SWOT assessment and development of a strategic action plan (or strategic orientation - SOR) for the projects involved and their regional locations. This training process was led by one of the Cluster coordinators. Time and space were also made available (i) for concurrent kick-off and subsequent individual project management meetings to be held in order to progress work on the individual component projects and (ii) the formulation of new project proposals. Report-back was done by project coordinators to plenary sessions followed by discussion.

5.2 Meetings

Early meetings were held in Brussels but subsequently venues were selected where projects or earlier activities had taken place – Mersin (Turkey), Wageningen (The Netherlands) Thessaloniki (Greece) and Gent (Belgium). At the earlier meetings in addition to the SWOT/SOR sessions presentations were made by Commission officials and others on topics such as previous experience gained in the FINE project, synergies between funding instruments, regional policy and use of structural funds, cluster policy in the Commission, opportunities in thematic programme areas of FP7, and examples of successful experiences with clusters or analogous initiatives at national or regional levels.

At those meetings held at FCI project geographical locations presentations were made on regional initiatives, SWOT and SOR analyses of local regions were presented for discussion, new successful projects were outlined, food innovations and innovation agencies were presented, cluster policy and the necessary regional policy instruments were described and press and publicity initiatives were taken. Such meetings were at times organised in parallel with other relevant events such as fairs or exhibitions in order to maximise potential for contacts. Social events such as networking dinners, visits to food/drink businesses, research and cultural locations and other initiatives also enhanced contact opportunities.

Hands-on involvement sessions were also made use of in small parallel discussion groups in order to gain inputs to outcomes and impact effects and gain insights into what members of component projects wished the FCI to address in forthcoming meetings and more widely. For example input was sought on funding tools, national regional and international interactions, devising projects, SME participation, how clusters work, how to develop research capability, and structuring the FCI website. Some meetings had particular workshops on specific areas of food sector and business interests. Varied and rich agendas

of this kind were thought vital for Cluster meetings in driving the initiative forward to deliver its objectives and a significant amount of effort was devoted to their planning and implementation. The meetings were usually of 2-3 days duration.

6 The nature of the projects selected for funding

There is a diversity of involvement with regions represented from new Member States such as Latvia, Estonia, Lithuania, Poland, Romania, Bulgaria; older ones such as France, Germany, Denmark, Spain, UK, Greece and Italy; as well as associated countries such as Turkey, Serbia, Montenegro and FYR of Macedonia. At the outset there were six successful projects in the food sector as members of FCI. Later a further three joined as a result of their success in achieving funding in further Calls for proposals to the same programmes. Others have since been incorporated over time. Brief initial descriptions of the projects are provided below.

Bringing the Benefits of research to Agrofood SMEs of the Regions of Central Macedonia, Puglia and Pazardjik - RAF-REGIONS

The RAF-REGIONS team

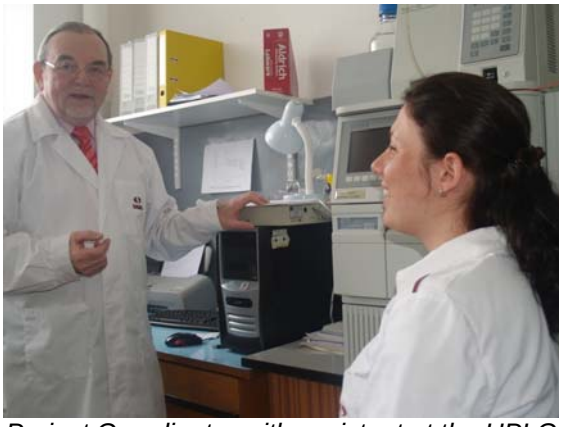
For the three regions involved the agrofood industry is a major manufacturing sector and local economies depend heavily on this. But the sector is slow to adopt new and innovative technology and introduce research results into its processes. As a consequence initiatives so far have failed to bring the benefits of research to SMEs in a sustainable way and to foster long-lasting and fruitful cooperation between industry and R&D entities.

This ROK project aims to accelerate decision-making and facilitate the development of key players. To do this its objectives include supporting the development and operation of key clusters in the agrofood sector in the regions involved; enabling the regions to attract more and better RTD investment in order to enhance their capacity to participate in FP7 and CIP and mobilise national, regional and private sector financial possibilities; to promote synergies between regional and research policies and produce food sector research strategies for the regions involved; to foster transnational cooperation between the project partners; to assist the agrofood SMEs in the regions to become more competitive by adopting new technologies derived from research; to facilitate the exchange of best practice; to mentor participating partners through mutual exchanges; to cooperate with relevant projects and initiatives developed in other regions of Europe.

Specific activities were identified that will achieve **significant impact**. These include developing 3 long-lasting research-driven clusters, mapping and analysing regional RTD policy and activity, performing technology audits at 80 SMEs, SWOT analysis of the three regions, organising workshops for the regional actors involved, organising training trips and conferences, exploiting synergies with other European research-driven clusters in the sector, developing a joint action plan of RTD activities to drive economic development in the sector. Twelve partners are involved in the project, four from each participating region.

Unlocking Animal Food Quality Research Potential in the Baltic Region by developing the scientific and technical capacities of the research institute Sigra - BALTFOODQUAL

The overall objective of this REGPOT project is to contribute to the realisation of the full research potential of the enlarged EU by unlocking and developing existing research potential in one of the convergence regions – the Baltic. Specific objectives include strengthening the capacity of the research institute, Sigra, to participate at EU level in research projects and activities on animal feed and food quality; to improve the technical capacity of the research institute, Sigra, to carry out high quality research on animal feed and food quality and its impact on consumers' health; to promote collaboration with other research institutions in the ERA having similar scientific interests in order to use research capacity more synergetically and efficiently.



Project Coordinator with assistant at the HPLC (high pressure liquid chromatograph)

The results of the project are designed to achieve the upgrading of RTD capacity and quality; better integration of the institute research team in ERA; improved capacity for involvement of the institute in FP7 projects.

Close cooperation with respected research teams in Lithuania, Estonia, Sweden and Denmark is envisaged and networking with teams in other EU countries such as Poland, Germany and Finland. The skills and knowledge of researchers is seen as being increased through secondments to cooperating research entities, secondments from elsewhere to the Sigra institute and involvements in workshops and similar events. Acquisition of high quality research equipment and associated training will also have an **impact** on the quality of research undertaken at Sigra.

The choice of the research area involved – animal feed and food quality – is based on a national and regional research area indicated by businesses researchers, policymakers and others as being important for reaching goals of growth, competitiveness and employment in the region – so one of the most important business sectors will benefit significantly.

Improving the Scientific and Technological Research Capacity of a food institute on safety and technology of food-packaging - SAFETechnoPACK

New equipment purchased through the project

The main objective of the REGPOT SAFETechnoPACK project is to improve the scientific and technological capacity of the Tubitak MRC Food Institute in food packaging technologies. The aim is for the institute to increase its participation in FP7 projects as a result..

Specifically there is an aim to improve research capacity in chemical contamination from food contact materials and developing new food packaging materials using nanotechnology techniques and active packaging technologies. These represent **major impacts**

Specific targeted objectives are in place concerning upgrading S&T equipment infrastructure; recruiting new researchers – two were envisaged at the outset in chemistry and polymer science on new packaging technologies; networking, cooperative and dissemination activities in order to facilitate knowledge transfer between researchers working at regional national and international levels – this involves international conference and workshop participation, technical visits to centres in Member States (MS) and organising brokerage events and international meetings in Turkey; informing the public and the food industry on the importance of the safety of food contact materials in terms of food quality, its packaging, storage and the technologies involved through websites, information days, leaflets and participation in relevant fairs; improving the S&T experience and knowledge of researchers by training in MS and exchange of know-how and experience also through invitations to MS scientists.

Balkan Vegetable Crops Research Centre for transfer of European knowledge research and practice - EU BALKANVEGETABLES

The purpose of this REGPOT project is to revive and reinforce the Maritsa Vegetable Crops Research Institute (VCRI) to become a leading horticultural research centre in the Balkan region for disseminating the recent achievements of ERA. The initiatives undertaken are designed to support the progress of the VCRI in ways which will reinforce it as a leading vegetable research centre for the Balkan region. This is the **key anticipated impact**.

The project team in the newly equipped laboratory

The institute is a unique entity in Bulgaria in the field of vegetable growing – a part of the Bulgarian Agricultural Academy. Recent priority work has included emphasis on vegetable quality by improving biological value and sensory characteristics, pest and disease resistance, high temperature and drought tolerance. A diverse number of vegetable species including domestic varieties, introduced cultivars, breeding lines and wild species are investigated so that valuable characteristics are preserved or transferred to new varieties and hybrids.

Project activities comprise lectures given by prominent researchers from leading European institutes in order to transfer knowledge of recent achievements of European science; enhancement of the professional level of young researchers and exchange of know-how and experience involving senior scientists in relevant advanced European institutions; improvement and upgrading of the technical status of the VCRI; establishment of the VCRI as a dissemination centre and promoter of European knowledge and practice in the field of vegetable science in the Balkans by active collaboration between relevant institutes; support for a VCRI technology transfer office as an innovation interface between the institute and vegetable producers and processors in order to transfer advanced technologies.
There are more than six collaborating institutions in the project.

Reinforcement of the Western Balkan Countries Research Capacities for food quality characterization - CHROMLAB-ANTIOXIDANT

Project coordinator and PhD students in the newly equipped laboratory

The trend of production and use of healthy food has focused researchers' attention on characterization of the phenolic profile of foods consumed in everyday diet. Fruits and fruit products are known to possess beneficial effects on health due to a wide variety of natural polyphenols and consequently a great antioxidant potential. Western Balkan Countries are predominantly agricultural with great potential for production of healthy food with authentic origin and specified health promoting composition.

In order to ensure efficient and appropriate development of food production and food quality characterization in FYR of Macedonia and in Serbia, according to EU standards and practice, a project for upgrading the research capacity in food quality control was proposed. Along with the reinforcement of the research capacities for food characterization by obtaining suitable equipment (liquid chromatographs with appropriate detection systems), improvement of the human potential was achieved by hiring young researchers and facilitating their training in the respective fields. With joint efforts of the researchers from FYR of Macedonia, Serbia and Bulgaria, on one side, and renowned EU research groups from Spain and France, on the other, methodology for characterization of antioxidant substances in fruits, juices and wines was developed and applied.

A regional network was established involved in research of various aspects of antioxidants in foods aimed towards providing the necessary knowledge, tools and methods for development of high quality, consumer-acceptable foods. So, the human and material resources from these institutions were mobilized by obtaining modern equipment, exchanging know-how, training of research personnel in EU research centres, disseminating the results and promotion of the new reinforced potential of the scientific community in the Western Balkan Countries for future high quality research incorporated in ERA. There are five partners in this project.

The **impact of the project** was therefore seen as contributing to high quality research using sophisticated instrumentation leading to improved capacity and competence of the research personnel; establishing and promoting official cooperation between the research groups in FYR of Macedonia, Serbia and Bulgaria leading to a network of researchers in the area of characterization of antioxidants in food; raising public awareness of the importance of assessing the quality of food during production and processing; improving regional scientific cooperation and encouraging regional partners to join European research trends hereby leading to enhanced participation in FP7.

Evaluation of the research capacity and development of a strategy for further growth in chemistry in general and in food science in particular - SWOT CHEMISTRY FOOD

The concept behind this REGPOT project was based on the fact that the FYR of Macedonia has gained international recognition due to its scientific results and collaboration with distinguished research groups from European universities and research centres.

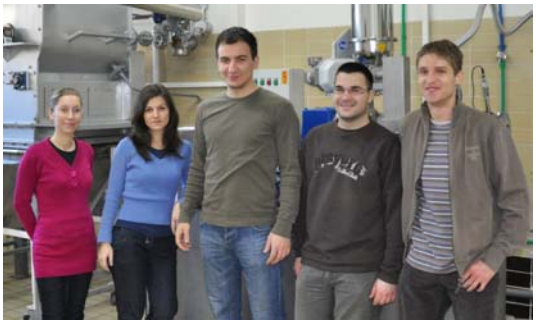
The international evaluating experts and the project team

It is nominated as a potential centre of excellence due to its competence supported by the fact that 28.3 % of all scientific papers published in international journals cited in SCI between 1971 and 2004 from FYR of Macedonia come from this Institute.
The involvement of the country in FP7 has brought opportunities for researchers to take part in European research activities. Performing an international independent expert evaluation of the level of the research quality and capability of the Institute of Chemistry, Faculty of Sciences and Mathematics (University of Ss. Cyril and Methodius), was therefore very valuable in terms of positioning in the country and more widely as an established research entity and a Centre of excellence.

This assessment was of direct relevance to the strategic orientation of the Institute, keeping the existing research groups competent and competitive in the ERA and strengthening and encouraging others. The group working in the area of food analysis was involved in the FCI as a result of its coordination of the FP7 Capacities project related to food science – CHROMLAB-ANTIOXIDANT.

In view of the fact that FYR of Macedonia is mainly as agricultural country, assessment of the triangular aspect - university-industry-government - in the food sector performed by independent experts and local researchers was seen as an **impact** greatly contributing to identifying the priorities in the food sector, especially in research and development, and so producing a strategy for a more active involvement in food research. Finally, the evaluation was intended not to be used solely as an instrument for internal evaluation, but it showed the way for building strategy by consulting other partners in society and making bridges between the Institute and its environment.

Reinforcement of FEED-TO-FOOD Research Center at the Institute for Food Technology of the University of Novi Sad



young researchers in front of the equipment in pilot plant of the project

The Centre for Feed and Animal Products (FAP), as an organizational unit within the Institute for Food Technology at the University of Novi Sad (UNS), is the only scientific research unit specialising in a wide range of issues related to feed technology in Serbia and in the region. FAP has laboratory equipment and scientific potential and is willing to take a leading position in the region in the research area of the production chain from feed to food.

Today, the importance of feed within a food chain is widely recognized and FAP, as the leader in feed technology, wants to be a “scientific link” in the production chain from feed to food and wanted to improve and upgrade its own research potential and assist in successful integration of Serbia, other WBC and the whole region into Europe.

The objectives of this REGPOT project involve (i) reinforcement of the Centre for Feed and Animal Products (FAP) into a modern research Centre upgraded with new researchers and pilot plant equipment capable of investigations in feed manufacturing technology; (ii) creation of a network for cooperation between research teams with scientific interests concerning the feed to food production chain;(iii)improvement of research capacities and filling the gap in experience in how to take part in complex and long-term EU research projects.

The overall strategy of the project involves:

- Upgrading and renewal of S&T research equipment for Research Center FEED-TO-FOOD; recruitment by the Research Center FEED-TO-FOOD of incoming experienced researcher (nationals) and of new young researchers.
- Exchange of know-how and scientific experience (see below) between IFIF and IFR Institutes and the Research Center FEED-TO-FOOD involving trans-national two-way secondments of research staff between the selected centres; training in IFIF and IFR institutes for Ph.D. students and/or post-doctoral researchers; specialized trainings in laboratories abroad; preparing of cooperative activities and/or joint RTD proposals.
- Knowledge transfer at national and international level by means of workshops and roundtables; national and international conferences; participation in the FCI; short term training events; network building; exposing of selected centres to a more international environment
- Dissemination and promotional activities to ensure increased visibility of all beneficiaries and their activities

This project was envisaged to have a **huge impact in the region** where research capacity in the feed to food technologies is much needed. As a result of this project FAP has developed through the upgrade and renewal of pilot plant equipment, by recruiting new researchers, by the training of staff (in particular young researchers), and by academic exchange visits, workshops and similar activities. Examples include trans-national two-way exchanges of research staff between FAP from Serbia and well-known European research Institutions such as International Forschungsgemeinschaft Futtermitteltechnik, Braunschweig, Germany (IFIF), Institute of Food Research, Norwich UK (IFR) and the most prominent Institutes from European convergence regions such as National Research-Development Institute for Animal Biology and Nutrition (IBNA) - Romania and Institute of Animal Science of Lithuania (IAS).
This type of involvement improves the WBC research potential and favours a brain-gain environment. Under different type of activities through the FEED-TO-FOOD project, FAP is developing into a Research Centre ready to participate in European RTD activities.
There are five partners in the project.

Agrofood clusters platform with common long-term research and innovation strategy towards economic growth and prosperity - AGFORISE

High-level audience at the project start-up meeting

AGFORISE brings together three regions where agrofood sector/industries play an important role in local economies and have potential to stimulate regional development. The main objective of this ROK project is to create a common dialogue platform and a joint action plan among the agrofood clusters that will maximise capacity for research and benefit from research infrastructure through complementariness and synergy thereby contributing to sustainable development, prosperity, economic growth and global competitiveness of regions.
Specific objectives include strengthening a sustainable dialogue between the participant agrofood clusters, creating a R&D and innovation strategy dialogue and cooperation, enhancing trade and investment opportunities in the agrofood sector, maintaining sustainability of cross-collaboration between the participating regions, and stimulating utilization of national/EU R&D funds.

In fulfilling these objectives particular activities will focus on analysis of the agrofood sector in participant regions in order to maximise the benefit from the research opportunities for regional economic development; development of a common dialogue platform between the participating regions for sharing information and experience thereby producing a joint action plan which will contribute to strengthening regional capacities for investing in and undertaking R&D that can enhance economic development; and improvement of cross-collaboration among the research and commercial communities.

The expected **impacts** are strengthening a sustainable dialogue between the participant clusters in the agrofood sector; sustaining collaborative actions by bringing together the agrofood related researchers, bringing the benefits of research to industry, creating a R&D and innovation strategy dialogue and cooperation between the agrofood clusters, enhancing trade and investment opportunities in the agrofood sector, stimulating utilisation from regional national and EU level RTD funds, and maintaining the sustainability of the cross-collaboration between the participant regions.

There are 13 partners drawn from the three regions involved.

Reinforcing research potential in the Laboratory for Chemical Contaminants at the Faculty of Technology towards the establishment of the Centre of Excellence in Food Safety and Emerging Risks - CEFSER

Project team in front of the new equipment

CEFSER is a REGPOT project dedicated to the reinforcement of research capacities at the Laboratory for Chemical Contaminants in Food and the Environment (LabCHEMCONT) at the Faculty of Technology, University of Novi Sad, Serbia, in order to become a unique Western Balkan Country (WBC) Centre of Excellence in Food Safety and Emerging Risks.

Through postulated general objectives such as capital investments in a highly sophisticated analytical instrument, upgrading of the existing equipment, reinforcement of the human resources (hiring, mobility), and networking with advanced EU institutions, CEFSER integrates LabCHEMCONT and the Faculty of Technology within the ERA, contributing to general harmonization of R&D within food safety and emerging risks research.

The CEFSER action plan is a coherent set of measures involving: exchange of know-how and scientific experience between the Faculty of Technology and the networking partners; recruitment of incoming researcher(s) as a means of encouraging the return of nationals having left the country, and hiring of new young researchers in order to promote and stimulate a new and modern working environment at the Faculty of Technology; acquisition of the capital research equipment and upgrading of the existing one at Lab CHEMCONT; knowledge transfer at national, regional and international level though trainings and events with invited EU scientists organized at the Faculty of Technology and participation in international meetings; dissemination and promotional activities to ensure increased visibility of LabCHEMCONT and the Faculty of Technology and enhance CEFSER efficiency.

All these measures will contribute to establishing CEFSER as a modern research unit at the Faculty of Technology able to meet requirements in future: scientific research in joint EU projects, knowledge transfer due to raising awareness on food and environmental safety, reference WBC point for perfluorinated compounds and networking with prestigious EU labs, training center and attractive research lab for new PhD students, encouraging of two-way researchers mobility. The overall **anticipated impacts** of the project comprise improving the potential of the Faculty of Technology to participate in FP7 projects in future; better integration of the Faculty into ERA; and making a contribution to Western Balkans Countries regional capacity building.

There are 4 networking partners in CEFSER each bringing complementary background, top expertise and experience to the project.

Food and Feed Laboratory of varied and outstanding research in Estonia - FLAVOURE

The main aim of the REGPOT project FLAVOURE coordinated from the Estonian Research Institute of Agriculture (ERIA) is to advance capacity for assessment and prognosis of quality risks of food and feed and develop new molecular biological assessment methods relevant to this.

Young researchers on the new equipment

Specifically the project involves: (i) Improving competence in food and feed quality, safety and risk assessment by means of the Food and Feed Safety and Quality Network, joint events with top quality research centres, and individual contacts between researchers; (ii) Strengthening laboratory facilities at ERIA for protein chemistry and trace components related analyses (HPLC, gas chromatography, and spectrophotometry), DNA-analyses (PCR equipment, equipment for electrophoresis) and samples preparation (centrifuges universal ovens).
The laboratory will be a facility providing life-long learning for research institutions, hands-on experience for young scientists and a meeting point for knowledge exchange; (iii) Building closer local cooperation with agricultural producers, government officials, and politicians, through seminars, training days and advisory services, and technology networks; (iv) Increasing participation in EU projects.

ERIA is a fast developing research institute with an ambitious development strategy, a rapidly increasing international reputation, a high ability to react to changes and a solid experience in project management. These advantages provide an excellent basis for the FLAVOURE project's success and for the expansion of the cooperation set up.

Joining forces, increasing collaboration, transferring research results to practice and making a maximum use of research potential are cornerstones of the European Research Area. Food and Feed quality and safety is a crucial topic for consumers' health today. FLAVOURE has a good fit with such approaches. The **key expected impacts** include strengthening laboratory facilities at ERIA; networking; providing life-long learning for research institutions and a meeting point for knowledge exchange; building closer local cooperation with agricultural producers, government officials and politicians, and increasing participation in EU projects.

There are eight partner institutions involved in FLAVOURE ranging from convergent regions (Estonia, Lithuania, Bulgaria) to Western European countries (Finland, Denmark and Spain) and covering the whole food chain.

Galicia-North Portugal Food Innovation Network - REAL

Project stand at the Spanish Presidency Conference WIRE in Granada

This ERDF INTERREG (Cross-border cooperation operative programme – Spain-Portugal 2007-2013) project joined the FCI at a later stage and so was not one of the original members. The aim of REAL is to elaborate a combined innovation and development strategy between Galicia and the North of Portugal, which involves the productive sector and integrates the existing capacities, allowing preparation of a socio-economic area to answer present day challenges, and profitable positioning in the EU food-processing sector.

In the Galicia-North of Portugal region the food industries are one of the main socio-economic sectors. However heterogeneity of development and participation in R&D activities is found. The subsectors furthest away from innovation share a high degree of dispersion and low competitiveness, while other subsectors with innovative capacity assume the role of "drivers". In the Galicia- North of Portugal region there are competitive R&D and innovation centres, however the organizational dispersion reduces the likelihood of joint actions to generate relevant projects. Moreover the relations between the production sector and the knowledge centres are characterized by limited feedback so achieving significant developments is onerous.

The prime objective of REAL is to achieve a structured cooperative knowledge network, to promote the internationalization and competitiveness through innovation in the food sector in this region. Intermediate objectives involve (i) aggregation of critical mass representative of the sector of the region, through the formation of a forum for multidisciplinary and integrated approaches to innovation and development; (ii) to position REAL as a reference for the

sector in the region, with the objective of being a solid base for the international competitive activities; (iii) to promote R&D activities that motivate innovation and stimulate competitiveness in the border areas, by interaction between the Food sector and the R&D Centres, fostering competitive and pre-competitive projects of interest for the region.

Impacts derive from the expected results which include consolidation of the network as a basic instrument of R&D; development of the food-processing sector in the region; integration of the resources dedicated to R&D and innovation; intensification of the relationships between enterprises; increased cooperation between the enterprises, scientific/ technological centres and institutions cooperation; strengthening cooperation between trans-border institutions; development and mobilization of the productive traditional resources of the region; improving the capacity of assimilation of technology into SMEs.

There are 10 partners in the project.

Fostering a science-based development of a sustainable Montenegrin agriculture - AgriSciMont

The main objective of this recent REGPOT project is to strengthen the excellence of the Biotechnical Faculty of the University of Montenegro (BTF) through fostering technological, human and partnership capacities and through a reshaping of internal organisation. AgriSciMont will support the integration of BTF within the ERA, by increasing its leadership among European research institutions, covering the whole production food chain, providing high level data interpretation and influencing local as well as EU politics in the field of food safety, biodiversity and agro-economics.

Project kick-off meeting

There are three principal research areas (embraced in an action plan of six work packages in the project): (i) Food and feed quality and safety; (ii) Agro biodiversity, conservation and sustainable use; (iii) In-depth sectoral and economic analyses. Major outcomes from the project involve: new items of equipment for 9 existing laboratories and for establishing a new one; hiring of three experienced researchers; five scientific and 8 support trainings; subscription to scientific journals; trainings of researchers (24 visits to partner institutions and 14 trainings by partner institutions experts); intensified extension services; farmers' workshops; organisation of an international conference; two workshops with international participation; development of a long-term RTD strategy; participation in 3 international conferences; organisation of an open day; development of a web-site and production of newsletters.

Expected Faculty impacts include: upgraded scientific knowledge and technical capacities; improved management; improved knowledge of foreign languages and communication skills; increased number of publications with high impact factors. Expected impacts at national level include: better communication with national research institutions in Montenegro; a contribution to reaching out to and integration with end-users of BTF services; better serving of national and international interests. **Expected international impacts** are: upgraded Faculty capacities contributing to research excellence in the region and on a global level, increasing visibility within the ERA; better possibilities for various sources of funding through EU programmes.

So the **expected impacts** of AgriSciMont overall are an increase of scientific excellence in top EU and national priorities, a step towards a more integrated national and regional system, the recognition of BTF as the best agricultural research institution in Montenegro and an increase in its quality excellence, visibility in the ERA and attractiveness. The AgriSciMont project fully answers the ambition of the EU to support Balkan research entities in improving performance, in the overall perspective of these countries possible future admission to the EU.

There are 10 partners in the project – five in Montenegro and five elsewhere in EU.

Activity and food for regional economics supporting health - AFRESH

The MENSANA Health-Truck, partner of the project

The recent ROK project AFRESH aims at developing a research agenda for reducing diet- and physical inactivity-related (chronic) diseases, such as diabetes, obesity, cardiovascular diseases and various types of cancer, by developing innovative products and services within the field of nutrition and physical activity. Instrumental to this is collaboration on an EU wide platform for new research and innovation in the combined field of healthy food and physical activity involving setting-up a joint research action plan between the regions and involving the scientific regional community.

Impact will lie in the novelty of the project - firstly in a multidisciplinary approach closing the gap between regional economic hotspots related to food and physical activity. Following this logic the acronym AFRESH was chosen - Activity and Food for Regional Economies Supporting Health. Secondly there is also novelty in undertaking mentoring activities where the collaboration within the so-called triple-helix is insufficient. Finally, the project is novel in the actions which will be implemented: “AFRESH Ideas” research development and a Change Management Toolkit for mentoring regions.

There are 10 partners in the project.

Food Innovation Network Europe - FINE

Although an original member of the FCI the FINE project is rather different in that it was a successful FP6 project which should be seen as a prototype for the Food Cluster concept overall.
In FINE European food clusters combined their efforts to make the European food sector more competitive through innovation and cooperation. FINE linked stakeholders from companies, research institutes, policy makers and several regional networks.

Press briefing at the Prague conference in 2009

All FINE-regions had common regional characteristics: a food sector playing an important role in the regional economy; the presence of a strong agricultural sector and other specialized suppliers of the food industry; a high level of food-related knowledge in the region; the presence of public support for the food industry and local networks linking the different actors together.

Concrete results of FINE were:

- A structured methodology and experience in activating regional stakeholders to define regional strategies for stimulating food innovation and food research based on a structured analysis of the strategic orientation and specialisation of the region and knowledge about the potential role of clusters.
- A network for project development and partnering. Clustering the local, regional, national and EU players in the field of food-related RTD, by providing a platform for long-term collaboration.
- An Action Programme for Europe's hotspots in the field of food RTD and innovation with 14 interregional cooperation projects based on 46 ideas for projects and more than 100 involved stakeholders in area's such as infrastructure, health, incubators etc.
- A long-term collaboration between the actors was an important outcome and impact of the project, and continual involvement of new regions is equally desirable. FINE is extending its network and inviting other food clusters to participate.

New projects continue to join, or have links to, the FCI (e.g. FCUB-ERA – a REGPOT project reinforcing the Faculty of Chemistry at the University of Belgrade; FOOD2MARKET – and INTERREG IVB (ERDF grant) project; Baltfood - an ERDF part-funded Baltic sea region food cluster; the Bioactive food plants network; Swiss Food Research; Food Processing Initiative; and Food Safety-Montenegro). Currently the membership continues to expand as a result of website publicity and other initiatives that are generating awareness and interest.

Although all the FCI projects are making a contribution to food sector research capability they are heterogeneous. So the planning, coordination and development of a growing and broader cluster needed (and will continue to need) to take all the varying features and objectives of the successfully funded projects into account. The difference between the two FP7 Cooperation programme areas also had to be recognised. The ROK programme stresses development and cooperation between regional and local research-driven clusters with particular aims of strengthening the contribution to economic development – as exemplified by RAFREGIONS, AGFORISE and AFRESH. The REGPOT programme objective was primarily to stimulate and realise the research potential of the enlarged EU's convergence and outermost regions and help strengthen the capacities of their researchers to successfully participate in research activities by setting up partnerships with other EU organisations and so achieve better integration with ERA.

Nevertheless certain aspirations are clear in virtually all of the FCI projects. Each of the REGPOT and ROK projects that originally constituted the FCI or joined the initiative during the first two years specified objectives, outcomes and impacts that the individual project was designed to achieve. The principal ones are summarised with examples in Table 1. Because there are some clear similarities such stated project-level objectives can be grouped into broader categories representing commonality (or comparability) of the aims sought from projects that were members of the FCI. This aggregation of project objectives is shown in Table 2. These aggregated project-level objectives are useful as generic parameters for assessing the outcomes of the Food Cluster projects as a clustered group.

TABLE 1: SOME EXAMPLES OF STATED PROJECT OBJECTIVES

1	Recruitment of key scientists from outside (EBV)(FTF) and young research nationals (FTF) (STP)
2	Mobility through secondments of research staff (FTF)
3	Training and mobility of new young scientists and better job potential (e.g. sabbaticals) (EBV) (CAO) (FTF) (STP) (CEF) (ASM)
4	Improved technical status of (laboratories in) institution (EBV) (BFQ) (CAO)(FTF) (STP) (CEF) (FLAV) (ASM)
5	Dissemination/communication/awareness focus of institution or food quality generally (EBV) (CAO) (FTF) (STP) (CEF) (AFR)
6	Commercial/technology transfer and company focus especially to SMEs (EBV) (RR)(REAL)
7	Strengthening professional researchers for future EU research programme participation and wider opportunities through leverage towards national funding (BFQ) (FTF) (RR) (STP) (AGF) (FLAV)
8	Research project development for the future (FINE concl)
9	Promoting collaboration/cooperation/linkage (e.g. through networks) with other reputed European and regional institutions (BFQ) (CAO) (FTF) (FINE concl) (RR) (STP) (AGF) (CEF) (FLAV)
10	Exchange of know-how, best practice and science experience with partners and beneficiaries (FTF) (RR) (ASM)
11	Methodology and experience for activating regional stakeholders to define food innovation strategies and research based on SOR analysis (FINE concl) (REAL)
12	Development and operation of research-driven clusters (RR) (AGF)
13	Developing regional agrofood sectoral strategies and research policy synergies e.g. through SWOT/SOR and similar (RR) (SCF) (ASM)
14	Organisation of conferences, workshops, brokerage events, visits and similar awareness (STP) (CEF) (FLAV)
15	Creating a dialogue platform (AGF)
16	Enhancing sectoral trade and investment (AGF) (REAL)
17	Quality, safety and risk assessment improvements (FLAV)(CEF)(AFR)

Acronyms:
BALTFOODQUAL (BFQ); EU-BALKANVEGETABLES (EBV); CHROMLAB-ANTIOXIDANT (CAO); FEED-TO-FOOD (FTF); FOOD INNOVATION NETWORK EUROPE (FINE); RAF-REGIONS (RR); SAFETechnoPACK (STP); AGFORISE (AGF); CEFSER (CEF); FLAVOURE (FLAV);SWOT-CHEMISTRY-FOOD (SCF); AgriSciMont (ASM); REAL (REAL);AFRESH (AFR)

TABLE 2: FCI AGGREGATED PROJECT-LEVEL OBJECTIVES

1	Mobility resulting in people-related/professional enhancement, mentoring and recruitment of both of young researchers and more experienced scientists
2	Enhancement of institutional facilities
3	Enhancement of training, know-how and best practice
4	Communication, dissemination and awareness development (including enhanced scientific publication in peer-reviewed journals), conferences, newsletters, websites
5	Commercial benefits/technology transfer with a focus on companies/SMEs
6	Improvements in linkage/collaboration/cooperation/clustering locally, nationally and Europe-wide thereby contributing to ERA capability and capacity
7	Contributing innovative solutions relevant to food quality and safety
8	Research proposal development for future funding using new sources and synergy with other instruments including national funding leverage benefits from achieving EU funding
9	Sectoral strategy development and new research positioning (agrofood) including project/institution/sector/locality SWOT/SOR benefits
10	Regional Cluster development and networks for operations for research and innovation

7 Outcomes of the projects and the areas involved

7.1 Assessing the outcomes

A bottom-up approach was used as the basis for assessing project outcomes so it was suggested during the third and fourth FCI meeting that each project nominate person(s) responsible for an outcomes monitoring role and producing a synopsis of progress being achieved perhaps quarterly. The persons nominated for this responsibility might be thought of as a Cluster Outcomes Group (COG) whose members are in contact with each other and with the FCI coordinator responsible for providing continuing advice/input when required. In practice it was the project coordinators who assumed this role.

A pro forma was discussed for collecting and monitoring information that eventually would assist with information collation on achievements and outcomes at Cluster level. It was also used as a basis for initiating open discussion of experiences and whether things could have been done differently. The areas used to stimulate debate involved:

- Initiation (decision to submit a proposal; principal content of the proposal; satisfaction with aims as specified in contract)
- Implementation (first steps; principal activities to date; changes)
- particular examples of outcomes and impacts (on which area/sector so far; future achievable impacts)
- future changes (if done again; for the Commission to consider).

Certain projects contributed to discussions in this way at two FCI meetings and at certain project workshop meetings. Some also provided written information on this basis. Some projects provided broader information through completion of a questionnaire for REGPOT programme purposes and relevant aspects of this input were also made use of in assessing aggregate project outcomes and potential impacts.

It was the original intention that Cluster meetings (and other workshop meetings) could be used to provide opportunity for report and discussion of outcomes so that potential impacts could be illustrated and elaborated. In practice this approach proved difficult to implement on the available timescale so inputs were made primarily as a result of visits to a number of projects by the FCI coordinator involved using presentations and engaging in both formal and informal discussion sessions.

Such project visits were undertaken during the second half of the 2010 contract year usually in the form of a 2-3 day visit based at the project coordinator's home institution. The projects involved were EU-BALKAN VEGETABLES (Plovdiv, Bulgaria); CEFSER (Novi Sad, Serbia); CHROMLAB-ANTIOXIDANT and SWOT-CHEMISTRY-FOOD (Skopje and Ohrid (workshop venue) FYR Macedonia ; BALTFOODQUAL (Sigulda, Latvia); FLAVOURE (Juuliku, Tallinn, Estonia); FEED TO FOOD (Novi Sad, Serbia). On occasion such visits coincided with other meetings planned simultaneously with project workshops and in other instances meetings at other organisations – government depts./agencies and research or commercial bodies – had also been arranged. Certain FCI meetings also provided opportunities to see projects in their own localities (e.g RAF-REGIONS; AGFORISE). A significant amount of first-hand information was acquired as a result of these visits and attendance and participation in workshop sessions where these occurred.

7.2 Selection of outcome groupings

As a result of the information derived from such visits, and written and electronic information provided by the projects the aggregated project-level objective categories described above (Table 2) were verified as pragmatic aggregate outcome areas for assessment purposes as the projects close to completion showed significant involvements in achieving their stated objectives. These **aggregate project outcome categories** were therefore confirmed as:

- **Mobility/young researchers** – to include activities such as people-related/professional enhancement, mentoring and recruitment of both of young researchers and more experienced scientists
- **Institutional facilities** – to include activities such as improved technical status and capabilities of laboratories through state-of-the-art equipment.
- **Training/best practice** – to include activities such as know-how and science/methodology experience acquisition with partners and beneficiaries
- **Awareness development** – to include activities such as use of communication and dissemination tools including conferences, newsletters, websites and enhanced scientific publication rates in peer-reviewed journals.
- **Commercial benefits** – to include activities such as technology transfer with a focus on companies/SMEs and user groups generally, involvements with meetings and equipment training.
- **Linkage** – to include activities such as improvements in collaboration and various forms of cooperation locally, nationally and Europe-wide thereby contributing to ERA capability and capacity
- **Quality and safety** – to include activities such as contributing innovative solutions relevant to food production, testing, processing, packaging and supply chains.
- **Proposal development/leverage effects** – to include activities relevant to obtaining future funding using new sources and synergy with other instruments including national funding by leveraging recognition as a result of achieving EU funding
- **Sectoral strategy development** – to include activities such as new research positioning (in agrofood) including project/institution/sector/locality SWOT/SOR benefits.
- **Cluster development** – to include activities such as networks and dialogue platforms for operations for research and innovation.

These outcome areas therefore form a basis for assessing the performance and impact potential of the projects in aggregate and so make a contribution to an assessment of the outcomes and likely impacts of the FCI as a whole. They are discussed in more detail with examples in the following paragraphs and are summarised in tabulated form in Appendix 2.

7.3 Mobility/young researchers

The effect on young scientific researchers in the supported projects is seen in the form of enthusiastic involvement generally and, for example, in working for, and achieving, higher degrees, presenting papers, contributing to poster sessions, and receiving training abroad.

Examples can be found in a number of projects such as EU- BALKANVEGETABLES, CHROMLAB-ANTIOXIDANT, FLAVOURE, BALTFOODQUAL, CEFSER, FEED-TO-FOOD where young researchers have at times been recruited specifically for project requirements, and sometimes benefitting from the project anyway as they were already studying in a partner institution. Several are registered for (or have completed) higher degrees.

Such young scientists are frequently involved presenting work at meetings/workshops or providing posters – where sometimes a prize is provided for a judged “best poster” (e.g. CEFSER). Several have also benefitted from visits and/or periods of work in laboratories elsewhere in Europe as a result of the project. Genuine enthusiasm is identifiable without doubt as a result of improvements in facilities and visits to other institutions which create confidence and stimulate creative contributions to the research work involved.

Wider inward and outward mobilities of those working in projects has been a significant feature involving visiting senior workers from outside institutional partners and elsewhere, involvement in international and national workshops, periods as visiting workers at other partner institutions, joint meetings with other bodies, and new personal relationships. For example:

- All the FCI projects have had involvements in visits to other collaborating laboratories; visitors coming to their own laboratories; and notable outside scientists attending meetings (where, for example, for a FEED TO FOOD workshop the cost of attendance by a distinguished researcher as a keynote speaker from Texas was covered by a Serbian commercial sponsor).
- This essential contact and interaction with other professionals has also been enhanced by co-location with different scientific meetings/exhibitions when this was appropriate for the project remit (e.g. CHROMLAB ANTIOXIDANT; FEED TO FOOD; CEFSER; RAF REGIONS) thereby maximising opportunities for scientific contacts.

7.4 Institutional facilities

The provision of new or upgraded laboratories and/or equipment has had a very significant effect both within an institution and outside it. For example:

- Most REGPOT projects have been enhanced or upgraded in facilities through provision of project funding often in conjunction with further funding from national sources. The results are impressive and the impact on working morale has been high.
- Some projects have achieved a national pivotal position in terms of specialist capability as a result of the enhanced facilities provided (CEFSER; FLAVOURE; FEED TO FOOD)

- The enhancement of facilities was a vital component for the fostering of mobility of senior scientists and achieving enthusiasm among young researchers.

7.5 Training/best practice

Training both inwards and outwards and the acquisition of best practice were key aspects of several projects:

- Several projects benefitted from (or will benefit from or provide) acquisition of best practice and mentoring techniques (RAF-REGIONS; AFRESH;)
- Training was received in a number of projects often in relation to new equipment/facilities that were acquired (BALTFOODQUAL; SAFETechnoPACK; EU-BALKANVEGETABLES)
- Training courses were also put in place at the home institution of certain projects often making use of visiting experts (CEFSER; FLAVOURE)
- Externally-based training courses are also important elements in the mobility of young researchers (e.g. CEFSER;FEED TO FOOD; CHROMLAB-ANTIOXIDANT)

7.6 Awareness development

All projects have made, or plan to make, significant efforts to develop awareness of their project, their field of activity, their institution and the wider aspects of involvement in a European cluster. Project websites have been established and other communication tools made use of such as newsletters and other promotional publications, open days, posters at larger events such as WIRE conferences (Granada 2010, Debrecen 2011), magazine articles (Research EU; International Innovation) and broadcast TV discussion (AGFORISE, Mersin FCI meeting)

High level university and governmental officials have attended workshop/ seminar and other forms of meeting to make introductory addresses and/or meet coordinators and others involved (e.g. Deputy Prime Minister for European Affairs - Ohrid meeting FYR Macedonia, - CHROMLAB-ANTIOXIDANT; Vice-Minister/Regional/Industrial senior officials - RAF-REGIONS Mind Your Food international conference Thessaloniki, Greece; Assistant Minister and Rector University of Novi Sad, - FEED TO FOOD Workshops, 2009 and 2010 Novi Sad)

Increased publication rates are evident in peer-reviewed scientific journals of quality (e.g. CEFSER; CHROMLAB-ANTIOXIDANT; BALTFOODQUAL)

Awareness of food quality by a wider public audience as a result of Open Days, exhibitions, promotional materials and media involvements (BALTFOODQUAL, FLAVOURE, FEED TO FOOD, AGFORISE)

7.7 Commercial benefits

These have occurred for example in meetings and workshops (sometimes acting as sponsors), and in joint cooperation to form spin-offs and/or have involvement in other initiatives. For example:

- Meetings organised in EU BALKANVEGETABLES, FEED TO FOOD, BALTFOODQUAL, FLAVOURE and CEFSER have included SME or user group presentations and discussion of necessary priorities
- FEED TO FOOD addresses directly feed manufacturing technology at pilot plant level and attracts commercial interest and involvements at workshop/meetings. It has benefitted from company sponsorship and displays at project workshops.
- A company spin-off is at a negotiation stage involving EU BALKANVEGETABLES and partners in The Netherlands (BLGG-AgroXpertus and HLB BV) and a student project report has been produced on this topic (17)
- Some projects have commercial partners directly involved (AGFORISE)
- Developing contacts and providing advice to users at a working level (e.g. farmers) is a feature in FLAVOURE.
- Company involvement in the acquisition of state of the art equipment and associated training and promotion has occurred (CEFSER with Thermo Fischer Scientific, in Czech Republic Prague)

7.8 Linkage

Linkages have been established both by sector and/or local region. For example:

- EUBALKANVEGETABLES has established a regional Balkan linkage with an agreed Memorandum and a steering committee to take the initial executive actions in developing the linkage
- CHROMLAB-ANTIOXIDANT has fostered international collaborative networking and linkages focussing on new scientific activities (e.g. with partners from Spain; Bulgarian partners establishing a phytochemistry network under UNESCO)
- BALTFOODQUAL has actively pursued close collaboration with teams in other European countries, especially Baltic states, to enhance ERA involvement
- FEED TO FOOD has fostered the creation of a network for cooperation between research teams with scientific interests concerning the feed to food production chain
- FINE linked stakeholders from companies, research institutes, policy makers and several regional networks.

7.9 Quality and Safety

Several projects address issues of quality, safety and risk relating to agrofood. For example:

- BALTFOODQUAL addresses animal feed and food quality issues and their impact on consumer health; AgriSciMont is also addressing feed and food safety issues as is FLAVOURE which inter alia also targets risk assessment issues employing sensitive molecular biological techniques;

- CEFSER specifically addresses food safety focussing on chemical contaminant detection in the food and emerging environmental pollutants(e.g.multi-component mycotoxins and pesticides, PCBs);

- In contrast CHROMLAB-ANTIOXIDANT has examined the health-promoting aspects of food using sensitive phytochemical techniques for detecting naturally-occurring polyphenols and other dietary- important antioxidants in locally produced fruits, fruit-products, wine and herbal teas;

- SAFETechnoPACK focuses on chemical contaminant detection resulting from food contact materials using polymer chemistry. It also is involved in the development of new packaging materials using nanotechnology.

7.10 Proposal development/Leverage

As a result of contact through FCI and other meetings/workshops/brokerage events new proposals have been generated with partner organisations in order to win new funding both from FP7 and from other sources. For example:

- A new INTERREG project (KNOWSHEEP) has been achieved through the FLAVOURE project and partners
- New cooperation led to a proposal (LATINNOFOOD) from BALTFOODQUAL and partners which unfortunately did not quite achieve the scores required for funding at the first attempt however three other projects have successfully achieved funding.
- Several other FCI project partners are currently involved in working up or achieving new collaborative proposal funding (CHROMLAB- ANTIOXIDANT).
- A major new project with FCI involvement (AFRESH) has been funded as a result of a proposal produced involving some FCI inputs
- RAF-REGIONS has had involvements in formulating a newly funded project INNO-FOOD SEE which extends coverage and the timescale of the original RAF-REGIONS project

Increased influence and recognition of an institution resulting from its success in winning European funding is evidenced by the presence of senior government and academic persons at various meeting functions, success in attracting national funding and influence on legalities/regulation as a result of the scientific work being undertaken. Specifically:

- Certain projects have gained the interest of national and regional government organisations with for example representatives attending the opening of meetings/workshops and making an introductory address (CHROMLAB-ANTIOXIDANT; FEED-TO-FOOD; RAF REGIONS; AGFORISE)
- The existence of the project has been valuable in enhancing or leveraging the case for further financial support to an institution from national and/or regional sources (e.g. FLAVOURE; FEED TO FOOD; CEFSER).
- Some projects that have been influential in government thinking on regulations/legal specifications and developing information centres (SAFETechnoPack) are succeeding in winning national support as a result

7.11 Sectoral strategy development

FCI SWOT/SOR training processes at meetings and more widely have assisted in the development of new institutional strategies and improved positioning in relation to other research organisations. For example:

- All FCI projects learned in Food Cluster meeting training sessions how to assess regional and institutional strengths, weaknesses, opportunities, threats and bring these together to produce a strategic orientation for their research and innovation approaches.
- The institute SIGRA (BALTFOODQUAL) has developed strategic plans and CHROMLAB-ANTIOXIDANT achieved another project to undertake a SWOT analysis in the parent institution (SWOT-CHEMISTRY-FOOD).

- Certain projects have been active in clarifying national positioning in relevant areas of research and innovations relating to other institutions and organisations and in some cases are developing collaborative ideas (e.g. FLAVOURE)

7.12 Cluster development

Several projects have fostered the development and/or formation of research-driven clusters that are regionally-based. For example:

- BALTFOODQUAL has had active involvement in forming a research-driven regional healthy food cluster (LATINNOFOOD) with a signed contract of cooperation which has been active in formulating research proposals and forging contact with other regional research-driven clusters
- RAFREGIONS brings together research-driven clusters in agrofood in three regions with agreed common aims in relation to R&D investment, policies, cooperation, best practice and SME support.
- AGFORISE is creating a common dialogue platform and joint action plan among agrofood clusters initially involving three regions.
- REAL has a prime objective of achieving a structured cooperative knowledge network in the Galicia-North Portugal region to promote internationalization and competitiveness through innovation in the food sector. An aggregation of critical mass is one of the intermediate results.
- AFRESH is pursuing a novel multidisciplinary approach closing the gap between regional economic hotspots related to food and physical activity

As can be seen all the projects in the FCI that are nearing completion or close to it have made significant contributions in achieving their stated objectives. Newer ones are working actively to achieve their stated outcomes. In aggregate therefore one can find interesting and exciting examples of mobility, fostering of young researchers and the ability to retain or attract their energy and expertise to the region or nationally. Training and sharing of best practice have been notable attributes in several projects.

There are good examples of linkage creation and development or formation of regional clusters, influence on regional or national government policy (for example in the areas of food quality and safety but also in broader areas for example European and/or R&D policy) and support from such sources for further developments. There has also been a significant effort, successful in several cases, to collaborate in the formulation of new proposals both to FP7 and to other sources of funding both national and European. In some cases better strategic definition of the necessary research effort has been put in place sometimes at institutional level, sometimes at regional or locality level.

Some projects have been able to attract the interest and involvement of the commercial sector or other types of user group. It is likely that other impacts of this sort will arise in the future as awareness increases further. Even so several projects have been able to create significant awareness of their work and the capabilities of the institutions involved in their regions and beyond – for example in other MS and Norway. The resources available certainly have gained significant credibility for the institutions and their research groups as a result of the enhancement of the scientific capabilities. This also has given a significant boost to morale and confidence for working at a European level where this was not particularly apparent before. Credible contributors to ERA are one outcome of this change of attitude and circumstances. In particular the impact of this improved resource capability is very noticeable with young researchers who have gained in enthusiasm and confidence as a result of the investment made.

Specific information on particular project outcomes is available in individual project reports and various dissemination outputs generated at project level. The FCI (http://www.foodclusterinitiative.eu/) and project websites represent an initial source of reference to such information. Whether viewed individually or in aggregated form as described above there are many positive outcomes identifiable in those FCI projects that are close to completion or well advanced. As the component projects are intrinsic to the FCI overall this can be interpreted as a successful position for the Cluster. However it can be argued that the individual projects might have achieved such successes in their own right without the support of the clustering put in place through the FCI. So the added value achieved by having such a clustering approach involved, needs to be considered also.

8 Differentiation of project outcomes and Food Cluster outcomes

A key question to pose for the FCI is whether the projects could have achieved their outcomes as portrayed above without being Cluster members? Furthermore were there other outcomes that were particularly Cluster-derived from which the component projects of the Cluster derived benefits? Or put another way what added value did the FCI bring? So an important aspect of assessing FCI outcomes and impacts is a differentiation between what was being achieved at individual project level and the overall effect of having a Cluster initiative in place. This implies an assessment of the added value of the Cluster rather than looking at component project outcomes in terms of aggregated or comparable areas where there might be no effect attributable to being a member of a cluster but the individual projects simply exhibited some commonality of aims.

In working discussions both at project and at Cluster meetings (as mentioned above in the COG context in Section 7) the following attributes intrinsic to the FCI were debated:

- The value of learning SWOT and SOR techniques;
- Briefings on other sources of funding – the value of the synergies approach to funding;
- Learning how to put proposals together in collaboration;
- Developing professional contacts and friendships through meetings and social events;
- Providing a broader awareness of other research activities in EU MS;
- Learning about experiences from each other – awareness of each other's initiatives and approaches (e.g. to customers/markets; to national government/local government) as well as their problems;
- Preventing a project being implemented entirely in isolation with little external influence especially if there was only one (or few) partners;
- The importance of dissemination and communication and ways of achieving it;
- Providing a forum for discussion of generic or common issues e.g.
  - Differentiating between the need for archives of information and the essential research activity of generating new ideas
  - "Scientific development " does not always reflect only needs of a user – there is an intrinsic R&D value to be considered as well
  - Linkages should not just be unidirectional
  - The EU is not simply a source of funding but has global strategic objectives in which research programmes and even individual projects play a part and the projects must reflect this
  - Business needs to be close to the culture of research and vice versa

- Regional policy thinking needs to be involved with, and embrace, the relevance of research in order to contribute to innovation
- Involvements with international endeavours can stimulate new ideas
- Soil quality, water, and other environmental effects are areas relevant to agrofood activities
- Dissemination and communication are vital both between different types of stakeholders and between those with similar interests
- Making use of existing events (under the auspices of other relevant organisations) to disseminate new initiatives and ideas
- The newly established FCI website has the potential to be an important tool in the future (www.foodclusterinitiative.eu)
- Individual project websites are also important for communicating between those with similar interests in clusters or networks at a regional level (e.g. EU Balkan Vegetables – Balkan Linkage - www.balkanvegetables.eu).

During such discussions some questions were used to prompt reactions/inputs from those project members taking part. Examples are:

- Are the FCI projects too heterogeneous so they do not have much in common?
- Is the FCI anything more than a network?
- Have FCI meetings provided anything additional to what the individual projects could have achieved on their own? If so what is it?
- Are policy impacts too difficult to assess at project level?
- The FCI was pushed forward by the Commission. Can it, or should it, continue on its own?
- Are FCI members too dispersed to provide significant benefits of clustering?
- Is the FCI too limited in resources to achieve the necessary critical mass and so significant visible impacts

Discussion based on the above features and parameters proved very valuable and some useful insights were obtained on the FCI, its nature and functioning and possible future direction.

9 Impact of the outcomes at Food Cluster level

As indicated above the FCI and its component projects had the potential to achieve impact in various contexts – e.g. in the science to enhance ERA; in influencing national/regional government; in forging partnerships with the commercial sector; in supporting young researchers and generating potential employment opportunities; in increasing awareness of food research through mobility. These different contexts for potential impact had been discussed repeatedly in FCI meetings so that it was recognised that projects could make an impact through their outcomes in a variety of ways.

Even though outcomes from projects that have a potential impact in different ways can indeed be aggregated into certain areas of commonality (as described above) the impact of the FCI overall looks somewhat diverse and so presents difficulties for any assessment of Cluster-originated impact in specific areas. So it is not possible to say for example that the FCI has increased regional commercial innovation in agrofood; or the FCI has generated new employment opportunities at a regional level; or changes in national/regional policy have been achieved. The Food Cluster objective would have had to be more focussed and targeted on particular issues to achieve such specificity of outcomes and impact for this to have happened. However the areas below can be recognised as ones that were Cluster-

generated and so provide some evidence of wider effects from the overall outcomes achieved:

"Breaking the box" by putting people together at meetings who would not usually communicate was an impact aim e.g. involving people taken from different sectors and different regions as a stimulus to new thinking and innovative ideas

The FCI meetings have put together professionals in agrofood areas who would not normally have been brought together because of different geographical locations or different R&D (or wider) interests. At times new project proposals have been developed as a result of such contact and are still being formulated. There have been successes in achieving funding.

Transfer of good practice – researchers from different Member States learning from each other has been a feature of the FCI and its meetings.

The movement of both young researchers to experience working in mature established institutions elsewhere in Europe and visits of senior mature working scientists to institutions in new and accession states has created further awareness and recognition of both the state of the art, best practice and the needs of users more widely. The FCI meetings sought to portray bi-directional awareness of needs on the one hand and available experience and resources on the other through presentations and more informal exchange of ideas. Training and workshops have also been an important feature of this approach.

SWOT and SOR training showed the value of self-analysis for research planning in a given situation.

Training at FCI meetings (and more widely) in the socio-economic management techniques of assessing strengths and weaknesses, opportunities and threats assisted institutions in devising strategic positioning (orientation) of their research within a broader politico-economic context. In several instances this benefitted not only the way in which the project itself would be delivered but also the wider positioning of the research of the institution as a whole.

Developing awareness of synergies in approaching funding possibilities showed the relevance of other funding sources and their inter-relationships. This also underlined how research academia, commercial interests and government can be necessary stakeholders in the innovation process (the so-called "triple helix" model and its derivatives).

There was a need to create awareness of the wider context of support for R&D and socio-economic development other than submitting proposals for research funding under the Framework Programme. This was achieved through presentations at FCI meetings of opportunities available under other instruments such as Structural Funds and the Competitiveness and Innovation Programme (CIP). For the Commission the awareness of such synergies between instruments is seen as very important in the fostering of innovation. Some project institutions have achieved successful funding from such synergistic approaches.

Creating awareness of the sector; of the region; of the innovation process; of the European dimension – all were important elements for the FCI in enhancing the impact and recognition of agrofood R&D activity.

FCI membership is increasing as the initiative becomes better known – for example through its new website. Some new projects have become part of the FCI as a result of achieving

ROK or REGPOT funding (e.g. AGRISCIMONT; AFRESH) or sought membership earlier after funding from other sources such as INTERREG (e.g. REAL). Other projects and clusters are now seeking membership or association with FCI in greater numbers (e.g. FCUB-ERA; FOOD2MARKET; Baltfood; the Bioactive food plants network.)

In several cases the successful achievement of funding a research project under FP7 has raised awareness of an institution and what it is trying to develop in a changing economic situation in terms of a new approach to innovation and an awareness of opportunities in a Europe-wide situation but from a regional standpoint.

Sometimes the recognition of this situation takes the form simply of political (or policy-related) public statements by senior government officials. In other cases it has achieved more tangible outcomes through matching or complementary funding from national/regional sources to further enhance what has been put in place from European funding – so the leverage of the FP funding has been an important impact component.

Creating a larger scale European activity than an individual project could achieve on its own – this was valuable in portrayals to government/regional agencies, other research organisations and potential stakeholders and created more "substance" towards fulfilling the aim of contributing to ERA.

The FCI achieved a presence for its component projects that would have been difficult or impossible for each of them to achieve in isolation. For example at EU level:

- During Open Days 2008 the FCI was the lead topic of a press conference involving Research Commissioner Potochnik
- The FCI was presented as part of a Round Table discussion ("Clusters – a policy or a tool for a policy")at WIRE 2010 in Granada.
- The FCI is cited as an example in the European Strategy for the Danube Action Plan (COM 2010 715) p60
- The involvement of the FCI as representing a wider platform of EU research funding facilitated a meeting with the national Ministry of Agriculture, Tallinn, Estonia during a FLAVOURE project visit by an FCI coordinator

The FCI brought potential for enhancing contacts through co-location of its meetings with larger professional events (Thessaloniki, Wageningen)

10 Policy relevance of the Food Cluster Initiative

Food is a large manufacturing sector in Europe yet is facing diverse and increasingly important changes related to demographics (ageing, migration), diseases (diet-related disease, cognitive decline, obesity, allergy), lifestyles (occupation, quality of life) and sectoral competition. In addition consumer demand for healthy, safe and ethically produced food is increasing as are demands for increased environmental protection and sustainability, personalised nutrition and risk reduction. So the food sector faces new challenges induced by globalization and societal issues and so requires a good understanding of the triggers of future change and the inter-relationship between these and their impact in order to remain competitive and overcome emerging threats. The aims of the FCI were in line with this by addressing such challenges in agrofood. The policy imperative behind such concerns and the need for providing support to clusters and cluster formation in general has already been outlined in Section 1 of this report and cluster development is seen as one of the aggregate outcome areas.

Examples can be found in the literature analysing the outcomes and impacts of the involvement of research on local business and local government agencies. The problems found in the different scenarios that have been reported on are also of interest to the FCI. Some of the scenarios published in the scientific literature or in reports have been presented at FCI meetings. (18)(19) (20 (21). No doubt several other relevant examples could be identified.

So the impact of the FCI and its policy context should not just be considered simply in isolation but be seen as one example of a broader picture from which we can learn and make comparisons with other studies. Such arguments were portrayed at the 5th FCI meeting and a number of the above points were also presented during the course of the 2010 WIRE meeting in Granada (15-17 March 2010).

A recent article ("Germany – the engine of success") (22) is also noteworthy in this regard. "A large part of Germany's products are simply indispensable. Companies can postpone such investments but they cannot skip them altogether. This is underpinned by intricately connected clusters that combine the knowledge of companies, universities, private research institutes, chambers of commerce and sector associations. Nowhere else in the world will you find a similar interplay between industry and universities". This quotes a German research partnership CEO for propulsion technology with 2000 industrial experts from over 200 engineering and automotive companies and 50 scientific institutes cooperating to train employees, share software and exchange knowledge. Comparing agrofood as a sector in terms of its indispensability is obvious but the need for "intricately connected clusters" is worthy of serious note. Indications such as this might lead one to think that FCI funding lines were too small to achieve real scientific and economic impact – and/or the FCI was too heterogeneous to achieve enough critical mass.

The EC present strategy on clustering sees it as a tool for regional economic development playing a vital role in fostering business innovation. However in Europe clusters are often seen to be lacking the critical mass and innovation capacity to become real world class. Cluster policies therefore need to be significantly improved so that SMEs become better integrated into clusters. Clusters also need improved professional management. There are signs now that this has been recognised.

In Europe 2020 seven flagship initiatives are defined of which three fall into the category of "Smart Growth". One of these three is the Innovation Union which involves refocusing R&D and innovation policy on major challenges for our society and strengthening every link in the innovation chain from blue sky research to commercialisation. Regional policy is now at the heart of delivering Smart Growth in Europe 2020.

Optimising the impact of Cohesion Policy funding that is allocated to innovation is an important element in the regional dimension of the Innovation Union - asking regions to design "smart specialisation strategies" (S3) to unlock growth. S3 is different from regional innovation strategies or cluster policies in that it (i) focuses on a narrower set of priorities and practical implementation; (ii) is more aware of the international context and ERA seeking complementarities with other regions and coordination of research and innovation investment; and (iii) aligns different public funding instruments in a coherent way (synergy) and leverages private investment. Clusters are an identified action to be considered in S3. The future orientation of programmes such as ROK will be closer to these identified flagship Europe 2020 initiatives such as Innovation Union. (See J-D Malo presentation FCI Gent meeting 2010). This then is the context in which the FCI should be seen from a European funding perspective in future.

The EU Strategy for the Danube Region's Action Plan might be taken as an example of the emerging role for clusters. It puts forward measures for building prosperity in the Danube Region which in the context of supporting competitiveness of enterprises includes cluster development. It envisages a Danube Region programme for clusters and SME networks including objectives for transnational cooperation between clusters and improved framework conditions to support cluster cooperation. The FCI is cited as an example of an FP7 initiative that can be built on but interestingly more in relation to capacity-building (which is the thrust of the FP7 programmes involved) rather than cluster creation per se.

11 Conclusions on the outcomes and impact of the Food Cluster Initiative

The following conclusions are drawn from the assessments made in this report on the component projects of the Cluster and the implementation of the FCI in its own right:

- The individual Cluster project outcomes constitute a success in virtually all instances that are at or nearing completion. However when these are viewed in relevant aggregated categories that show commonality across the FCI projects the added value brought by having the FCI in place needs to be identified separately.
- Many project coordinators have confirmed the view that the FCI itself has provided outcomes or attributes that could not have been achieved effectively on a "project only" basis.
- There were outcomes and impacts achieved by the component projects of the FCI that benefitted from and were complementary to activities embraced by the Cluster at its meetings and more widely including:
  - Stimulating linkage at various levels and in various ways
  - Fostering the transfer of good practice
  - Fostering strategic planning through SWOT/SOR training
  - Developing awareness of different funding possibilities and formulating appropriate proposals
  - Creating broader awareness of the agrofood sector in Europe
  - Supporting a European research effort and so creating awareness of ERA
- The FCI is not a typical cluster as there is no proximate geographical dimension – it is more a network and should develop as such in the future. Clusters need to be regionally - or locality - based to maximise effectiveness.
- The FCI was a research capacity-building pilot initiative conceived as a tool for building research capacity for enhanced cooperation between European regions. From this standpoint alone it has been successful in the agrofood sector and increasing interest in applications for "membership" illustrate this.
- It is envisaged that the FCI will develop further over time as a network of European regional food clusters through acquisition of future projects and associated actions. This is already happening. So the FCI should become a European network of food-related clusters aiming to spawn and enhance food-related regional clusters in Europe.
- The FCI or its successor needs a "foresight" capability to determine where the particular focus of its effort should be over time. This will avoid dilution of resource capacity that can result from too great a degree of heterogeneity in the activities supported.

12 Recommendations for the future

How can the FCI contribute to achieving what is needed in the future? What should be its organisation and style be like and how will this be decided? How can it be made to perform tasks identified as forming part of its remit? Should it be a network of regional cluster members who make a contribution to resource its functions as defined in a MOU? In which case should projects continue to be candidates for membership or should such applicants be clusters?

It is RECOMMENDED that a working group be formed to advise on the future governance and implementation of the FCI.

Choices will need to be made on what theme(s)/niche(s) to pursue in future so that the FCI gains a reputation for certain specific contributions e.g. food industry innovation; food and health; agrofood and the environment; farm to fork issues – what should the supply chain be like; the effect of large scale retailing on food issues; safety and quality of food; European agrofood exporting

It is RECOMMENDED that the FCI or its successor organisation devotes effort to assessing and specifying what is needed - by whom; where; why; and with what result. It is not sufficient simply to foster cluster formation - clear and specific definition is needed on what the cluster is for and how it will make a contribution especially in relation to the Innovation Union as described above.

An important aspect of this process is to devote some thought to the key societal issues involved and their prioritisation. For example is the over-riding need for increased economic activity; better global competitiveness; improved health and welfare; environmental acceptability; spreading the “influence or reach” of Europe – in science/research/innovation, in the food sector, in a social context?

There is a need to stimulate more innovative activity in the European agrofood sector by brainstorming ideas in the chosen areas of activity relevant to public need rather than collaboration for the sake of collaboration.

It is RECOMMENDED therefore that a foresight activity be established as a key aspect of the Recommendations proposed above in order to brainstorm such societal needs.

There are other initiatives and organisations with which FCI might have a good “fit” or complementarity. For example European Technology Platform (ETP) Food for Life (See http://etp.ciaa.eu) which is an industry-driven instrument to unite stakeholders at European level with aims to enhance competitiveness of the agrofood sector in Europe and strengthen innovation and to meet the needs and expectations of society better. Further information on this was presented by Andras Sebok (Campden BRI – www.campden.co.uk; www.campden.hu) at the FCI Gent meeting in 2010.

It is RECOMMENDED that possibilities for association or inclusion of FCI with other organisations with comparable aims are explored as part of FCI’s strategic positioning for the future.

The **Food Cluster Initiative has proved to be beneficial** as its critical mass allowed it to attain outcomes that would not have been reached at individual project level. These have been discussed earlier in this document.

It allowed notable unlocking of the research potential in the European Food Research Area by bringing together regional research actors that would not have met otherwise.

For this **positive impact** to be leveraged up in the future, the FCI's objectives will need to be more focused on specific issues such as for instance **increased regional commercial innovation**.

In that respect, the **recommendation to set up a foresight activity** to identify the priority societal challenges to be addressed by the Food Cluster Initiative is '*key*' to the success of its future activities.

Appendices

I Regions and teams participating in the European Food Cluster initiative

RAF-REGIONS [FP7-REGIONS-2007-1]
Bringing the benefits of research to Agrofood SMEs of the regions of Central Macedonia, Puglia and Pazardjik

Euroconsultants SA (*coordination*)	**GR**
Region of Central Macedonia	
Federation of Industries of Northern Greece	
Institute of Agrobiotechnology, Centre for Research and Technology Hellas	
INNOVA SpA	**IT**
Agenzia regional per la Tecnologia e l'Innovazione – Regione Puglia	
Institute of Sciences and Food production CNR	
Distretto Agroalimentaire Regionale Scrl	
Euroconsultants SA Bulgaria	**BG**
District of Pazardijk	
Agricultural University of Plovdiv	
Bulgarian Association of food and drink Industry	

BALTFOODQUAL [FP7-REGPOT-2007-1]
Unlocking animal food quality research potential in the Baltic region by developing the scientific and technical capacities of the research institute SIGRA

Research Institute of Biotechnology and Veterinary Medicine "Sigra" – Latvia	**LV**
University of Agriculture	

SAFETechnoPACK [FP7-REGPOT-2007-1]
Improving the scientific and technological research capacity of a food institute on safety and technology of food-packaging

TUBITAK – Turkiye Bilimsel ve Teknolojik Arastirma Kurumu	**TR**

EU-BALKANVEGETABLES [FP7-REGPOT-2007-1]
Balkan vegetable crops research centre for transfer of European knowledge research and practice

Maritsa Vegetable Crops Research Institute	**BG**

FEED-TO-FOOD [FP7-REGPOT-2007-3]
Reinforcement of FEED-TO-FOOD research centre at the Institute for food technology at the university of Novi Sad

Institute for Food Technology of Novi sad (*coordination*)	**RS**
Forschungsinstitute Futtermitteltechnik der IFF	**DE**
Institute of Food Research - Norwich	**GB**
National Research-Development Institute for Animal Biology and Nutrition - Balotesti	**RO**
Institute of Animal Science of LVA	**LT**

CHROMLAB-ANTIOXIDANT [FP7-REGPOT-2007-3]
Reinforcement of the Western Balkan countries research capacities for food quality characterisation

Faculty of Natural sciences and Mathematics, University Sts. Cyril and Methodius – Skopje (*coordination*)	**FYROM**
Faculty of sciences and Mathematics, University of Nis	**RS**
Institute of Organic Chemistry with centre of Phytochemistry, Bulgarian Academy of Sciences	**BG**
Department of Food Sciences and technology, National Centre for Scientific Research – Murcia	**ES**
Joint research unit "Science for Oenology", INRA – Montpellier	**FR**

SWOT-CHEMISTRY-FOOD [FP7-REGPOT-2008-2]
Evaluation of the research capacity and development of a strategy for further growth in chemistry in general and in food sciences in particular

Faculty of Natural sciences and Mathematics, University Sts. Cyril and Methodius – Skopje	**FYROM**

AGFORISE [FP7-REGIONS-2008-1]
Agrofood clusters platform with common long-term research and innovation strategy towards economic growth and prosperity

Mersin Special Provincial Administration	**TR**
Alata Horticultural Research Institute	
Targid Food and Agricultural Products Industry and Trade	
Mersin Chamber of Commerce and Industry	
Regione Emilia Romagna	**IT**
Institute of Biometreorology	
Cooperativa Terremerse SCRL	
ASTER Scienza Technologia Impresa	
Region of Murcia – Ministry of Agriculture and Water	**ES**
National Technological centre for the Food and Canning Industry	
Juver Alimentacion S.L.U.	
Grupo Taso Economic & Business Development	

CEFSER [FP7-REGPOT-2008-1]
Reinforcing research potential in the Laboratory for chemical contaminants at the Faculty of Technology towards the establishment of the Centre of Excellence in Food Safety and Emerging Risks

Faculty of Technology – University of Novi Sad	**RS**

FLAVOURE [FP7-REGPOT-2008-1]
Food and Feed Laboratory of varied and outstanding research in Estonia

Estonian Research Institute of Agriculture	**EE**

AGRISCIMONT [FP7-REGPOT-2010-5]
Fostering a science-based development of a sustainable Montenegrin agriculture

Biotechnical Faculty – University of Montenegro	**ME**

AFRESH [FP7-REGIONS-2010-1]
Activity and food for regional economics supporting health

Stuttgart Region Economic Development Corporation	**DE**
UNIVERSITEIT GENT	**BE**
RESOC Meetjesland, Leiestreek en Schelde	
Erkend Regionaal Samenwerkingsverband West-Vlaanderen vzw/RESOC Midden-West-Vlaanderen	
M.C.S.B.R.	
ASSOCIATION AGROPOLIS	**FR**
Asociación Nacional de Fabricantes de Conservas de Pescados y Mariscos - Centro Técnico Nacional de Conservación de Productos de la Pesca	**ES**
LIVERPOOL JOHN MOORES UNIVERSITY	
STICHTING KATHOLIEKE UNIVERSITEIT	**NL**
Warsaw University of Life Sciences	**PL**
Sante a. Kowalski sp.j.	
Mazowiecki Osrodek Doradztwa Rolniczego w Warszawie	
INNOVA ESZAK – ALFOELDI REGIONALIS FEJLESZTESI ES INNOVACIOS UEGYNOEKSEG NON PROFIT KORLATOLT FELELOESSEGUE TARSASAG KFT	**HU**
DEBRECENI EGYETEM	
"KATKER 2005" Kereskedelmi,Vendéglátó és Szolgáltató Korlátolt Felelősségű Társaság	
Innovatív Élelmiszeripari Klaszter Kft.	

REAL [INTERREG]
Galicia-North Portugal Food Innovation Network

Universidade de Trás-os-Montes e Alto Douro	**PT**
Universidade do Minho	
Universidade Católica Portuguesa	
Instituto Politécnico de Viana do Castelo	
NERVIR – Associação Empresarial	
Universidade de Vigo	
Universidade de Santiago de Compostela	**ES**
Centro Tecnolóxico da Carne	
Xunta de Galicia	
ANFACO-CECOPESCA	

FINE [FP6-KNOWREG-2-2005]
Food Innovation Network Europe

Ontwikkelingsmaatschappij Oost Nederland NV *(coordination)*	**NL**
Öresund Food Network DK & SE	**DK/SE**
Stiftelsen Rogalandsforskning	**NO**
Universiteit Gent	**BE**
ASTER S. cons. P.	**IT**
Centuria RIT Romagna Innovazione Tecnologia soc. cons. a r.l.	
Fundacja Uniwersytetuim Im. Adama Michkiewicza	**PL**
Scottish Enterprise	**GB**
Centro de Automatizacion, Robotica y Tecnologias de la Informacion y de la Fabricacion	**ES**

II Terms of Reference

The objectives will embrace:

- An assessment of the strengthening of EU Food research achieved by forming research-driven clusters involving inter-regional cooperation;
- Whether the definition of Regional Food RTD policies and strategies has been improved;
- Assessing the result of attempting to make the EU regional food RTD infrastructure landscape transparent; and
- Assessing whether investing in combined regional strengths has created excellence in the European Research Area as a result of defining a mutual strategy and developing inter-regional projects.

So the following features apply:

- the impact of individual projects and the food cluster overall need to be taken account of in any assessment of performance.
- there is a need for benchmarking and a methodology for achievement analysis that takes account of both macro levels and more specific objectives.
- assessment of the policy objectives, their direction, the strategic decision-making required, the impact of the cluster as a result of the development and coordination undertaken and the future potential for the clustering represent some of the further contributions needed from this expert role
- it will not be sufficient simply to confirm upgrading of a particular S&T resource or reinforcement of the capacities of an institute at a specific geographical location as justification for establishing a European Food Cluster – an assessment of European Added Value (EAV) is required.

The actions required therefore in this final year will involve inter alia assessment of the outcomes of the following aspects:

- Development of the management structure of the cluster;
- Development of the policy objectives and direction of the cluster including follow-up and forward look;
- Extent of participation in the various meetings with project coordinators and project partners to explain/motivate the idea of a food coordination cluster and underpinning of the arguments;
- Organisation of a strategic orientation round (SOR) for training of project partners on SWOT-analysis and coordination of the SWOT/SOR implementation and production of a common report;
- Design and implementation of detailed action plans to stimulate integration of the new regions in the Food Innovation Network to build the new cluster (to integrate weaker and successful operators);
- Policy, management /planning, and involvement in the implementation and direction of cluster meetings comprising either coordinators or all partners;
- Visits to cluster partners/groups requiring policy input and guidance;
- Visits to cluster partners/groups requiring scientific/development input and guidance;
- Participation in workshops relating to funding involvements and potential initiatives (FP7, structural funds, CIP) within the view of supporting partners from weaker regions/teams;
- Consideration of the impact at regional and European level of the cluster and how to measure it – developing benchmarks internally, scientifically, in the agro food sector, and regionally with appropriate interlinking.

- Provision of guidance and inputs to deliverables focusing on enhancing visibility of all actors involved;
- Policy recommendations for future similar initiatives and or possible re-orientation of the supporting scheme "Regions of Knowledge" and "Research Potential".

III Summary of main project outcomes (or intended outcomes) in aggregate categories

This information is summarised in main category areas and shown in the Table below. For recent projects the information categorisation is based on stated project intentions. For other projects the information is derived from the outcomes achieved or partially achieved at the present time.

Description of the aggregate categories is provided in the subsequent sub-table and is based on the description provided in the report (Section 7).

Summary table of main project outcomes (or intended outcomes)in aggregate categories												
	Outcomes	Mobility/Young researchers	Institutional facilities	Training/best practice	Awareness development	Commercial benefits	Linkage	Quality and safety	Proposal development and	Sectoral strategy development	Cluster development	Notes
Projects												
RAF-REGIONS				■					■	■	■	
BALTFOODQUAL		■	■	■	■	■	■	■	■	■	■	
SAFETechnoPACK		■	■	■	■	■						
EU-BALKANVEGETABLES		■	■	■	■	■	■		■	■		
CHROMLAB-ANTIOXIDANT		■	■	■	■		■	■	■	■		
SWOT CHEMISTRY FOOD					■	■				■		
FEED-TO-FOOD		■	■	■	■	■	■		■			
AGFORISE					■	■	■		■	■	■	
CEFSER		■	■	■	■	■	■	■	■			
FLAVOURE		■	■	■	■	■		■	■	■		
REAL						■	■			■	■	
AGRISCIMONT		■	■	■		■		■		■		Recent project
AFRESH				■	■	■	■	■	■	■	■	Recent project
FOOD2MARKET				■	■	■	■			■	■	Recent project
FINE						■	■		■	■	■	FP6 project

Note: Shaded cell indicates project possessing outcome attribute

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The overall objective of the FCI was to find a way of bringing all players together so that successful and less experienced operators were integrated into a viable and successful European Food Cluster by building on the FP6 project FINE as a prototype. A key aspect was to develop ways of involving the present and current project partners and potential successful projects under future Calls and prepare for new coordination actions to be funded under FP7.

The Food Cluster Initiative has proved to be beneficial as its critical mass allowed it to attain outcomes that would not have been reached at individual project level as described in this document.
It allowed notable unlocking of the research potential in the European Food Research Area by bringing together regional research actors that would not have met otherwise.

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