

REGIONAL SECTORAL SUPPORT: A REVIEW OF THE CONSTRUCTION INDUSTRY, SMES AND REGIONAL INNOVATION STRATEGIES ACROSS EUROPE

James DICK¹ and David PAYNE²

¹ *Business Enterprise Services in Europe, 5, Clipstone Road, Hounslow TW3 3BS, London, United Kingdom
E-mail: jamesd2020@btinternet.com*

² *VTT Technical Research Centre of Finland, VTT Building & Transport, P.O. Box 1803, FIN-02044 VTT, Finland
E-mail: david.payne@vtt.fi*

ABSTRACT. The performance of the EU construction industry in total makes a major impact on the European Community's economy, particularly on capital formation and employment. Small and Micro Enterprises account for 97% of businesses across the construction sector in the EU, a profile broadly reflected in the individual national and regional business base of members. This paper reviews the state of regional support for innovation and technology transfer in the Small Medium and Micro-sized Enterprises (SME) sector of the Construction industry in the European Community. Results show that at the regional level, where most construction SMEs operate, there is a marked absence of focus on construction in either innovation support initiatives or business development services. Data on the construction industry at national and regional levels across Europe is not available in sufficient quality or detail for strategic decisions concerning this economically significant sector.

KEYWORDS: Construction; Sector; Innovation; Europe; Regional

1. INTRODUCTION

The EU Construction Industry is differentiated by its structural characteristics from most other sectors. 93% of its 2.37 million enterprises are "micro" businesses. The smaller enterprises (97% of the total) are widely dispersed geographically, while the industry as a whole is sub-divided into numerous trades and specialisms. A recent Innovation Project of the European Commission's 5th Framework Programme for Research has been studying the most appropriate ways to support innovation in SMEs of the construction sector - a sector, which although highly significant for Europe's economy and growth, has been little regarded and whose innovation performance is questioned.

The CONSTRINNONET Project (2001-2004)

[1] tried to understand the mechanism behind successful innovation and to examine ways to improve supporting measures for SMEs of the sector across Europe. The Project comprised of a consortium of partners from 7 states in Europe and included research institutes, universities and private companies with experience in the construction sector and SME issues.

As part of this work, a European-wide study on the regional support for construction SMEs was undertaken. The objective of the study was to identify issues, solutions and transferable models (learning) relevant to the construction industry drawn from documented experience of a range of activities in countries and regions which have been involved in the regional innovation and technology transfer strategies programme. This paper now presents some findings from this study.

2. STUDY APPROACH

The methodology consisted of field research and extensive desk-based research of published documents and reports, including direct contact with regional actors in the principle regional innovation networks of Europe; specifically these were: the Innovating Regions in Europe (IRE) Network, the Innovation Relay Centre (IRC) Network and the Business Innovation Centre (BIC) Network. Reports on outcomes of the regional innovation strategies programme (RIS, RIS +, Innovative Actions) relating to more than 100 regions were examined. The published EU innovation policy/strategy statements and support programmes were consulted and the national/regional policy and support initiatives were studied with reference to the construction sector.

3. TERMINOLOGY

The following definitions and terminology have been adopted for the purpose of this study:

SME: the category of SME includes micro, small and medium-sized enterprises and is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding € 50 million, and/or an annual balance sheet total not exceeding € 43 million [4]. Within this category: a micro enterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed € 2m; a *small enterprise* is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed € 10m.

Construction Sector. the report is based on a broad definition of the industry, where references to the construction sector embrace not only site preparation, building of complete constructions or parts thereof, the execution of civil engineering works, building installation and building completion [5], - but also all subcontracting trades, materials supply, profes-

sional design, engineering, and other services etc. [2].

Regions: references to regions mean in general, areas defined according to the Nomenclature of Territorial Units for Statistics (NUTS) classifications, but also conforming to established administrative boundaries. RIS and RITTS Projects are concerned with innovation primarily in NUTS 2 & 3 regions, where populations are: 800 000 - 3 million (NUTS 2), and 150 000 - 800 000 (NUTS 3); 3 - 7 million is covered by NUTS 1.

RIS-RITTS: Regional Innovation Strategies (Objective 1 & 2 areas), Regional Innovation & Technology Transfer Strategies (Objective 3 areas). EU funded programmes for raising regional performance in innovation and competitiveness particularly aimed at SMEs. The methodology rests on a tested "bottom-up approach" to bringing the capability of regional innovation supply infrastructure into alignment with the identified innovation needs of SMEs. Since 1994, 120 regions have implemented projects. *RIS+* are Regional Innovation Strategies under the European Regional Development Fund Innovative Actions.

The Partnership: the CONSTRINNONET Project from partner countries: Belgium, Finland, France, Greece, Lithuania, Spain, United Kingdom.

EIS: European Innovation Scoreboard

EU 7: see above - the Partnership

EU 15: Member states of the European Union: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

EU 25: European Union from 1 May 2004: EU 15 plus Cyprus, Czech Republic, Estonia, Latvia, Hungary, Lithuania, Malta, Poland, Slovakia, Slovenia.

IRE Innovating Regions in Europe. *IRE Network* is a network of more than 200 regions involved with RIS-RITTS and associated innovation projects. The *Central Unit* is the network secretariat charged with animating the

network. Funded by DG Enterprise Innovation Networks Unit.

4. EU CONSTRUCTION INDUSTRY PROFILE

Considering the performance of the construction industry in the EU-15, it accounts for nearly 10 % of Community GDP, nearly 50% of gross fixed capital formation and it provides direct and indirect employment for approximately 26m workers [3]. The structure of the industry can be appreciated by considering the distribution of private contractors by size and output. Taking the situation in the UK as an example, Table 1 presents the size and output structure, based on statistics for 2002 from the UK Small Business Service.

In addition, the industry is divided between main contractors and sub-contractors, which in the UK, results in a ratio of about 1:3 between main contractors and the more than 23 different trades of sub-contractor. In this context, 48% of the output is accounted for by 0.3% of the enterprises and 27% of the workforce. A huge efficiency and productivity gap exists between the large market leader companies and the SMEs. Of the SMEs, “micro” firms account for nearly 98% of the business base, 58% of the employment but only 37% of the output.

Like-with-like or directly comparable analysis was not possible for other countries, either of the Partnership or the EU 15. But on the grounds that 93% of the firms in the EU qualify as “micro”, it seems reasonable to assume that similar profiles obtain elsewhere, not least in the so-called “Big Five” members, (Germany, United Kingdom, France, Italy and Spain).

The smallest firms are not easy to track. Their numbers are large and they tend not to be represented - in the sense of belonging to a trade or professional association except where that may be mandatory, e.g. membership of a chamber of commerce in Germany.

The aggregate performance and structure of the EU construction industry (above) mask wide variations in the national industry outputs of member states, and their ranking with regard to the national investment in innovation. Table 2 presents comparative economic performance data, set in the context of national ranking on the Cordis Innovation Scoreboard (EIS). Except for Greece and Lithuania, the figures are based on data sources from Euroconstruct 2002, the European Construction Industry Federation (FIEC) and the Cordis EIS [8].

Whilst it may be in order to infer that the higher the national EIS ranking, the more likely the construction industry to be innovative and exert influence on the diffusion of in-

Table 1. Distribution of UK Private Contractors in 2002 by Size Classification and Output

Size Interval (no. of employees)	Category	Size (%)	Employment (%)	Output (%)
0 - 4	Micro	95.11	50.2	36.7
5 - 9		2.62	7.6	
10 - 19	Small	1.36	7.7	15.6
20 - 49		0.63	7.9	
50 - 99	Medium	0.16	4.5	21.0
100 - 199		0.07	3.7	
200 - 249		0.01	1.0	
250 - .	Large	0.04	17.4	26.7

* the sum of public and business R&D expenditures expressed as % GDP

Table 2. European Countries' Construction Output and Innovation Performance

Country	National GDP 2002 (€bn)	Construction Industry Output			EU/National Innovation Indicators (using R&D expenditure)		
		2002 (€bn)	2002 (% GDP)	% ± previous year		Scoreboard (2.1 + 2.2)*	% GDP if different
				2002 estimate (%)	2003 forecast (%)		
Sweden	255.9	18.3	7.1	0.8	2.6	4.27	
Finland	139.7	19.2	13.7	(0.6)	0.5	3.49	3.5
Germany	2110.4	196.4	9.3	(5.5)	(2.5)	2.49	2.5
Denmark	183.8	18.7	10.2	(2.1)	(1.2)	2.41	2.4
France	1522.8	149.6	9.8	(0.8)	(0.7)	2.20	
Belgium	259.9	23.2	8.9	(4.0)	(1.5)	2.17	
Netherlands	444.6	48.7	10.9	(1.1)	(2.4)	1.94	
UK	1659.0	132.9	8.0	8.1	4.4	1.84	1.24
Austria	216.8	26.1	12.0	(0.2)	1.2	1.78	2.19
Luxembourg	n/a	n/a	n/a	n/a	n/a	1.71	
Ireland	129.3	21.5	16.6	(3.5)	(5.4)	1.24	
Italy	1258.3	135.5	10.8	2.3	1.7	1.10	
Spain	696.0	120.5	17.3	4.6	3.8	0.96	0.95
Portugal	129.3	22.7	17.5	(1.6)	(2.2)	0.84	0.93
Greece	141.3	10.5	7.4	n/a	n/a	0.67	
Lithuania	14.7	0.86	5.9	n/a	n/a	0.69	

* the sum of public and business R&D expenditures expressed as % GDP

novation culture and good practice, the rankings cannot be assumed to reflect national or regional or even industry policy towards innovation support for construction SMEs located in sub-regional districts and sectors. In general, countries that do well on the EIS tend to do well in all four manufacturing sectors. The reason for this effect is unknown but is explained by there being a faster rate of diffusion and adoption of new ideas in countries with innovative high and medium-high technology sectors. Some countries also show high innovation performances in medium-low technology sectors.

5. REGIONAL INNOVATION PERFORMANCE AND RESEARCH

Although disaggregation of data in Table 2, to the regional level is not available, the EIS does use a broadly drawn methodology for

measuring regional innovation performance. The calculation of a "Regional Summary Innovation Index" establishes a country mean and a regional index of performance against the mean. In most countries, less than one third of the regions perform above the country mean - confirming that national innovation capabilities tend to be concentrated in a few regions. The regions with leading innovation performance in each of the countries of the EU 7, are shown in Table 3.

It is important to understand how the support for innovation for construction SMEs at national level (where it exists) in the EU, translates into support in the regions, where most SMEs operate. But research is impeded by lack of, or difficulty in accessing relevant or like-with-like information either among the member states or from relevant industry and innovation units of the EC.

There appears to be no published research into the innovation or knowledge transfer

Table 3. Leading Innovation Regions in EU 7

Country	No. of Regions	Leading regions
Belgium	3	Brussels, Vlaams Gewest, Région Wallonne
Finland	6	Uusimaa (suuralue), Etelä-Suomi, Pohjois-Suomi
France	23	Île de France, Midi-Pyrénées, Rhône-Alpes
Greece	13	Attiki, Kentriki Makedonia, Voreio Aigaio
Spain	18	Comunidad De Madrid, País Vasco, Comunidad Foral De Navarra
United Kingdom	12	South East, Eastern, South West
Lithuania	10	n/a

needs of construction SMEs based on widespread direct contact with owner/managers. It seems likely, therefore, in view of the structure of the sector, as noted above, that the only voices likely to be heard articulating their needs come mainly from within the narrow band of larger enterprises (the 0.3%), or from associations whose managers have the time and resources for industry, government and EU networking – which hardly qualifies as a “bottom up” expression of needs and priorities where the “micro” majority is concerned.

Extrapolation from known information to create an assumptive regional profile would be an alternative but risky solution. The best currently available source of information on regional innovation is RIS-RITTS, which is elaborated further in the next section.

6. REGIONAL INNOVATION STRATEGIES

Starting in 1994, RIS-RITTS has aimed at mobilising the innovation potential of a region by systematic research, analysis and action focusing on SMEs’ innovation needs and demanded support for the transfer of knowledge, technology, expertise and best practice. The ultimate objective is to drive up regional competitiveness in the new, global economy.

120 regions have participated and are now

linked in a dynamic network spreading across Europe. The Innovating Regions in Europe Network (IRE) funded by Enterprise DG and animated from Luxembourg, delivers a broad range of administrative and partnership services in support of sustaining the innovation initiatives in the regions which have completed the projects. The IRE online library and archive are rich sources of methodology and shared experience from ten years of delivering innovation support to SMEs [6].

Studies of RIS projects illustrate how regional agencies engage with SMEs to promote innovation. But in spite of the economic significance of the construction industry and the innovation capability of the centres of RTD and industry leaders in the sector, the industry does not feature in regional innovation strategies. Of more than 100 Project results from RIS-RITTS and from the RIS+ Innovative Actions scanned for this research, construction was the main theme in only one, the Italian region of Umbria (which is dealt with in section 6).

The following case in Figure 1, illustrates how construction may be identified as a major component of regional economy in a ‘SWOT’ or economic analysis but still be ignored in the subsequent Innovation Action Plan. The case is based on an extract from an actual report from the Balearic Islands (2000-2002).

EXTRACT FROM RIS PROJECT REPORT

Business Sector

The business sector consists substantially of small or very small companies, the major part of the business activity being in the services sector. More than 90% of the companies surveyed have no more than 5 employees, and in only 74 companies, in 1998, were there more than 200 employees, of which 64 were in the services sector, 4 in construction and only 6 -in all the Islands- in industry and energy.

Construction Sector

Construction has a significant specific weight in the economy, representing 9.12% of the total economy and with an employment rate of 14.12% in 1999. After tourism, this sector continues to be the driving force of the economy, with a growth rate of 17.40% in 1999, closely linked to the evolution of tourism. However, it has led to problems of an environmental kind, due in part to property speculation and the recession in agriculture. In the last few years, construction activity has been seen to be stimulated by the need to enlarge tourism supply and the demands for modernisation in equipping public and transport infrastructures ... in technological terms, there are great opportunities for improvement for companies, particularly in relation to specialist construction methods in restoring buildings.

The building materials sector specialises in cement, ceramic and metal transformations. Acquiring products and processes that respect the environment is an area of great interest to the sector.

Construction and Urbanism

There were sectoral (discussion) tables on tourism, the environment, information society, agriculture and food, construction and urbanism, leather, and fashion, and costume jewellery sectors. Construction and Urbanism noted:

- *Incorporation of detailed specifications in projects so that the architect co-operates with the manufacturer of the building materials and with the constructor who finally uses them in his work.*
- *Limitation on work in quarries and paying attention to tipping refuse as measures that endeavour to halt the degenerative processes of the environment.*
- *Paying the maximum attention to design in order to incorporate aspects such as the durability of materials, respect for the environment, prefabrication and taking into account the aspects that facilitate renovation, modernisation and an eventual change of use, and the use of non-conventional structural materials*

OBSERVATION

In spite of this, the project team did not include measures to support innovation in the construction sector in the final report and action plan. Further scrutiny of the report and action plan by an international panel of experts did not mention the construction sector in their recommendations.

Figure 1. Case of Construction Sector presence and absence in Regional Innovation Strategy

There are many innovation-linked issues addressed by RIS-RITTS e.g. *Clustering, Financing Innovation, Fostering Innovation Capacity, Benchmarking, Technology and Knowledge Transfer, Technology Centres*. RIS-RITTS is not a single sector-specific programme. But its interventions are intended inter alia to maximise the innovation potential of regional key sectors. In this respect, construction appears to be missing out on the regional innovation debate, networking and collaboration. The reasons appear to be a mixture of miscon-

ception and inertia by regional representatives on both sides, for example:

- Regional agencies don't recognise Construction as a sector because of the local proliferation of micro firms.
- The economic contribution of Construction is taken for granted – lacking analysis, it attracts no regional or local awareness e.g. *Balearic Islands* case.
- Construction is not regarded as an added-value target for innovation strategies or support.

- SMEs tend to be the “construction interface” with local organisations and the community. Poor public perception or experience of the trade locally influences policy regionally e.g. *South London RITTS*.
- The regional branches of trade and professional associations do not do enough to raise the profile of the industry in the regions; and have not been proactive in scoping and joining the regional innovation projects and initiatives e.g. *Region of Umbria*.

Many documented regional innovation profiles, (whose primary purpose is to exemplify knowledge and technology transfer), provide further evidence of construction’s “market failure” to participate in regional innovation and development initiatives.

7. REGIONAL INNOVATION AND CONSTRUCTION

Within the data examined for this study, there was just one example where construction was the main theme in a regional level innovation project: the Umbrian region. The construction industry in the Italian region of Umbria was regarded as neither forward-look-

ing or innovative by regional development managers. It took an earthquake to bring construction, university research and economic regeneration together to produce a blueprint and pilot project for the future shape of living and workspace design. The case shown in Figure 2 below, illustrates the insight gained and the consequence of this initiative.

There are clearly other regionally based initiatives in Europe endeavouring to support innovation in the construction industry although not a part of the RIS/RITTS or IRE initiatives. However, these appear to be very few in number and some may be service supply-side driven rather than industry innovation needs based. The former Centrex organisation in the Aquitaine region of France and the Centre for Construction Innovation (CCI), in Manchester, UK are two positive cases. The organisation of construction RTD at national level may be open to question [7], but the CCI appears to be a catalyst in the region’s current development agenda for construction revitalisation.

National initiatives can sometimes also translate into meaningful support for change (and innovation) at regional level. The *Constructing Excellence* initiative in the UK [9],

Pilot Project Issues raised
<ul style="list-style-type: none"> • New ways of organizing work e.g. teleworking (58% of people under 40 said they would prefer to work at home). • Life cycle cost analysis (LCCA). • Housing comfort (amount of light, internal control systems of temperature, use of environmental friendly material) • Energy and water-saving systems (users willing to pay 10-20% more on construction to reduce manage costs). • New technology and smart-houses. • Management cost/maintenance estimation. • Design of houses to reflect modern lifestyle
Outcome
<p>The region authority of Umbria viewed the findings as important enough to be incorporated in the regulations for housing and building. Local housing associations also endorsed the new design concepts.</p>

Figure 2. New Concepts for Competitive Buildings - Region of Umbria

describes a methodology developed for the construction industry which is successfully bridging the knowledge gap between research and technology development (RTD) and day-to-day good practice issues and problem solving of groups of small and micro enterprises at sub-regional/local levels. However, such initiatives are not necessarily linked to structured regional programmes for promoting innovation and competitiveness.

8. CONCLUSIONS

Regional sector-specific innovation support for Construction SMEs across the EU is not well documented and where it exists must be presumed to be an exception rather than part of a structured programme for the promotion of innovation at regional/local levels.

Construction SMEs have been missing out on regional initiatives for increasing the local innovation capability. The key RIS-RITTS programme has routinely ignored the construction sector in most of the 120 projects implemented since 1994.

Some successful models for effective knowledge transfer and best practice examples for local small contractors have been developed in the UK and France. A mechanism for EU networking of such methodologies to other countries and regions would aid dissemination.

Development of a uniform set of key performance indicators and statistical measures for reporting and comparing construction outputs in members states - with particular reference to regional and SME activity - is needed.

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SANTRAUKA

REGIONINĖ PARAMA SEKTORIAMS: EUROPOS STATYBOS PRAMONĖS, MVĮ IR REGIONINIŲ INOVACIJŲ STRATEGIJŲ APŽVALGA

James DICK, David PAYNE

Bendras ES statybos pramonės rezultatyvumas daro reikšmingą poveikį Europos Bendrijos ekonomikai, ypač kapitalo formavimui ir užimtumui. Mažos ir labai mažos įmonės sudaro 97 % įmonių, veikiančių ES statybos sektoriuje, ir tai pateikiama nacionalinėse ir regioninėse valstybių narių verslo bazėse. Šiame darbe apžvelgiama, kokia yra situacija, susijusi su regionine parama inovacijoms bei technologijų perdavimu, mažų, vidutinių ir labai mažų įmonių (MVĮ), plėtojančių statybos verslą Europos Bendrijoje, sektoriuje. Rezultatai rodo, kad regioniniu lygmeniu, kur veikia daugiausia statybos MVĮ, labai trūksta dėmesio statybai tose srityse, kurios susijusios su inovacijų paramos iniciatyvomis bei verslo plėtros paslaugomis. Duomenys apie statybos pramonę nacionaliniu ir regioniniu lygmenimis visoje Europoje nėra geros kokybės ar detalumo, kad jais būtų galima remtis priimant strateginius sprendimus, susijusius su šiuo ekonomiškai svarbiu sektoriumi.