

Title: Regional Innovation Systems: Designing for the Future - REGIS

Final report - Executive summary

Regional innovation systems can be found in four of the eleven regions investigated in the REGIS study. These are Baden-Württemberg (Germany), Basque Country (Spain), Styria (Austria) and Wales (UK). Not all are equally evolved and the Basque and Welsh cases are more strongly policy than market driven. Systemic innovation exists strongly at *local* level in S.E. Brabant (Netherlands) and Tampere (Finland) where *regional* institutions and organizations are less pronounced than in other cases. In localised innovation systems links are also close with *national* innovation support organizations.

Strong regional *governance* for innovation support and promotion seems to be a necessary, though by no means sufficient, condition for the existence of regional innovation systems. The cases of Baden-Württemberg, Basque Country, Styria and, to some extent, Wales point to that. But strong regions like Friuli and, particularly, Wallonia do not generate notable regional innovation systems. The weakest systems are found in highly centralised governance settings with little local, let alone regional, purchase upon or influence over the evolution of regional innovation trajectories of firms or sectors. The Hungarian, Polish, and to a lesser extent, Portuguese cases exemplify this.

The key policy dilemma is thus how to produce a generic policy approach for enhancing regional innovation systems potential which may usefully be accessed by regions at different stages of economic development and with varying regional powers? Ten of the eleven regions examined, including those in Hungary and Poland, are recipients of EU structural intervention funding, and these two accession countries will undoubtedly be such when they join the Union. Only Baden-Württemberg lies outside the regions in receipt of Structural Funds, in this sense. Structural Funds, therefore, may be the key to promoting regional innovation systems in less favoured regions. This is one of our fundamental conclusions.

A substantial portion of main corporate functions of firms surveyed are located at regional level. Baden-Württemberg revealed high percentages of R&D activity, purchase of inputs, location of main competitors and existence of main cooperations to be regionally located, only the sale of outputs being substantially less regional than towards higher market scales. Of the reconversion regions, the Basque Country and Styria were fairly regional in their outlook for R&D, competitors and cooperations, while the industrial district regions (Centro and Friuli) displayed less regional focus for key corporate activities. Regional competitor firms and innovation cooperations were identified for Friuli, and R&D and innovation cooperations for Centro. Hence, there is a reasonable degree of decision autonomy to be found at regional level though more, perhaps, the more economically developed the region in question. This suggests that initiatives to promote innovation at regional level should not meet insuperable barriers because of firms having to refer decisions to engage in interactive relationships to a head-office outside the region.

Firms in all regions, including those in Hungary and Poland, reported that *quality* and *cost* were the most important or second most important impulses driving their competitive behaviour. We conclude that these twin imperatives are the source of their demand to innovate. A generic position in which firms seek to ensure they have the *human capital* necessary to sustain competitive advantage is also present. Thus, innovation, for surveyed firms, is focused upon three pillars of corporate activity: enhancing *quality*, enhancing *skills* and minimising *cost*, thus price in the market. We conclude that these are the essential drivers of the innovative impulse and that firms are open to receiving external assistance in seeking to respond. Innovation policy must recognise the integrated nature of the quality/cost and skills development elements of the challenges faced by European firms, especially SMEs.

Organizational innovation is within firms' power to a considerable extent. The most widely-practised *organizational innovation* on average has been the introduction of *teamwork*, recognition of the importance of collaborative intra-firm practices in sustaining competitive advantage. Close behind it has been the achievement of the *ISO9000* organizational standard, frequently required nowadays to remain a supplier to increasingly demanding customers, particularly in the supply chain. Next, 'Total Quality Management' also reflects the recognition of quality as a key competitive instrument, and introduction of Information Technology and "Just-In-Time" management further underline the organizational changes that have relatively widely been introduced. Most of these organizational innovations imply considerable workforce re-training consequent upon reorganization. However, overall, less than half our sample had introduced organizational innovations such as these, so the need for increasing awareness and assisting implementation remains sizeable in all regions. Here is a place for policy to offer support to an aspect of innovation - that related to firm organization - that may, in the past, have been under-emphasised.

Firms seem rather introverted or at least limited in their horizons regarding their *sources* of information regarding innovation. Fairs and exhibitions, customers, journals and suppliers, in that order, are the main sources and there is little detectable pattern according to regional categorisation. Firms are learning most from other firms, but less from consultants, industry associations, technology transfer centres or universities compared to the more familiar surroundings of other firms and the absorption of technical literature. When it comes to actual partnership in the innovation process, customers and suppliers again score highly, though, interestingly *universities* and *consultants* rise up the rank-order considerably. Both seem to be used more when an innovation problem or opportunity is clearly specified than for more general accessing of information concerning innovation. Moreover both tend to be quite strongly regionally located, suggesting greater dissemination and proactivity by regional universities towards their business community could result in benefits for both, as is also the case with consultants.

The results of innovation efforts by firms, alone or in partnership, may be thought to be rather disappointing. Our data echo very closely the findings of the Community Innovation Survey (CIS), albeit for a slightly different period. The CIS results refer to 1990-92, ours to 1993-96. The percentage of product innovations new to the market in the CIS survey was 48% and in our research 44%. However actual innovations averaged 67% in our survey, indicating a substantial proportion of product innovations being imitations or re-innovations new only to the firm not the market. The ratio is worse for process

innovations, where an average 50% of firms in our 1993-96 survey reported producing them, but only 23% were new to the market. There is some degree of necessary process innovation to generate product innovation but there must remain concern that there is a disparity between innovations and sales of innovations. Maybe the much-observed inadequacy of finance to enable firms to transform prototypes into commercial propositions has a part to play, and invites obvious policy reflections.

Constraints on innovation are stated by firms in our study to be, first, *funding* (or lack of it) and second, the costs of research personnel. Clearly, innovator firms experience serious barriers to conducting or realising the potential of innovations because of *funding* limitations. After funding, *management time* is cited as the next most important constraint, followed by workforce *skills* and “*know-how*”. Hence the aspiration to enhance workforce skills to sustain competitive advantage meets something of a barrier because research personnel are expensive and appropriate skills are not always or easily available to assist in the pursuit of product or process innovation. Clearly, the funding and training environments are operating less than optimally, suggesting the need for policy attention. These problems are generally more pronounced in the less favoured regions than in the high performance engineering and upstream reconversion regions.

When firms interact with the public innovation infrastructure, something that is done on a modest basis compared to inter-firm interaction, regional and national *universities* are the most important interlocutors with 24% of firms linking with universities in their region and 22% linking nationally. However, small firms (employing less than 50 people) do this between 30% and 50% less than firms in general; medium-sized (50-200 employees) do so at the average level (i.e. 24% regional, 22% national) while large firms (over 200 employees) do so between 75% and 90% more than the average. Larger firms also cooperate noticeably more than average with research institutes, technology transfer and training organizations. Thus larger firms make much the most use of the innovation support infrastructure at both regional and national levels while small firms significantly under-use it. There may be a rôle for policy in stimulating small-firm networks that might form the critical mass necessary for better information supply, learning opportunities and joint-financing to help overcome barriers to fuller use of appropriate services. If insufficient innovation support services are available regionally, there may also be a rôle for policy to supply them.

Overall, the results for policy consideration from the research into innovation processes of firms and the innovation support infrastructure show some generic features. First, is the element of complementarity between the multiple levels of the EU innovation support infrastructure. Regional universities, technology transfer agencies and training organizations are conveniently used, on a modest basis, where they exist and offer valued services. Funding for innovation support is often organised at national level and firms access this intelligently as appropriate, except for small firms. Also *specialist* research institutes and services as well as specialist training services may be organized and accessed nationally for reasons of efficiency. At the EU level, more generic funding programmes and services, including international *networking* focused on innovation, is an appropriate task. However small and less innovative firms are not well-reached by the innovation system at any level, perhaps because of a lack of intermediaries or other barriers. Hence a policy to improve this could be a valuable initiative led by the EU but implemented regionally. Consciousness of the value of

networking by firms is rather low and there may be a case for EU support to promote more pre-competitive collaboration among SMEs. Finally, improving the capability of SMEs to engage in “bridging” technologies to newer sectors, would be valuable.

Existing innovation policies have begun to recognise the importance of the regional level for organizing innovation support to firms. However, thus far policies have been piecemeal and have tended not to recognise the fact that for firms, innovation includes quality, organization, management, marketing and training aspects as well as those dealing mainly with technology. However regional competences are not evenly distributed within the EU and hardly exist in the rest of Europe. Nevertheless, much funding in support of economic development from the EU is absorbed with a regional focus. There is a clear case for strengthening regional absorption capability, re-emphasising the centrality of innovation support as a key focus for expenditure and encouraging transfer of learning opportunities concerning the management of regional innovation policy from strong to less favoured regional innovation systems. This is especially important regarding innovation support for SMEs.

A number of policy challenges must be faced in preparing for future improvements to regional innovation policy. First, there is the question of “*policy learning*” which is two-dimensional: ensuring that regional bodies understand their own strengths and weaknesses as sites for promoting innovation; and comparing that situation with other regions, learning from their experiences, and adjusting lessons learned back to the context of the learning region. Second, the question of policy communication and coordination within the region, or the formation of regional “*policy networks*” is important for improving intra-regional policy coordination to support innovation. Bringing universities and other normally external bodies into such policy network arrangements is desirable. A third challenge may be called building “*policy bridges*”, meaning encouraging, through use of incentives, the graduation of firms from stagnating or declining sectors into those with growth prospects, without making these bridges impossible by trying to leapfrog into wholly new, perhaps high-tech industries. Finally, regions need to develop “*policy consensus*” about action lines agreed by all the major regional stakeholders regarding the appropriate future innovation strategy to be pursued. This should then be monitored, evaluated and adjusted in line with changing policy conditions and evolving policy goals.

For future policy we would wish to distinguish innovation policy from technology policy. One of the strong findings of our research is that, for firms, innovation is intimately tied to issues of competitiveness and is to be understood, in consequence in relation to finance, quality and skills issues as well as being inextricable from social, political and cultural relationships. All firms recognise this and have communicated it to us, but small firms are mainly left out of the innovation support picture, while few medium-sized firms make regular use of the support infrastructure, larger firms being the main beneficiaries. Some EU initiatives such as RITTs and RIS recognise this and bring together all the actors of consequence in a region to build a regional culture of receptivity to innovation. We would urge this approach on all regions, especially the less favoured, but add that there must be funding mechanisms, via regional policy, to enable projects to be implemented.

Less favoured regions of the many kinds we have identified should evolve towards a more systemic approach based on the concept of interactive innovation, emulating but not copying the condition enjoyed by more developed regional economies. Interactive

learning and adapting of appropriate experiences from elsewhere should be facilitated in pursuing this aim. Equally, broader aspects of innovation, concerning firm organisation, management competence, skills development, quality management and finance for innovation must be addressed, particularly for SMEs. In other words a regionally integrated innovation policy is now required, linking SMEs, not necessarily excluding large firms, but also including regional and relevant national and even international support organizations. A Regional Innovation Strategy at EU level is needed to express consensus and guide action towards achievable innovation goals.

Innovation should be at the heart of regional economic development policy, complementing and gradually displacing an older tradition of regional development policy as concerning investment in “hard” infrastructures with one more attuned to the promotion of “soft” infrastructures at regional level. Part of this process involves learning from elsewhere as well as understanding internal needs alone. By listening to the difficulties firms have, such as - insufficient management time to think about innovation - it may be deemed more valuable to subsidise the appointment of a graduate “innovation assistant” to deal with the problem than to try to teach “an old dog new tricks”. If universities are not committed to encouraging spin-off firms, perhaps, as in the Basque Country, technological centres can take on such a function. There is a great need to improve transparency concerning services that are on offer for regional firms who constantly find it hard to identify a route towards help regarding finance, information, technology and partners with respect to innovation.

Innovation organizations, understandably, concentrate their efforts on receptive firms but they should be required to place effort in assisting “slow learners” as well as “fast trackers”. Moreover, our evidence shows that SMEs may benefit from being encouraged to form self-managing networks through which they can engage in informal know-how trading, benchmarking and, collectively, identification of possible innovation projects of generic value. Such networks, supported by regional innovation agencies, should be in a position to bid for *Structural Funds* to co-fund joint strategies and implement their findings as appropriate. Such projects may well be broader than mere technology transfer, involving organization, marketing and skills-development as adjuncts to innovation. Universities and other knowledge generation and diffusion agencies should be encouraged to play a key rôle in such networks along with firms.

Already existing and important EU regional economic development resources like the Structural Funds can be a main vehicle for promoting nationally and regionally co-funded promotion of systemic regional innovation in less favoured regions. Other, experimental approaches like RITTs and RIS could be “mainstreamed” usefully into Single Programming Documents which are the means for realising development through approved projects. SMEs, working in networks, supported by innovation organizations should be main recipients of such funding insofar as innovation is the focus. Innovation itself should be more broadly defined to capture firm-relevant dimensions of the process. This, we believe, is a viable approach to designing regional innovation systems for the future.