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IKINET results and recommendations from an Austrian perspective

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and European knowledge and innovation networks:
an international comparison of innovation cluster policies
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1. Main results of the IKINET activities in Styria / Austria

As an ‘old industrial area’, long-dominated by a large nationalised industry, the region of Styria was subjected to several economic shocks, particularly after the fall of the Iron Curtain in bordering countries. This threw up a number of **new challenges**. As a result, the 1980s and the beginning of the 1990s were characterized by a low level of regional growth, an unbalanced labour market and structural problems such as an insufficient rate of new firm formation and a low rate of innovation.

For the region of Styria, the **structural problems** - below average R&D and innovation, low rates of new firm formation, low growth - have been dealt with **successfully** and this initial phase of structural change has meant that all the principle policy objectives have been achieved. However, the specific conditions under which this transformation was brought about also directly indicate the remaining challenges for the future and thus point to the **policy elements** necessary for **subsequent phases** of regional technological development in Styria.

In summarizing and interpreting the various results derived from the IKINET project we can draw several conclusions:

- The analysed network in Styria is strongly based on **knowledge intensive relations**. The network relations – measured in various dimensions of interaction – reveal that the immaterial dimensions dominate the material ones. While the firms do have extensive supplier relations, these are relatively weak within the region and within the network. However, their knowledge oriented relations are to a large degree **regionally concentrated**.

- The firms pursue **different sourcing strategies**, their activities comprise a **portfolio of interactions**: material deliveries, different forms of knowledge exchange. The different dimensions of interaction coincide only to a small degree: supplier relations are more or less separated from knowledge intensive ones. There is no automatic parallelism of interactions.

- The interactions are **strongly structured**: there are distinct leading actors in the network as a whole both receiving and omitting more flows than others. The position

is mainly dependent of size, export orientation, but also of the position in the value chain.

- The **dominating role** of the newly founded cooperative R&D institutions (**competence centres)** might be taken as an indication that this kind of network relation is rather new and that the pattern of interaction has a temporary character and depends of the existence of specific kinds of knowledge generating institutions.

Clusters and networks can therefore be regarded as **institutions for knowledge exchange** and as a **'scientific community'** which have both the task of restoring tranquillity, and – according to Loasby – of "devising intimate connections which exploit the advantages of the increasing subdivision of functions within the economy".

2. Policy recommendations

Several policy suggestions, covering various fields of activity, can be made for the furthering of regional development in Styria. These have been derived on the basis of insights developed from the IKINET Project and from experience gained through interaction with firms (and also augmented by IKINET results from other regions). One guiding principle that needs to be kept in mind here is the basic need to devise policy instruments for **specific target groups**.

In addition, one should not forget that the subject matter of innovation and technology policy is highly heterogeneous in scope, and is made up of a **variety of policy fields**, diverse institutions and numerous agents. Thus, any potential solutions will require **highly complex strategies of intervention**.

The themes covered include:

- building upon regional strenghts and developing proactive cluster policy
- extension and further development of leaders in innovation
- internationalization and interregionalization
- promoting new company formation which is technology oriented and nowlegde based
- job qualifications and further training and education
- strenghtening the regional knowledge infrastructure
- policy design and implementation

In the following, two of the topics will be more extensively outlined and a third one shortly addressed as a form of conclusion.

3. Proactive cluster policy

An area of particular importance in regional policy concerns the development of **regional fields of competence** and the need to identify and target **relevant areas of new technology**. For the region of Styria, cluster policy has played a highly significant role in this respect. It has stimulated much greater awareness concerning the need for co-ordination and cooperation in promoting economic and technological affairs and has also led to **greater focus and selection in economic policy**. The services provided by clusters have had a highly positive effect on the diffusion of information and on the promotion of cooperative activity. The underlying approach to cluster policy in Styria derives from the belief that organizations operating in clusters are **providers of new services** which, over the short-term, are to be developed with the help of initial start-up funding, but which over the longer term should not be supported by government financing. This **in-built need for self-financing** makes it necessary for clusters to focus on developing services which generate clear operational benefits for companies in a short space of time. While clusters thus support the development of new, company-related service structures, the prevailing financial considerations mean that **short-term operational benefits** are pushed to the fore, and long-term, **strategic concerns** tend to recede into the **background**. In such a setting it is difficult to legitimise more than a very limited role for public funding, and asking cluster organizations to be self-financial and self-directing is not at all inconsistent. On the other hand, such a policy is clearly not designed to promote long-term structural and regional development. This is all the more unfortunate given the fact that clusters offer great potential in this respect. As became evident in discussions carried out with cluster representatives, the tensions arising from such a setting are clearly perceived by those concerned. As a result, we propose that the tasks expected of clusters be **more precisely defined** and identify **three distinct fields of activity**:

1) Supporting **core cluster themes** by devising long-term programs lasting several years
2) Integrating clusters more closely into **public policy concerns**
3) Understanding clusters as **providers of access to company activity** and exploiting them in developing greater internationalisation, improving employee qualification programs, promoting technological advances, etc.

In this context clusters remain independent organizations, and can still be perceived as providers of company-relevant services at normal market rates. However, in addition, clusters can take on functions related more closely to the public sphere such as the generation and supply of data, or the development of long-term scenarios for various fields of technology or economic sectors.

4. Dynamization of the regional knowledge infrastructure

The research undertaken within the IKINET project has outlined the importance of a multi-dimensioned and multi-institutional regional knowledge infrastructure. Its dynamization therefore comprises a variety of policy activities of which a few are emphasized here.

One important task is to actively encourage the **opening up of new fields of technology** and growth in Styria. This also requires that procedures for systematically identifying and promoting new fields of technology be clearly determined. Preferably, such technology fields should be located in areas of Styria where there is already a strong knowledge base available so that this can be directly coupled with the needs of the economy and integrated into innovation processes.

Recent research has identified three groups of such fields of competence within Styria according to their stage of development:

- **Developed fields of competence** are traditional strongholds of research well connected with the economy such as automotive technology, machinery, chemistry and an already existing support infrastructure.
- **Developing fields** show existing strength in the supply of research but lack sufficient embedding and demand in the regional economy (human technology, environmental technology, electronics).
- **Emerging fields** in an early stage of research undertaken such as nanotechnology and computer simulation /mathematical modelling. Especially this last group is in need of policy support.

A second important task lies in generating new research institutions such as **'Competence Centres'**. They have been designed in the 90's as temporary funded cooperation in specific research fields and started their first programme period in 1998. So far they have proved to be of considerable value. On the whole, such centres are believed to be major sources of value as far as the development of industry-relevant research is concerned. Industry-based, innovation-oriented models of cooperation in a small number of key companies and research institutions, all organized according to a **particular overarching theme**, are not only highly flexible instruments, they also provide short and medium-term solutions to **project related research and development problems**. However, IKINET research has confirmed that the transfer of scientific knowledge to small and medium sized companies is not something that occurs automatically (e.g. via the relatively infrequent contact between industry and the science base), nor does it occur anywhere as rapidly as desired. In this respect, it is necessary to ensure that expectations remain realistic.

Examples for Styria include Acoustic, Polymer, VIF (Virtual Vehicle), Water Resource. This programme has in 2006 been relaunched as COMET (Competence Centres for Excellent Technologies) with a strong orientation on international excellence, globalised competition for human capital and inclusion in European networks.

A third dimension of the dynamisation is the adequate **policy design and the coordination of differentiated research institutions** ('old' ones such as universities, RTOs, and 'new' ones as Competence Centers and technical colleges). The possibilities for implementing necessary changes in the design and application of technology policy depend on an ever more complex backdrop of regional decision makers. This increasing complexity is being driven by both technological and political factors. It will become increasingly necessary to co-ordinate and synchronize a number of policy fields, in particular those relating to research, technology, economic factors, internationalisation, education and training. It will also be necessary to **integrate and use agents outside the policy process**, for example various interest groups or representatives.

Three innovations for Styria in this respect should be mentioned:

- The **Styrian Research Council** as an internationally selected group of persons from research and industry counselling the Styrian government; closely related is the **Research Forum** as an open network of all research institutions within Styria.
- The publication of both a **"Technology Concept Styria (2006)"** and the **"Research Strategy Styria (2007)"** as an orientation of the official strategy of the Styrian government for other agents in these fields.
- The implementation of two research networks for emerging research and technology fields – **NANONET Styria** and **SIMNET Styria** – in order to create favourable conditions for these future competence fields.

5. In search of further interregionalization and internationalization

Seen from the perspective of technology policy, the purpose of internationalisation is the promotion of economic development in emerging regions in the EU **in order to raise the competitive advantage of Styria** by supporting cooperation, cost and scale economies. This is particularly important in facilitating the participation of SMEs in the process of globalization. The focus here lies particularly **on the adjacent regions and countries**. It requires not only co-ordinating existing local government support programs on internationalisation (e.g. those provided by the Styrian Centre for Internationalisation: ICS), but also intensifying efforts at internationalisation, for example by making use of future structural funding programs which are designed to foster territorial cooperation. In the last analysis, improvements in export intensity

depend closely on finding market niches for successful innovation. IKINET research revealed that **strengthening the inter-regional division of labour** and developing **cross-border value chains** remain particularly challenging activities. From the point of view of the project team, measures which are easily accessible by the public, i.e. those relating to information provision, advice, skill acquisition are particularly beneficial in promoting direct investment in the emerging areas of the EU. Complementary to these, further measures targeted at the creation of vertical, cross-border value chains should be used to help SMEs take advantage of existing wage differentials. In addition, horizontal, cross-border value chain partners are also needed to help exploit potential or existing complementarities with respect to skills or competencies. Here, **members of regional clusters play a major role**. A further line of play is related to the need to develop partnerships in technology and research. This is particularly important in respect of countries undergoing economic transformation, where **complementarities in R&D** clearly exist.

This paper is particularly based on:

Steiner, M., Ploder, M., IKINET-Policy Recommendations for Innovation and Technology Policy based on Strategies and Networks in the Regions of Styria, 2007

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