



Good Practices on Regional Research and Innovation Strategies for Smart Specialisation

Polli Horticultural Research Centre

Estonia

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1 Basic Data of the Practice

1.1 Title of the practice

Polli Horticultural Research Centre

Polli Horticultural Research Centre is the experimental fruit and berry product development centre preserving genetic resources of berries and fruit, breeding new sorts, developing and experimenting fruit and berry storage and processing technologies in order to enhance regional business activity in alternative economic area and increase competitiveness of Estonian and Latvian food industry.

1.2 Precise theme/issue/policy tackled by the practice

- Clusters
- Innovation friendly business environments for SMEs
- Research infrastructures, centers of competence and science parks
- Universities
- Digital Agenda for Europe
- Key enabling technologies
- Cultural and creative industries
- Internationalisation
- Financial engineering instruments
- Innovative public procurement
- Green growth
- Social innovation

Process of regional change initiated:

- transition
- modernisation
- diversification
- radical foundation of a new domain

1.3 Geographical range of the practice

Estonia region (NUTS level 3).

1.4 Contact details

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1.5 Sources of information

<http://www.polli.ee>

2 Introduction: Regional Smart Specialisation Background

The innovation system in Estonia was mainly set up in the beginning of 2000's when not only the legislation and institutions related to R&D and innovation but the whole public functional system was created.

The Estonian RD&I Strategy "Knowledge-based Estonia 2007–2013" sets objectives and measures to ensure high quality and increased intensity of Estonian research and development, to increase business sector innovativeness and the added value they create as well as to establish Estonia as an innovation friendly country. Current R&D strategy is not quite „smart specialisation“ type. Efforts are made that the next strategy would integrate more S3 approaches. As the innovation is also investment and knowledge-intensive sector, Estonia draws major attention to the cooperation between the research establishments and companies and also to the participation in international cooperation networks.

The R&D strategy sets out three main objectives:

- Competitive quality and increased intensity of research and development;
- Innovative enterprises creating new value in the global economy;
- Innovation friendly society aimed at a long-term development.

These objectives will be achieved through:

- Development of human capital;
- Organising the public sector RD&I more efficiently;
- Increasing enterprises' innovation capacity;
- Policy-making aimed at long-term development of Estonia.

Particular areas of specialisation in the region:

- ICT
- Biotechnology
- Materials technology
- Electronics
- Machinery and metal-working
- Wood processing and production, furniture production
- Logistics, transport
- Food
- Tourism

Food industry is important for Estonia. Development of foodstuff industry of local origin mainly is related with the possibility to increase incomes of farms and development of rural area. Significance of the branch is regularly underlined in documentation of rural development policy. In Estonia in the year 2001 the area of orchards and berry gardens was 18,526 ha and the total production amounted to 27,031 tons including 18,232 tons of fruits and 8,343 tons of berries, in addition 456 tons of other berry cultures. In 2008 the amounts were less. Most important articles are bilberries, red currants, strawberries, black currants, raspberries. The total export of Estonian products in 2008 was 975 tons: 33.9 million EEK. Main challenge for sector development is linked to product value development. To get economical advantage and to become competitive producers need to proceed their products (e.g. to make apple juice) not only to sell basic products (e.g. apples).

3 Description of the Practice

3.1 Executive summary

The Polli Research Institute for Horticulture was founded in 1945. Since 1994 Polli Horticultural Research Centre was included to the Estonian Agricultural University. The main directions of the research are the following:

- Breeding apple, (pear), plum, sweet cherry, black currant, and raspberry new cultivars; in earlier decades, the breeding of sour cherry, red currant, white currant, strawberry, and gooseberry for domestic horticulture.
- Scientific research in new technologies of fruit and berry cultivating, plant protection, and organic gardening.
- Introducing new cultivars for fruit and berry production in Estonia; testing them for evaluation of their perspective for cultivating.
- Investigating new crops: sea buckthorn, edible honeysuckle, and sorb.
- Breeding of apple vegetative rootstocks.
- Preserving genetic diversity and cultivars' resources of fruit and berry crops of Estonian origin.

Polli is a practical basis for provision of horticultural education in fruit science for the students: introducing the diversity of cultivars and fruit crops, experiments in fruit gardens, and supervision of post-graduate students, and applicants for doctor's degree. The Polli Research Centre is responsible also investigation and preserving of genetic resources of fruit and berry cultivars and selections bred in Estonia.

In terms of development of agricultural production in Estonia, it is important to use local raw material and high-value marketing. Extended storage life and product development together with marketing activities ensure significantly higher value added per employee. Lack of storing facilities, novel storage technologies, diverse processing and product development is considered to be a substantial obstacle to the production of home-grown agricultural products in Estonia and Latvia.

Fruit and berry processing and product development cannot be enhanced only by theoretical consultation and training alone. It was crucial to establish pilot centre for processing and development of horticultural products, which would allow introduction of learning and research results into business. Therefore in 2009 Fruit and Berry Product Development Centre created in Polli, Estonia. Centre offers product development support for enterprises by informing, counselling, developing and experimenting fruit and berry storage and processing technologies in order to enhance regional business activity in alternative economic area.

Among certain people the products grown without poisonous plant protection chemicals and mineral fertilizers are in great demand. Organic production is constantly being discussed and a development plan for promoting organic production has been established. At the moment there is further process of developing Competence Centre of Health Good and Natural Products. The Competence Centre is unique in Estonia as its main field of activity and niche lies in the research and development of health goods and natural products using modern, high-technology methods, including extraction of bioactive ingredients of plant origin, that are used in functional foods, eco-cosmetics, household chemicals, pharmaceuticals etc. The main goal is to consolidate and mobilise sectorial know-how as well as other resources and raise the sectorial competitiveness via international networking, research, and development based on both academic excellence and business innovation. It also aims at enhancing the visibility of the region and supporting the cooperation of research institutes, the public sector and enterprises.

3.2 Key features of the practice

- Regional cluster of horticulture
- Regional competence centre of health and natural products
- Platform for the exchange of experience
- Platform for research work including experimenting
- Intersection between companies and science
- Initiation of cooperative projects
- Support for the development of innovations and the exploitation of the application potential of new technologies
- Supports in the fields of education and qualification and for an enhanced availability of skilled personnel

3.3 Detailed content of the practice

Strategy “Estonia 2020” sets priorities for innovation areas. Creating preconditions for increasing the volumes of research and development in the private sector and raising the number and quality of innovation outputs is one of them.

Development of foodstuff industry of local origin mainly is related with the possibility to increase incomes of farms and development of rural area. Significance of the branch is regularly underlined in documentation of rural development policy both in EE and EU. Defenders of “local foodstuff” together with researchers of the phenomenon of this branch have identified two mutually connected directions of the branch:

(1) Local foodstuff underlines the local origin as closed or limited system, where foodstuff is produced, processed and sold in geographically restricted area. In some way it establishes channel system for good delivery as an alternative for conventional products. This system contains such product channels as farmers’ markets, farm shops, food delivery baskets and other direct forms of trade.

(2) Local foodstuff can be as an added value for export. It means a particular product is being labelled with the origin of place and certified, but it can be purchased and consumed in other geographical place. In such case the local origin is being associated with a special assortment, traditional products and quality of products.

The total export of Estonian products in 2008 was 975 tons: 33.9 million EEK.

Polli Horticultural Research centre is the only horticultural centre in the region. Since 2009 Fruit and Berry Product Development Centre offers its services for entrepreneurs in other regions as well (Estonia, Latvia , Finland). There is well-equipped laboratory, where enterprises and research centre achieve good results through cooperation in product development.

The activity gives not only the economic advantages in form of profit for the manufacturers themselves, but establishes supplementary advantages for the society in general:

- Firstly, their activity is a support for development of common agriculture, small entrepreneurship and economic activity of the region.
- Secondly, manufacturing of local products helps to establish loyalty between manufacturer and customer.
- Thirdly, local foodstuffs are connected to identity of region; their manufacturing helps to preserve and bring forward traditional knowledge.

Regional companies benefits from the practice:

1. Breeding and introducing new fruit and berry cultivars for domestic fruit and berry grower. The whole number of accessions in collections is about 1100, including 449 apple, 95 pear, 95 plum, 98 cherry, 76 strawberry, and 110 black currant genotypes.
2. Research and counselling in fruit and berry cultivating technologies, plant protection, organic gardening.
3. Research and counselling in fruit and berry storage techniques.
4. Increasing and diversification of small scale processing of horticultural products in Estonia and Latvia.
5. Individual consulting on fruit and berry product development with assisted use of processing equipment. Small scale experimental production clarified or unclarified fruit and berry juices, carbonated drinks, puree and jam, seed oils, dehydrated products ect.
6. R&D projects and educational programs and workshops.

During the EstLat cross-border programme project GoodFruit (2009-2011) partners of this project have been sharing their efforts and knowledge to raise the general competitiveness of the local fruit and berry businesses that form an important agricultural industry in both countries. To achieve this, project partners concentrated on both upgrading their infrastructure and building contacts with enterprises. The project introduced novel storage methodologies, upgraded infrastructure in both countries, as well as carried out active networking with enterprises (Estonian and Latvian SMEs), offering them know-how, various product development and storage related services.

3.4 Bodies and stakeholders involved

Polli Horticultural Research Centre (PHRC) was designed by the Estonian University of Life Sciences Institute of Agricultural and Environmental Science.

Fruit and Berry Product Development Centre in PHRC was designed by the Estonian University of Life Sciences Institute of Agricultural and Environmental Science in cooperation with Pure Horticultural Research centre (Latvia), Estonian and Latvian companies. However, it is important to note that the idea for the platform came from companies.

Partners who have signed the mutual co-operation agreement for the strategic development of the Competence Centre of Health Good and Natural Products are: University of Tartu, Tartu Biotechnology Park Ltd, TBD-Biodiscovery LLC, Estonian Employers' Confederation, Karksi Rural Municipality, A.Le Coq Ltd, Desintegraator Tootmise LLC, Elujõud LLC, Märja Monte LLC, Orto Ltd, Tervix LLC, Mayeri Industries Ltd, Competence Centre of Food and Fermentation Technology Ltd, Estonian Spa Association, Põltsamaa Felix Ltd, Saarek Ltd. All parties who are interested in developing the Competence Centre are welcome to join the team of contractual partners. Specific projects and provision of complex services will be regulated by specific agreements.

3.5 Timescale and maturity

The Polli research institute for horticulture was founded in 1945, Polli fruit and berry experimental centre was established in 2009 and at the moment competence centre of health food and natural products is being developed.

3.6 Legal framework

Polli Horticultural research Centre is a unit of Estonian University of Life Sciences Institute of Agricultural and Environmental Science that acts according to statute of University and Institute. Head of the centre is manager, appointed by director of Institute.

3.7 Financial framework

Running costs of the Polli Horticultural Research Centre are mainly covered by budget of Estonian University of Life Sciences Institute of Agricultural and Environmental Sciences. For implementing new projects the competence centre can apply for financial support from the ERDF Funds.

4 Monitoring and Evaluation

Polli Horticultural Research Centre works consistently and year-round. The outcome concerning the effectiveness of the policy was number of visitors, services and product development projects. The project objectives did not change during the project cycle. The expected results have been achieved.

The popularity of the Fruit and Berry Product development Centre with its storage and experimental laboratory has been bigger than expected.

During last year 36 Estonian and Latvian companies used freezing and freezer storage services. Refrigeration storage services have been used by 3 Estonian companies. Maximum limit of the service is gained – no more free space for others.

Experimental laboratory was used for the first time by 96 Estonian companies, 12 Latvian companies, as regular customers by 78 Estonian companies and 6 Latvian companies. These numbers do not include numerous excursions by schools and organisations. Also this service is developed – excursion, introduction of services, exhibition of apples and degustation.

In experimental laboratory several new pure juices, purees, nectars, jams, berry flours, dried berries have developed and produced (more than 26 tons). New technology allows not adding preservations, chemicals or additives – this is pure production. Also maximum limit is gained – equipment capacity at the moment (1 ton per day) is not enough now. Interest and demand from companies is much bigger.

Observable success factors of implementation are high-skilled workers and grown network.

Difficulties are that small companies are not able to participate and cover co-financing of EU projects, their interests are very different and not all development activities can be supported.

5 Lessons Learnt

Research and product development centre like Polli Horticultural Centre for small businesses is very reasonable to support product development and innovation. Positive aspect is that product development is effective – pilot products gain the biggest capacity as company will get practical information about technologies, problems etc before building and investment. Company can analyse product, receive evaluation by customers and idea of possible sale success of the product before building up technology and producing it at home.

Important is also work that can be done by research centres and universities – supporting product development with analyses, knowledge and software which must be also supported and developed further.

Companies still need active help and support in product development and projects financing.