INNOVATION AND THE OBJECTIVE 1 PROGRAMME IN WALES: LESSONS FOR THE CONVERGENCE FUND

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INTRODUCTION

- This short paper will examine the impact of European Structural Funding on the development of innovation within the West Wales and the Valleys, a NUTS II region within Wales. In 1999, this region was awarded Objective 1 status by the European Commission for the period 2000-2006.

- This resulted in the region receiving £1.2 billion from the Structural Funds programme, which was to be matched by a further £1.3billion from the public, private and voluntary sectors (Bristow and Blewitt, 2001). Further details of the development of the programme can be found in Boland (2004).

- According to the Single Programming Document which acts as the overall strategy for the Objective 1 programme, there were three overall targets for the programme, namely to raise per capita GDP in the region from 73 per cent to 78 per cent of the UK average; to create around 43,500 net additional jobs; and reduce the number of those who are economically inactive by 35,000 (Welsh Assembly Government, 2000).

- These would be achieved through developing projects under six key priorities, namely:

  - Expanding and developing the SME base
  - Developing innovation and the knowledge-based economy
  - Community economic regeneration
  - Developing people
  - Rural development and the sustainable use of natural resources
  - Strategic infrastructure development.

- This paper focuses on the outcomes from Priority 2, namely "Developing innovation and the knowledge-based economy". Its aim was to improve the competitiveness of the region through the acquisition and use of knowledge and new technologies through five broad objectives, namely

  - creating a culture of innovation
  - diversifying the economic base by growing more technology and knowledge driven firms and improving their links to the knowledge base
  - increasing investment in R&D
  - stimulating increased demand for, and adoption of, ICTs
  - improving environmental performance through the adoption and use of clean technologies.

- As part of this strategy, two measures were established to directly support innovation and R&D within West Wales and the Valleys namely measure 2.3 - support for the development of innovation and R&D; and measure 2.4 - skills for innovation and technology.

Measure 2.3 - Support for the development of innovation and R&D

- The aim of measure 2.3 was to create an environment which supports innovation, R&D and improves Wales' competitiveness in a global market place through developing existing clusters and new R&D potential around higher and further education institutions.

- This would be achieved by supporting commercialisation of the knowledge base and the development of new products, processes and services. It was expected that the final recipients of support under this measure would be companies operating predominantly in high technology sectors.

- The projects to be supported would include the provision of a comprehensive innovation and technology support infrastructure for business, the development of long term R&D capacity in the region and increased competitiveness through improved linkages between the academic base and businesses.

- It would also aim at embedding a culture of innovation throughout the region for all sectors, including those predominantly located in rural areas which do not have a strong history of innovation, and support the development of networks and clusters of technology-based companies.

Measure 2.4 - skills for innovation and technology

- By utilising European Social Fund (ESF) money, this measure would provide financial support towards the running costs for vocational training schemes, guidance and counselling projects, job creation measures and other steps to improve the employability and skills of both employed and unemployed people.

- In this respect, it would enhance skills and boost human potential in research, science, technology and innovation, with the final recipients of this measure being managers, the current and potential workforce of small firms, trainers and commercial managers.

- The type of projects to be funded under this programme could include the interchange of personnel between academic and research institutions and business, graduate retention programmes; high-level skills training for employees of growth companies to support research and development.

EXPENDITURE ON INNOVATION ACTIVITIES.

- Utilising information that is publicly available from the Welsh European Funding Office (WEFO), the authors have analysed the expenditure of each project awarded funds to develop innovation under measures 2.3 and 2.4.

- As table 1 shows, £130,904,284 of European Structural Funds were awarded to 34 different Welsh organisations, predominantly in the public sector, during the period 2000-2006. In total, 105 projects were funded with an overall value of £283,682,925. Capital and revenue projects accounted for 81.9 per cent of those

funded under this programme, with only 18.1 per cent being allocated to skills and training.

Higher education sector

- The main beneficiary from the innovation strand of Objective 1 funding has been the university sector in Wales, which has received £65,158,394 of aid for 59 projects with a collective value of £138,739,942. This equates to 49.8 per cent of all European Structural funding awarded for innovation projects within the Objective 1 area of Wales. Two universities, Swansea University (£23,356,243) and the University of Wales Bangor (£14,509,643), accounted for over 58.1 per cent of the funding for innovation by higher education in the Objective 1 region of Wales.

- Both universities have managed a total of 32 projects with an overall value of £81,870,192. Swansea University has largely focused on the development of major research infrastructure projects such as the Institute of Life Science (ILS) and the Institute of Advanced Communications (IAC). For example, the ILS is a £17,009,000 project is a partnership between Swansea University, the Welsh Assembly Government and the Swansea NHS Health Trust which aims to co-locate a number of life-science related research centres of excellence in one high-quality multi disciplinary research environment, as well as developing an appropriate business support structure and an incubator for micro-companies.

- The University of Wales Bangor has concentrated focused on developing its core areas of expertise such as agrifood, optoelectronics, software, marine technologies and chemistry. It has also hosted two major training projects, worth a total of £9,829,582, to enable individuals to develop the skills necessary to contribute to research as professionals.

- Cardiff University, geographically located outside the Objective 1 region, was awarded grants of £13,558,229 for five projects with a combined value of £26,670,126. These include funding for the £10,840,544 Geo-environmental Science Park in Neath-Port Talbot region and the development of the £15,358,024 Supporting Innovation Product Engineering and Responsive Manufacture (SUPERMAN) project which assists SMEs in applying innovative and advanced manufacturing technology.

- The University of Wales Aberystwyth has drawn down funding of £4,106,452 for one project only, namely the Centre of Excellence for Visualisation in Wales with a total cost of £9,897,498. This provides an innovative, world-class virtual reality environment which will be used by SMEs across the Objective 1 region to enhance their competitiveness and profitability through solving complex problems and create new products through imaging technology.

- The new university sector within the Objective 1 region, comprising of Swansea Metropolitan University and the University of Glamorgan, has been awarded £7,222,982 of grants to predominantly support training projects, including a programme for upskilling ICT Business Advisers to full accreditation against Institute of Management's Technology Means Business Standards, and high level

skills training for SMEs in engineering, technology and ICT. No new university located outside the Objective 1 region has successfully applied for project support.

- Further education colleges received only £1,161,937 of grant funding for six projects, all of which were specific education programmes such as training in marine technology or courses in advanced composites manufacturing.

Table 1. Objective 1 innovation project recipients, 2000-2008.

Sponsor Name	Total grant £	Total project cost £
Welsh Assembly Government	49,573,805	105,615,382
Swansea University	23,356,243	53,383,773
Bangor University	14,509,643	28,486,419
Cardiff University	13,558,229	26,670,126
Aberystwyth University	4,106,452	9,897,498
Neath Port Talbot County Borough Council	2,203,811	8,659,119
University of Glamorgan	3,829,547	8,143,653
TWI Ltd	3,206,671	7,157,743
Swansea Institute of Higher Education	3,393,435	7,057,045
Ceredigion County Council	2,319,287	4,381,976
HEFCW	1,670,775	3,481,147
Arena Network	1,530,194	3,185,080
Cyngor Gwynedd Council	1,222,505	2,578,980
Pembrokeshire College	799,348	1,775,894
Bic Eryri	465,755	1,763,321
Pembrokeshire County Council	697,520	1,393,020
The Wales Environment Trust Ltd	618,000	1,315,000
The CADCENTRE (UK) LTD	489,420	1,200,000
Sarvari Research Trust	349,303	999,882
Carmarthenshire Recycling Research Centre Ltd	528,386	977,144
University of Wales Lampeter	389,028	902,393
Pontypridd College	276,758	733,806
Trinity College	345,042	717,888
William Battle Associates	294,740	604,740
The National Botanic Garden of Wales	278,431	520,820
Engineering Education Scheme in Wales	160,183	493,909
Groundwork Bridgend	229,562	433,220
Cyfle Cyf	170,677	352,906
Neath Port Talbot College	30,207	169,000
West Wales ECO Centre	79,250	163,831
City and County of Swansea	52,623	131,211
Royal National Eisteddfod of Wales	59,500	119,500
Gorseinon College	55,624	114,999
Darwin Centre for Biology and Medicine	54,330	102,500
TOTALS	**130,904,284**	**283,682,925**

Source: Authors derived from WEFO databases

Government sector

- The second largest recipient of funds has been the Welsh Assembly Government (WAG), attracting £49,573,805 of grants for 15 projects worth a total of £105,615,382.

- The largest part of this funding has gone towards the construction of a range of new incubator facilities known as Techniums, with buildings constructed across Wales in Swansea, St Asaph, and Bangor at a total project cost to WAG of £49,991,906.

- Overall, the Technium project has attracted European grants to the value of £32,219,636, with the majority of local authority funding for innovation being awarded to two Technium projects in Pembrokeshire and Neath Port Talbot.

- Another key recipient of funding via WAG has been the university sector, albeit for third mission work. For example, the Centres of Excellence for Technology and Industrial Collaboration (CETIC) programme to support academic research groups based in one or more Higher Education Institutes (HEIs) in Wales was awarded £3,563,000 to assist in areas of collaborative research, technology and knowledge transfer, technical problem solving and testing for small firms.

- The Assembly Government also funded the Knowledge Exploitation Fund's Strategy for innovation to support all Further and Higher Education institutions in the Objective 1 area to commercialise and transfer their knowledge and technological expertise to small firms. This attracted an overall grant of £14,464,298 for a total project cost of £29,367,310.

- Only 17.9 per cent of WAG's innovation programmes were targeted directly at supporting the private sector. These include the SMART R&D programme - which received £1,998,175 of grant funding to encourage and support SMEs to undertake innovative research and technological development with commercial potential - and the Technology Exploitation Programme, which was awarded £6,001,107 to provide grants to encourage the more widespread use of technology and the provision of appropriate technology services and expertise and introduce them to the company.

Private sector

- Given the perceived importance of the private sector in developing innovation in Wales, only 5 per cent of the innovation funds (or £6,515,166) has gone to seven projects developed by the private sector with a total value of £14,888,028.

- None of the projects were funding innovation development directly within the businesses that were awarded the funding. Instead, the grants were financing innovation support projects such as the establishment of a Non Destructive Testing (NDT) Validation Centre for industries using pressure equipment; a strategic and co-ordinated programme to encourage business to improve their environmental performance; and mentoring programmes for technology-based businesses.

- Charities and not for profit organisations attracted only 1.5 per cent of the total grants awarded.

OUTPUTS FROM THE INNOVATION MEASURES

- The outputs from the two measures of the Objective 1 programme directly related to innovation are examined in detail in table 2. It shows that the majority of the activities to be undertaken by the programme have been met in terms of the companies assisted by the projects under measures 2.3 and 2.4.

- However, there has been a considerable shortfall in the number of employees helped through the programme. To date, 6,950 individuals (or 46 per cent of the programme target) have been assisted, well below the forecasted total of 8,112 (or 54 per cent) of the target by December 31st 2008.

- In terms of results, the target for the number of gross new jobs was not reached during the lifetime of the programme for measures 2.3 and 2.4. Even allowing for gross new indirect jobs created by participating companies, only 4,870 jobs were created as opposed to 8,000 (61% of the target).

- In terms of new jobs in high technology sectors, the programme had relatively more success, reaching 66% of the target as opposed to new jobs in other sectors.

- Whilst the overall target related to the number of safeguarded jobs has been successfully achieved, only 121 jobs out of a target of 600 have been safeguarded through ESF support up to December 31st 2008.

- With regard to gross new companies in high-technology sectors, a target of 2,000 was established for the programme, although only 431 (or 22 per cent of the programme target) have been created at the end of 2008.

- Given the comment from Huggins et al. (2008) that Wales should prioritise knowledge-driven entrepreneurship, the efforts to date have been unsuccessful and there needs to be a re-examination of whether the programmes being developed are appropriate.

- Therefore, the programme has failed to achieve some its key targets in raising the innovation potential of West Wales and the Valleys. Certainly, it can be argued that some of the capital projects, such as the Technium programmes, are long term investments that will help develop a stronger innovation infrastructure linking university and industry. That may well be the case, but given that a key focus of the structural funds programme is the creation of higher quality jobs within the poorest areas of Wales, the failure to achieve the jobs target should concern policymakers.

Table 2: Outputs from Priority 2 Measures 3/4, Objective 1 programme, 2000-2008

Measure	Output	Programme Complement (PC) Target (2000-06)	Outputs at 31/12/2008			
			Forecast		Actual	
			No	% of PC Target	No	% of PC Target
ACTIVITIES						
2.4	**No of employees helped**	**15,000**	**8,112**	**54%**	**6,950**	**46%**
	Companies assisted *of which:*	**5,000**	**17,503**	**100+%**	**20,424**	**100+%**
2.3	Companies receiving advice on innovation and R&D	2,000	13,894	100+%	16,964	100+%
2.4	No of companies helped	3,000	3,609	100+%	3,460	100+%
RESULTS						
	Gross new jobs *of which:*	**8,000**	**6,630**	**83%**	**4,870**	**61%**
2.3	Gross new jobs	5,000	2,399	48%	1,711	34%
2.3	Gross new indirect jobs	-	1,657	-	1,167	-
2.3	Gross new jobs in high-tech sectors	3,000	2,574	86%	1,992	66%
	Gross safeguarded jobs *of which:*	**7,830**	**12,631**	**100+%**	**11,979**	**100+%**
2.3	Gross new jobs safeguarded	7,230	11,861	100+%	11,858	100+%
2.4	Gross jobs safeguarded through ESF support	600	770	100+%	121	20%
2.3	**Gross new companies in high-tech sectors**	**2,000**	**469**	**23%**	**431**	**22%**

Source: Authors derived from WEFO information

- In addition, the failure of the programme in reaching its human capital targets is extremely worrying. Whether this is a result of inadequate learning initiatives is uncertain but any regional innovation system cannot operate effectively without the necessary quality of people who are developing innovation within the public and private sectors.

- This issue was recognised in the Mid Term Review of the programme (CRG Research, 2003) which stated that priority 2, measure 4 appears to have been used to fund generic high-level training which has little formal link to the research and development base. According to the report, the very low numbers of managers and

employees who actually received training in innovation suggests that funding was not used to provide training which is supportive of the intention of the measure. In addition to concerns over training, the review also highlighted concerns over a number of the outputs for both measures 3 and 4, especially in terms of employment creation and the number of gross new high technology companies.

- Surprisingly, no action was taken to address this, as evidenced by the final output data in Table 2. Increasing the capacity of businesses to develop their own capability in managing innovation successfully is a major element of successful regional economies. The focus on achieving business support targets rather than improving the quantity and quality of innovation employment could affect the capacity of West Wales and the Valleys to successfully improve its innovation potential during the future.

CONCLUSIONS

- This paper has examined the development of innovation within Wales through the utilisation of European Structural Funding within West Wales and the Valleys. The findings suggest that there is no real evidence of a step-change in innovation capacity and performance within Wales during 2000-2006.

- Whilst £284 million of innovation support projects have been supported, the key programme targets in terms of new jobs, upskilling and new business creation were not achieved. This reflects the failure to address the disconnectivity between public sector funding and private sector interests. It may also be the result of over-governance of the regional innovation system, although further research is required to examine this.

- For policymakers, one of the key lessons to be learnt from the development of innovation potential within the previous Objective 1 programme is that there needs to be far greater engagement with the private sector in any future innovation strategy for the new Convergence funds that are in place from 2007-2013.

- Whilst important, creating a greater knowledge-base within universities will not, in itself, enable the poorer areas of Wales to take a jump in innovation performance and there is an urgent need for the new programme of European funding to engage far more with business to improve its R&D performance and the overall innovation potential within Wales.

- Part of this may approach may require the creation of better incentives to encourage industry to invest in the research base in Wales to stimulate higher education institutions to respond to the needs of the industrial and service sectors in the interest of wealth creation and employment in Wales.

- However, Huggins et al (2008) have argued that the apparent demand from the business community to interact and make use of the knowledge-based services of the higher education sector is weak. Therefore, there must be a greater effort in ensuring that programmes focus on building both research capacity in both the academic and private sectors whilst enabling better relationships between the two sectors.

- The economic development strategy document "A Winning Wales (Welsh Assembly Government, 2005) confirms that it is necessary to "encourage and finance more high calibre research and development with commercial potential and work to increase existing collaboration between universities and colleges and companies in Wales".

- To achieve this, there must be a different approach to supporting innovation and not just repeating the same policy initiatives which have largely failed to attain the targets within the previous round of Objective 1 structural funding. In particular, the various projects funded under Convergence need to work more closely together as part of an innovation system and not operate in isolation or, even worse, in competition, if Wales is to improve its innovation performance over time.

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