

Partners in Development

A Report on Structural Policy in Scotland and Northrhine-Westphalia (Germany),
edited by Scottish Enterprise, Scottish Executive and the Ministry of Economy,
Energy and Transport of the State of Northrhine-Westphalia

January 2002

Contributors

Editorial Team

Russell Simpson (Chair)	Scottish Enterprise
Colin Brown	Scottish Executive
Herbert Jakoby	Ministerium für Wirtschaft und Mittelstand, Energie und Verkehr des Landes Nordrhein-Westfalen
Kirsty Macdonald	Scotland Europa
Wulf Noll	Ministerium für Wirtschaft und Mittelstand, Energie und Verkehr des Landes Nordrhein-Westfalen

Writing Teams

Land Reclamation (p. 6)	Rolf Heyer Andrew Tate	Landesentwicklungsgesellschaft NRW Scottish Enterprise
Clusters (p. 24)	Grant McKenzie Wulf Noll Jörg Meyer-Stamer	Scottish Enterprise Ministerium für Wirtschaft und Mittelstand, Energie und Verkehr des Landes Nordrhein- Westfalen Institut für Entwicklung und Frieden, Duisburg
Sustainable Development (p. 41)	Alexandra Landsberg Pat McHugh	agiplan ProjectManagement GmbH, Mülheim an der Ruhr Scottish Enterprise
Entrepreneurialism & Sustainable Business Start-ups (p. 63)	Angela Copland Ulrich Cichy	Scottish Enterprise Ministerium für Wirtschaft und Mittelstand, Energie und Verkehr des Landes Nordrhein- Westfalen
Structural Funds (p. 75)	Carolyn Sawers Colin Brown Herbert Jakoby	Strathclyde European Partnership Scottish Executive Ministerium für Wirtschaft und Mittelstand, Energie und Verkehr des Landes Nordrhein- Westfalen

FOREWORD

Devolution has brought a new urgency, a new momentum, to the policy process in Scotland. Where we can learn from the experience of others, we should do so. Where, in the process of developing policy, we have experience which we can share with others, we should do so.

It is a top priority for Scottish Ministers to engage constructively throughout the European Union. Scotland has enjoyed good relations with the EU and member states for many years. With the benefits of devolution, we intend to make a step-change in our level of engagement. Our vision is of Scotland, with a strong sense of identity in Europe, as a modern, dynamic country within a powerful member state. The vision, strengthened through devolution, bring us into line with many of the major regional players on the Continent. And it makes it that much easier to enter into dialogue with them.

We have said that:

- Scotland – its people and its businesses – should be completely at ease in Europe.
- We should be learning from the best policy practice wherever it is in Europe.
- We should not simply be taking from others but also contributing to European policy discussions.

This Report is a clear demonstration of how we can further develop our contacts, by extending and deepening our links with regions with similar economic backgrounds and experiences to ourselves. We are delighted to introduce the Report as a good example of the benefits of areas (Scotland and Nordrhein-Westfalen in this case) being open about their respective experience, and learning how similar problems, through different institutional structures, are tackled.

We hope that both regions will be able to make full use of the learning in the Report, and that opportunities arise to share our experience with the candidate countries developing new methods of dealing with similar problems of economic development and financing.



Angus MacKay
Minister for Finance and Local
Government



Jack McConnell
Minister for Education, Europe and
External Affairs

FOREWORD

Employees, business, the State and communities all face ever new demands as a result of ongoing structural change in Nordrhein-Westfalen. Nordrhein-Westfalen has learnt a good deal from other regions in the last forty or so years of dealing with this structural change, but has also been able to present successful solutions.

Nordrhein-Westfalen places great importance on its engagement in the context of the European Union. The Land has for many years enjoyed excellent relationships with the Union, other Member States and other Regions. It is a modern, dynamic, European Land, and it shares this basic position with many other Regions of the European Union, which makes for greater ease in the exchange of experience.

We believe:

- That Europe is profitable for Nordrhein-Westfalen.
- That we should learn from good practice in Europe, wherever it is found.
- That learning is no “one-way street”, but that we also want to contribute our experiences to the development of Europe.

This report demonstrates clearly how we can best use and build on our relationships with Regions which share a similar economic background. We see the report as a good example of how two co-operating regions can gain mutual advantages. It shows how similar problems can be successfully solved against the background of different insitutional arrangements.

We hope that both regions will be able to use the opportunities presented by this report and that opportunities will arise to share our experiences with the candidate countries in Eastern Europe.



Ernst Schwanhold
Minister for Economic Affairs,
Energy and Transport



Hannelore Kraft
Minister for Federal and European
Affairs

“PARTNERS IN DEVELOPMENT”

Introduction

This document is the result of collaborative work between partners in Nordrhein-Westfalen and Scotland in the course of 2001 when it was agreed that an examination into some of the economic development issues surrounding common problems of land reclamation and environmental renewal would be mutually beneficial.

The idea was taken forward by officials from the respective Ministries, working in close partnership with other actors in economic development in each region. The initial concept developed into a project proposal for collaborative work examining four specific themes, with additional consideration of the part played in the economic development process by the Structural Funds. The report, to some extent, tests some of the assumptions we tend to make about the way others do their business; are systems in Nordrhein-Westfalen more geared to long term thinking than in Scotland, and if so, can Scotland learn from that? Are partnership structures in Scotland more fully developed than in Nordrhein-Westfalen, and if so, what can, or should, be transferred?

The result is a project which demonstrates partnership in action, and underlines the benefits of the regions of Europe working together. The diversity of regions within the Member States, even where they face similar problems, leads to different approaches and different solutions. Work such as this allows the regions to learn from each other and grow together.

What is the project?

The project is a comparative, but concise, discussion of four areas of economic development activity:

- Land Reclamation and Environmental Renewal
- Clusters / ‘Competence Fields’
- Sustainable Development and Environmental Technology Industries
- Entrepreneurialism and Sustainable New Business Start-Ups.

An overview is also given of management and policy related to European Structural Funds and their contribution to the success of the four areas.

Particularly interesting is the interweaving of themes. In each of the areas an interdependency of thinking is revealed; the debate in economic development, as in many areas of government, is becoming more dominated by the need to take a holistic “joined up” view of the world. This report is just one example of such intertwining of policy instruments and concepts. The concept of sustainable development, for example, is reflected throughout the report, not just in terms of traditionally defined ecological or environmental sustainability, but equally in terms of the economic sustainability of new firms, of employment, or of communities dependent on the development of new patterns of work. Sustainability is also addressed as the regions contemplate the likely eastward shift of the support from the Structural Funds.

The participants in the project were at pains to ensure that the resultant document is not simply an iteration of different practices. That sort of approach is interesting but tends to end up sitting in bookshelves with no further practical action. It is taken as read that there are similarities in the structural changes faced by each region – significant shifts in the economic and industrial bases, the problems of contaminated sites, slower than desired formation of new enterprises, and so on.

It was accepted that there are inevitably significant areas which are culturally or environmentally fixed, or at least beyond the competence of this study to impact upon – legal and planning frameworks, for example. So the project was much more about seeking positive outcomes for the participating regions and organisations. In seeking to understand each others' systems, the authors of the relevant chapters have noted, and described, differences where that is helpful in terms of contextual understanding. They have quickly moved on, however, to identify very specific areas of policy and practice which can be influenced by joint learning, or where further work is called for.

The project team has identified a number of outcomes of value:

- Joint learning, both in exploring systems in the partner region, and in re-examining systems in the home region
- Opportunities for further collaborative investigation
- Opportunities for influencing policy development at home
- The opportunity to leave a legacy which may be of value to candidate countries developing policies in similar fields.

These outcomes fall into three main categories – an opportunity to re-appraise and debate policy at a relatively conceptual level; an opportunity to investigate specified concrete issues in more detail; and an opportunity to contribute in a concrete and beneficial way to the debate on the future of Europe.

Who has been involved?

The project has been chaired by Scottish Enterprise under the auspices of the Scottish Executive and the Ministerium für Wirtschaft und Mittelstand, Energie und Verkehr des Landes Nordrhein-Westfalen. The writing of the report, and the research involved, has been carried out by staff working in the Scottish Enterprise Network structure, in Strathclyde European Partnership and in a range of organisations in NRW. In most cases, the work has involved visits by members of the writing team to their opposite numbers. The visits have exposed the teams to a range of people and concepts in the host region, where members have participated in site visits, seminars and expert workshops.

So what?

The collaboration has been interesting and the individuals and organisations involved have learnt a great deal which will be of personal value. European Regional Policy encourages the learning and exchange of experience which arises from such collaboration. That in itself is good. Better than good is new thinking, and in its

concentrated way, the report identifies and promotes new thinking, notably in regard to sustainability and the impact of European Commission policy in this sphere. European Structural Funds policy is often the stimulus required to get economic and social development underway, and in doing so, it can also act as a stimulus for the mainstreaming of other policy considerations.

The conclusions from this report suggest that the Funds are effective in these aims – not so much because the Funds are involved in every project – indeed, with increased concentration of resources both geographically and thematically, that would not be possible – but because the application of the Funds has stimulated debate. In this case, one clear message is, as set out above, that the issues of sustainable development can be an integral part of economic development in the future. The chapter on land reclamation is about building more sustainability into planning and development policy. The chapter on clusters and fields of competence suggests that there are as yet untapped opportunities for innovative thinking on sustainable development concepts being a source of economic growth. The chapter on sustainable development and green industry highlights waste management and renewable energy as areas for potential growth. The chapter on small firm formation talks of the need to grow new talent through education, and to sustain that talent in the early years of its business life.

If the Structural Funds are to leave a legacy for the future, then this element of influencing policy thinking must be a central part of that legacy. This project demonstrates in a concentrated way just how that influence can work. It also leaves us to consider how we can best use the legacy of those with long experience, sometimes painful, of economic development and use of the Structural Funds, to contribute to the aim of improved cohesion between existing Member States and candidate countries.

LAND RECLAMATION AND ENVIRONMENTAL RENEWAL

	Nordrhein-Westfalen	Scotland
History	<ul style="list-style-type: none"> ▪ A priority for NRW since the late 70s when structural crisis made instruments necessary that could substitute private capital. 	<ul style="list-style-type: none"> ▪ Primary duty of SDA and Scottish Enterprise since 1970s - role gradually transformed from principal agent to facilitation and partnership with Private Sector.
Organisation	<p>Large number of institutions hinders effective strategic approach to land reclamation and marketing. Integration and lean organisation required.</p>	<ul style="list-style-type: none"> ▪ Predominantly the responsibility of SDA & then Scottish Enterprise Network, in co-operation with other public & private bodies.
Funding	<ul style="list-style-type: none"> ▪ Private. ▪ Objective 2 and other EU-Funding. ▪ Special land budgets. 	<ul style="list-style-type: none"> ▪ Scottish Enterprise Network. ▪ Objective 2 and other EU-Funding. ▪ Specific budgets.
Advantages	<ul style="list-style-type: none"> ▪ High standard of sustainability. 	<ul style="list-style-type: none"> ▪ Very Flexible and integrated with wider economic development goals.

Land Reclamation and Environmental Renewal in NRW

Structural Change in NRW

Since the early 1950's the old industrial regions in Nordrhein-Westfalen have been subject to a fundamental process of transformation. The historical structures of the areas in NRW - namely the "Ruhrgebiet" (Ruhr area), the "Niederrhein" and the "Westmünsterland", but also the "Siegerland" and the "Bergische Land", which were characterised by coal and steel, textile, chemical and linked industries - have been changed through the closure of many of these enterprises.

Since then, the creation of new jobs has been the focus of several political programmes: until 1979 no special public effort had been necessary to recycle disused commercial and industrial land due to strong economic growth which generated sufficient demand for these sites for industrial use or housing estates.

Normally these sites were made available for redevelopment and became part of the local property market again. The previous owners were usually able to redevelop at a reasonable cost, obtain planning permission and were able to lease or sell them to new users.

Where former owners did not want to, or could not proceed in the normal way, the municipalities acquired these areas and put them on the market as part of their industrial regeneration policy. Inherited liabilities ("Altlasten")¹ was not an issue up until the mid 1980s - the term simply did not exist at all. In the Ruhr area a large number of smaller commercial estates can be found, which are located on such former mining areas e.g. the so-called "Zeche Centrum" or the pit "Fröhliche Morgensonne" in Bochum-Wattenscheid. These examples are representative of every city in the Ruhr area, particularly in its central and southern parts.

This process ceased to function in many parts of the "Land" in the 1970s due to the slowdown in economic growth following the oil crisis. More and more areas were not economically developed, remained disused and became 'problem cases' of urban development.

According to an analysis by the KVR (Kommunalverband Ruhrgebiet) in 1979, more than 6000 hectares of disused industrial land were not assigned for any new purposes. However, this could also be regarded positively: 6000 hectares were available for new ideas, for new concepts and for new developments. The results of recent mapping of the Ruhr area revealed that a further 6000 or more hectares of unused land have subsequently become available.

The political reaction to this process was the first 'Ruhr Area Conference' in Castrop-Rauxel in 1979. It became obvious that the usual instruments of urban development and structural change policies were no longer effective and new approaches had to be found. Due to the high density of settlement in NRW, the ensuing debate on urban

¹ "Altlasten" refers to inherited burdens or liabilities, e.g. contamination of the soil and the resulting costs.

development concentrated on the need to "recycle" old sites. One of the most successful instruments was the 1979 decision to establish a "land fund" for the regeneration of disused industrial areas

Planning Policy and Planning Process

One of the most important conditions for the development and re-use of disused industrial land is the existence of a system for the rapid granting of planning permission.²

In particular, analyses and investigations of the Inward Investment successes of Germany's European neighbours, showed that special emphasis is placed on the fact that in these countries (e.g. Great Britain, the Netherlands) it is quicker and easier to get planning permission for industrial re-use. It is likewise always stressed that in those countries large-scale industrial projects in particular can be realised in a quicker, easier and thus more customer –orientated way.

Its hierarchical structure and the need to consider and respect a multiplicity of other fields of law, special conditions and regulations mark the planning law and planning system of the German Federal Republic. It is also defined by the constitutional sovereignty in planning issues of the municipalities.

It is at local planning level that planning permission problems usually arise. This is caused by the number of different laws and regulations that have to be considered when assigning building areas. Good examples of this are regulations governing water, regulations on soil protection for contaminated areas, noise regulation (which aim to protect the resident population against noise from commercial and industrial production), the regulation of "emissions" and the overriding importance of traffic and supply routes.

In the densely settled regions like the Ruhr, planners are confronted with a number of priority users and uses for land which significantly reduces further options. European transport and distribution are dominant features in NRW: from Benelux to the east, from Scandinavia to the south and the southwest. This makes infrastructure improvement necessary. However this is in conflict with recreational and tourism uses in the regions on the fringe of the Ruhr and wider areas. Residential land use sits uneasily with the emissions of productive industry.

In recent years many people have placed a greater premium on their personal living conditions than perhaps they did in the past. There has also been an increase in personal commitment to nature and conservation. People are prepared to take the authorities to court where this type of development is threatened. As a result, courts and case law are a further element which have to be factored in by the planning administration and by local politicians.

² "Planungsrecht".

It is therefore evident that, on the one hand public opinion and pressure groups, and on the other hand the complicated system of special regulations, laws and judgements, make planning in Germany a difficult and lengthy process.

However, in certain cases, the German planning system can facilitate the implementation of important and extensive industrial settlements in short periods of time in comparison with international standards. For example, the conversion of the British air base Wegberg-Wildenrath into a check and test centre for Siemens' rail-mounted vehicles was possible in less than two years. In this instance, as well as clear political will at all levels from the Land to the municipality, of crucial importance was the guarantee of the financing and organisation of the project through a development agency/corporation. The five regional planning authorities came to an agreement that high priority investments will get building permission in six months time.

The same applies to the service, industrial and landscape park ERIN in Castrop Rauxel where the permission to plan was given in less than 15 months after the conditions were set and which included - among other things - the presentation of a strategy for decontamination.

Land Recycling for Consecutive Economic Uses

At the end of the 1970s the usual instruments of urban development policies for the reclamation of disused commercial and industrial sites were no longer sufficient. Instruments had to be developed which permitted the state and therefore the "Land" and its cities and municipalities, to contribute more strongly to the regeneration of disused areas. This political demand was based on the realisation that economic growth in these areas in crisis - at this time predominantly the Ruhr area - was no longer strong enough to solve the problems autonomously. Neither did the municipalities have the necessary authority to regenerate these areas without the assistance of the "Land" nor were the old owners economically interested in such regeneration.

This led to oversupply of properties. The process of growing supply and insufficient demand for available old properties has still not eased - at least at a local and regional level and remains an issue for regeneration policy. At the same time, the need to create spaces for new industrial and commercial development was strengthened through international economic competition.

The Property Funds of the Land NRW

The first objective of public intervention policy was to regenerate disused land. This meant to purchase sites - through the property funds of the Ruhr area and, from 1984 on, NRW - and prepare them for new use. First the old buildings were demolished, then contaminated soil ("Altlasten") was removed and a load-bearing building site was created. The overall control of the two property funds lies within the competence of the Ministry of Urban Development of the regional government. The first objective was to eliminate the shortcomings of urban planning and to open up those sites for new uses. The management of the funds was assigned to the "LEG - Landentwicklungsgesellschaft" NRW. The cities and municipalities were allowed to register those areas in their city which they considered to be suitable for the two

property funds. The evaluation and purchase were made via the LEG as the trustee³ of the Land, whereby the regional government as the trustor⁴ had the decision-making power over the purchase.

Development Planning, because it is so closely linked with physical planning responsibilities, is formally a responsibility of the cities or municipalities. However, it soon became quite clear that many cities and municipalities were not able or willing to undertake regeneration activity on their own behalf. Since 1987 therefore, cities have been able to apply to the Land to put the LEG in charge of the development of land planning, as well as marketing and implementation. This procedure has proved to be reliable.

The priority objectives for the development of disused industrial and commercial sites is wide-ranging and covers landscape parks and sports complexes, classical commercial or service estates, as well as integrated projects with multi-use and locations for technology, science and research.

Working in the Park and the “IBA Emscherpark”

In the 1990s the concept "working in the park" played a particular role in the development of extensive disused areas. The Ministry of Urban Development and the LEG had developed the concept at the end of the 1980s. The aim was to establish, particularly in those areas that were strongly affected by structural changes, locations for high-quality production, technology and service industries. The initiative placed a premium on the quality of architecture and urban construction, integration of the selected areas into the urban structure and on ecological and technical qualities of the development.

Thirteen locations were included in this project. The locations within the Emscher area were then integrated into the project “Emscherraum” at the international construction exhibition “Emscherpark” (Internationale Bauausstellung - IBA), in 1989.

The initiative helped to introduce the former owners of these locations to new ideas on the potential for land to be re-developed for new productive uses. Since the beginning of the 1990s this trend has been strengthened through EU funding which created incentives for developing projects in public-private-partnership.

The projects have, at least partially, allowed some accommodation between the demands of both politicians and the public. The former mining and steel companies have retained responsibility for their sites and have begun to employ workers who were no longer needed in the mining industry in other areas of their company, enabling them to qualify for new occupations.

Common to all the projects in this initiative was the fact that they were planned and designed for a mixture of purposes, including trade, services, technology, recreation

³ Translation of the term “Treuhaender(in)” which means that the agency is charged with the management and preservation of the property which constitutes the trust estate.

⁴ The term “Treugeberin” is the opposite of trustee (see footnote above).

and, partly, housing. The projects were based on experience from modern industrial estates in the USA and Great Britain, and drew on the realisation that the new labour market also requires a high-quality environment. The central idea was that modern and dynamic enterprises would be attracted by projects designed to invigorate those regions and areas that had been strongly affected by structural change. In order to make these areas more resistant to cyclical fluctuations and to stabilise the labour market, small and medium enterprises were increasingly to replace the old structure of large-scale industries.

The IBA Emscherpark has fostered preservation and re-utilisation of existing industrial buildings and also promoted the preservation of industrial heritage. This made it possible to incorporate protection of monuments, sustainable development and a positive image change in projects, as was the case, for example, in the pit and coke production plant “Zollverein” in Essen (now a world cultural heritage site) and the landscape park “Duisburg-North”. Both locations are particularly impressive due to their architecture, their size and the level of preservation of their industrial production plants. These sites have attracted many visitors in recent years.

Business Start-Up and Technology Centres

For many of these projects the integration of technology and business start-up centres was of crucial importance. The promotion of knowledge transfer from research to industry was one of the purposes of these centres. The other chief purpose was that research should orientate itself more towards the requirements of industry, and focus more on application.

The Centres were expected to foster dynamic and organic growth, allowing successful new enterprises to move to new, larger locations, whilst at the same time retaining contact with other elements of the Centre. In Dortmund this concept was completely realised through its technology centres, which are close to the university and its technology business park (has been enlarged several times). However this development did not take place on an old industrial location, but on a greenfield site.

Recent Developments

For the last few years, attempts have been made to couple the formation of industrial-commercial clusters with the development of industrial estates and their marketing. The most important example of the combination of these two aspects is the concept “ChemSite” (see also the chapter on cluster development). Several cities and chemical enterprises in the ‘Emscher-Lippe’ Region are involved with this concept, with the objective of improving - in the neighbourhood of already existing chemical enterprises - the conditions for the establishment of further chemical companies, their suppliers and processing enterprises in the region. The objective is to improve both sales prospects and the opportunity for growth amongst local enterprises.

Another new approach called “NEW PARK” has been developed in recent years and represents an integrated concept, which offers following advantages: Land provision; support in planning permission processes for new companies; the development of fiscal

funding instruments; the supply of qualified personnel and a flexible arrangement for working conditions which includes the system of wage agreement (Tarif system)⁵.

Leisure, Cultural and Tourist Industry

The leisure and cultural industries have played an important role in the development of regeneration policies over the last 10 years. Since 1985 seven theatre locations for musicals were developed in NRW alone. Those cases concerned the reutilization of old industrial buildings (in Essen and Düsseldorf) for new purposes, of existing theatres (Mönchengladbach) or of new buildings for special theatres. As a result of these developments, alongside the impressive array of industrial culture in Duisburg and Essen, the importance of the Ruhr area as a tourist attraction within Germany, and increasingly also for European neighbours, has been substantially strengthened.

Instruments and Institutions in NRW

Spatial development in the context of structural change is managed, implemented and monitored by the State and by the following institutions:

- Ministry for economics and medium enterprises, energy and traffic (Ministerium für Wirtschaft und Mittelstand, Energie und Verkehr);
- Ministry for urban development and living, culture and sport (Ministerium für Stadtentwicklung und Wohnen, Kultur und Sport);
- Ministry for employment and social affairs, education, training and technology (Ministerium für Arbeit und Soziales, Qualifizierung und Technologie);
- GFW (Gesellschaft für Wirtschaftsförderung, Düsseldorf) - responsible among other things for international marketing, assistance to foreign investors, advice to start-ups and companies in crisis etc.
- ZENIT GmbH (Mülheim a.d. Ruhr) - the technological advisory body of the Land;
- GIB GmbH (Bottrop) - the advisory body of the Land on employment, education and training and labour market;
- LEG NRW Ltd. (Düsseldorf, regional offices) - trustee for the property fund;
- Investment bank (Düsseldorf and Münster) - handling of the allocated funding
- Regional institutions for the promotion of economic development, e.g. ELA for the northern Ruhr area or AGIT for the region around Aachen;
- Local institutions for the promotion of economic development of the districts, municipalities and cities;
- Chambers of Industry and Commerce;
- Chambers of Trade and of Crafts.

In addition there are other local or private sector influences on spatial development. This multitude of institutions, authorities, companies and federations means that frictions in NRW can often hinder the development and marketing of these areas. By comparison, the integrated structure of Scottish Enterprise seems to have a lot of advantages.

⁵ 'Tarifsystem' refers to the complex German system of wage settlements.

Financing of the Measures and the Role of the EU Structural Funds

The funding instruments of the Land are of special importance to the financing of development and regeneration in NRW. In the case of infrastructure funding, it is especially important to differentiate between the different 'regions' of the Land. In Objective 2 Regions the funding instruments of the EU Structural Funds can be matched with funding from the Federal Government and the Land. In contrast, as a rule, outside these regions only Land (perhaps supplemented by municipality funds) can be used.

The funding measures mainly target the municipalities. Public-Private Partnership projects also require a legal guarantee⁶ for the funding; either through the participation of the municipalities in the development agencies or through extensive securities on the funds for properties and/or through contractual agreements. In each case funding only covers the non-profit-making parts of any measures. The proceeds, e.g. for the sale of the properties, for drainage fees etc. are to be taken off beforehand.

The Investment Bank deals with the technical aspects of financing, while requests for funding are examined and granted by the local governments. Of special importance in the process of land revitalisation are the municipalities, the property funds and the PPP agencies/societies (intermediaries between the municipalities and the property owners). The activities of the property owners and 'Developers' are only limited to individual cases - usually to regions with high land prices and to projects with productive uses (office and commercial locations).

Since 1990 the availability of EU finance through the Structural Funds has played a major role in the regeneration of brown field sites. Between 1992 and 1999, the property funds of the Land financed projects with over 517 million DM, co-financed by the EU. Most of the money was invested in the decontamination work and the building of technical infrastructure (waste water and raining water systems, streets, and bridges).

The Implementation of a project - the example of the commercial park ERIN

The service, commercial, industrial and landscape park "Erin" is as a good example which illustrates the following points:

- Project management
- Handling of inherited burdens of the site and the preparation of the building site
- Granting of planning permission
- Implementation of land development
- Marketing and commercial exploitation
- Promotion and financing.

"Erin" is a project of the "IBA Emscherpark" and part of the thematic field "working in the park". It was created in 1989 on the 41-hectare site of the premises of the former 4 Erin pits in direct proximity to the city centre of Castrop Rauxel. Other plants had

⁶ The exact German term is 'gesellschaftsrechtlich'

operated in the same area, such as coking and benzene plants, which had caused serious contamination of the soil and groundwater. These inherited liabilities were the most serious obstacle for subsequent uses of the area.

A steering committee for the project was set up, chaired by the vice-president of the local government, and consisting of representatives from different authorities and institutions. In this steering committee all the important milestones of the project were discussed and decided. At the actual project management level the project managers of the LEG, of the city and of the IBA Emscherpark co-operated on the basis of scheduled 'Jour fixe' meetings, in which the technical experts of the LEG and the city, as well as external experts and consultants also participated. Below the level of fixed meetings four working groups (inherited liabilities, development, marketing, architectural consultancy) processed and implemented the technical topics.

Through this procedure it was possible, for the first time in NRW, for most of the contaminated soil to remain on the premises and be safely built into two landscape works. Thus over 130,000 cubic metres (cbm) of lightly and moderately contaminated material was safeguarded. Only the most heavily contaminated soil (approx. 20,000 cbm) had to be treated through thermal cleaning methods, which were then customary. This procedure, through which the redevelopment was realised, now forms part of the soil protection law of the German Bund.

Through the analysis of factory and production history, the production processes which led to the contamination are identified and also the location of this contamination on the works premises. A search of the archives and in particular the analysis of maps and aerial photographs from different periods of time was used for this.

On this basis a programme of analysis is developed for risk assessment, which specifies the soil and groundwater and also the parameters of the chemical analyses. After approval by the responsible authorities the programme is implemented. Specialised consultants evaluate the soil samples and the chemicals analyses and specify, within the framework of an opinion, the possible dangers and redevelopment measures. On the basis of these recommendations the redevelopment plan is usually drawn up - often also by external experts - and is submitted for approval to the responsible authorities. Subsequently, the implementation of the redevelopment starts - also documented and accompanied by consultants and institutions, for quality assurance.

Usually the redevelopment of the inherited liabilities is linked to the preparation of the building ground and the search of weapons remaining from the Second World War. This was also the procedure in the case of the Erin Park premises. Furthermore, in an iterative planning process the results of the inherited liability analyses are linked to the planning process and the development plan. Only through this procedure was it possible to implement - after the definition of the redevelopment concept and also the authorisation by the local government - the overall planing process within 15 months.

Parallel to the preparation of the development scheme and of the premises, the planning for the opening up (development) strategy was made for both the waste water system and for the road network. In both cases the target was to attempt to develop

and realise concepts which were, at the same time, economically and ecologically useful. This was implemented in an exemplary way in the case of rainwater through a very differentiated system of several underground and surface drainage systems and with the integration of the de-canalisation of a river in the area.

In addition, the procedures which were used for the marketing of Erin became standards: at an early stage an internationally active broker was contacted, the possibilities of the Internet were used and a thematic marketing concept for the main topic, "medical technology", was implemented. This was supplemented through the concentrated contact and mailing of relevant enterprises.

The aim of project "Eurogateway", which was carried out in co-operation with Glasgow Development Agency (now Scottish Enterprise Glasgow) and the Agency for the promotion of economic development in the region of Hérault (Montpellier in France), was to settle small and medium enterprises from the three regions in the other regions. Actually two enterprises from Scotland were settled in the Mulvanycenter on the Erin premises.

For the overall financing seven different funding and financing programmes were employed:

- Purchase of the premises by means of the property fund and the ZIM programme;
- Inherited liability redevelopment, and parts of the development with funds from the GA programme and supplementary ZIM means;
- Further parts of development and preparation of building ground by means of the Objective 2 programme, Phase 3 and/or Rechar programme;
- Building of the landscape park by means out of the town planning funds and the ÖPEL programme.

To date over 80 million DM have been invested and the conditions set for the employment of 600 people in nearly 60 firms on the premises. If one takes only the fiscal aspects, from sales and income taxes into account, the state investments will have completely flowed back by 2006 and, due to these state investments, nearly 200 million DM of private investments will have been attracted.

Results of land reclamation and spatial development work in NRW

Unfortunately there is no data available on the results of the land reclamation work in the entire Land of NRW, and in particular on the regeneration of unused areas, but it is possible to carry out projections on the basis of the ERIN Park analyses.

Through the property fund, which is the most important instrument of the Land regarding the reclamation of derelict land, more than 2500 hectares were purchased of which, by 30 June 2001, a total of 1298 hectares were redeveloped and sold. More than 545 hectares are used as trade and industrial locations. For a calculated average value of 30 m² per job this means that over 18,000 jobs were created and safeguarded in the trade areas of the property fund.

On the basis that, since 1999, the sales of premises of the property fund constituted approximately 5% of the entire sales of unused properties for commercial purposes in the Land (about 60 hectares of approx. 1200 hectares in total), it can be estimated that the conditions for the safeguarding and/or settlement of approximately 40,000 jobs were set.

In the case of the premises of the former pit 'Graf Bismarck' in Gelsenkirchen, which is currently in development, the estimated calculation of the economic development agency of the city and of the LEG is that at least 400 jobs will be safeguarded over the next ten years and 1000 to 1500 jobs will be created on the premises itself. Furthermore, another 2000 to 2500 jobs will be safeguarded in the city and/or in the region.

The total projected investment - in those 545 hectares already commercialised - calculated on the basis of the possible private investments in the areas of the property fund, amounts to over 2.5 billion DM (building investments only).

Land Reclamation and Environmental Renewal in Scotland

Structural Change in Scottish Land Use

In Scotland until the 1960's the dominant industries were steel, coal production and textile manufacturing. Coal and steel activities were principally located in the "central belt", a densely populated area between Glasgow and Edinburgh where supplies, particularly of coal, were readily available. Coal production also extended South of Glasgow into rural valleys where populations sprang up to service the mines.

Textile production was principally located in the area known as the Border Region, South of Edinburgh, where fast flowing rivers in steep sided valleys provided water power for mills making cloth. However, clothing manufacture using the output from the Border mills and imported cloth was located throughout the populated parts of Scotland.

Production, particularly of coal in Britain was maintained artificially, as a state owned industry until the early 1980's. As a result, few mines closed and the steelworks using the output from them continued as steel was also a nationalised industry. Little structural change therefore took place until this time. A change in government policy introduced in the mid 1980's resulted in the privatisation of many state owned operations including coal and steel.

Many closures therefore took place in the mid to late 1980's. This created a substantial amount of derelict land but did not have a catastrophic effect on unemployment due to earlier policies of attracting other industries into Scotland particularly electronics which took up much of the labour released onto the market.

The derelict land was in general not immediately redeveloped. Both government policy and ownership of the land drove the reasons for this. Government policy was more concerned with job creation and retention than considerations of land use. It is in general cheaper and easier to develop on greenfield sites than on those previously used

for industrial purposes particularly when new “clean” industries are targeted that prefer not to be associated with the possibility of earlier pollution. In addition, land was sold in parcels to those that paid the highest price. This resulted in multiple ownership of formally single user sites often by organisations that did not have the funds to contribute to remediation. No clear solution has therefore been developed to address the problem and land remediation has been more difficult to undertake and less strategically oriented than could have been the case.

Planning Policy and Process

For the regeneration of existing industrial areas the principal instrument is the planning system which regulates where development should take place and what is appropriate. In Scotland, as in the rest of the UK, this system is principally administered by local authorities that are political structures funded partially by local taxation and partially by central government. Each local authority is tasked with developing and implementing a planning framework for their area.

Two levels of control are used. A regional structure plan is produced which sets planning policy in respect of particular types of development and where these can be located. This document will consider historical development speed and set targets for the provision of housing land for example. Each settlement also has a local plan, which examines the potential use for each plot of available land and designates it for housing, industrial, agricultural or other uses using a designation of use type.

There is no overall Scotland wide plan but planning policy is set at a national level by a series of instructions to local authorities issued to deal with particular planning issues. These instructions do define usage of specific plots but can, if appropriate, instruct local authorities as to the amount of land they should define for particular purposes such as housing.

Planning decisions are taken at local authority level by reference to the land usage plans they have produced. A committee of politicians based upon advice from professional planners takes the final decision. If a negative decision is not accepted by the applicant then appeal is possible to professional planners employed by central government who will reinterpret the structure and local plan produced by the particular council. Certain large scale or controversial proposals can be “called in” by central government and a strategic decision taken usually following a public enquiry but this process is used relatively rarely.

The planning process in Scotland can produce quick and effective decisions, although it is common for decisions to be taken which are at odds with local plans previously devised. Issues of job creation and lobbying can sway politicians taking these decisions. In addition, the 36 different local authorities carry out the planning process in Scotland largely independently across the country which inevitably produces some inconsistencies in planning policies in similar areas. Some of these issues are addressed by plans being approved by central government and the “rules” under which plans are devised being the same, as these are set centrally. Nevertheless, without some co-ordinating overall plan across all local authority areas, true consistency cannot be

achieved. Some local authorities have banded together to form larger groups, particularly in the central belt area.

Within the German system, once local plans are set, it is unusual for these to be deviated from. Historically this seems to be because professional planners rather than politicians took a greater degree of decision making. Within the Scottish system the involvement of lay politicians has been a permanent feature of the planning process.

Property Development and Public Sector Intervention Policies

Public sector intervention in property provision has been taking place in Scotland since the early 1970s. Initially this consisted of the creation of industrial estates, and the building of standard buildings, which were then rented to incoming tenants. The justification for this was that land values in Scotland were too low to persuade the private sector to develop without assistance.

In the mid 1970s the Scottish Development Agency was created which provided a wider range of intervention and expended considerable sums on the environmentally improving sites in addition to promoting buildings and sites for occupation and job creation. By 1990, after 15 years of the SDA pursuing this policy, it had become clear that the policy of providing industrial space for rent was having an adverse market effect as the rents charged were lower than would have been the case if the private sector had provided similar accommodation. In turn this was restricting further the ability of the private sector to provide accommodation, as they were unable to compete with the relatively low cost space being provided by the public sector.

At this time a new organisation, Scottish Enterprise, was created which provided a much broader interpretation of economic development, by adding work force training and a remit to become directly involved with business, to the property powers. Scottish Enterprise carries out project financing in Scotland in a variety of ways controlled by an Act of Parliament. Overriding the Act is the requirement that all projects comply with European Union State Aid rules, which apply to all member states. Other bodies also provide financing, particularly local councils, most of which have an economic development department and EU Structural Funds, but at varying levels of intervention. Alongside this, a new policy for providing accommodation by gap funding the private sector was developed.

It was recognised that a much stricter test of market failure should be applied to property projects and that the public sector should intervene at the minimum necessary level. The private sector, therefore, was expected to take the lead in the provision of accommodation and seek support from the public sector when it could be shown that projects were not otherwise profitable. This policy was called “gap funding” and a programme, approved by the European Commission, called “RAPID” (Resources and Action for Private Industrial Development) was approved in 1992. This programme was the bedrock of property support by Scottish Enterprise until 2000, when the European Commission reassessed it as part of the global re-notification of state aids following Agenda 2000.

The structure of RAPID was to provide support where the financial appraisal of a specific project showed that the return on the investment was inadequate to allow a developer to proceed. As only sufficient funds were to be provided to allow the developer to achieve a normal profit level, then no support was deemed to pass onto the end user of the accommodation. Unfortunately, the original principle of RAPID, that it should support developers, was compromised, and using this approach with end-users was at odds with European Union State Aid rules, hence the reassessment of the scheme. The revised schemes, now being approved by the EU, will reduce the amount of support that will be made available to a particular project; but will comply with State Aid restrictions. Due to the higher rent levels now being achieved in Scotland following the abandonment of the public sector directly providing accommodation, lower support levels should still achieve the same outputs.

The primary difference between public sector intervention in property in Scotland and Germany is that in Scotland projects are considered very much in isolation from one another, and are approved independently, whereas in Germany projects tend to form part of a longer term strategic plan. The advantage of the short-term approach in Scotland is that it allows a very close interface with business and greatly aids in the attraction of inward investment. This is perhaps a partial explanation as to why inward investment levels in Scotland are very much higher than in the Ruhr area of Germany, despite the Ruhr's obvious geographical advantages.

Use of Structural Funds

Until 2000, the majority of Scotland benefited from the provision of EU Structural Funds with only small areas concentrated around Edinburgh and Aberdeen where such funds were not available. Since 2000 the new Objective 2 Map for Scotland has put over half the country into the 'Transition' category. Structural Funds have been used extensively in support of land renewal and property projects over the past few years. In the main, Structural Funds have been used primarily for the provision of new industrial estates and for environmental improvements, rather than for the provision of single user buildings.

Structural Funds are principally intended to be matched with other public funding rather than private funding. However, in recent years the Structural Funds in Scotland have been used to match the private sector contribution to a PPP project with the condition that the public sector sponsor is guarantor for the whole ERDF amount granted. Historically the vast majority of industrial estate projects in Scotland were wholly public funded. More recently, there has been far more co-operation between the public sector (predominantly Scottish Enterprise) and the private sector for the provision of large industrial developments. Examples such as Glasgow Business Park and Cambuslang show how the Structural Funds combined with a public sector contribution, often with regard to environmental decontamination (see below), and the private sector providing the 'above ground' facilities have created substantial business locations as assets for the region. Most environmental projects are wholly public funded, whereas the provision of buildings is mostly carried out in partnership with the private sector. Historically this has been carried out via the RAPID scheme and therefore the ability to use Structural Funds for the provision of new single user accommodation is limited.

In Germany the use of gap funding for project finance is unusual and therefore Structural Funds have been used much more extensively for the provision of buildings. It may be worthwhile for the market failure argument to be debated further within the EU as the Scottish example has shown that excessive intervention in the market by direct provision of accommodation restricts the ability for the private sector to operate, thus defeating the purpose of the intervention.

Land Renewal

In Scotland, land renewal has been carried for two main reasons: as part of the statutory duties of the development agency – in the late 70's and early 80's this meant removing the detritus of the coal mining industry. Secondly, as part of the wider aspects of economic development – targeted on creating a better environment of modern business and commerce and remediating the effects of many decades of now defunct traditional heavy industries. The changing needs of business have sometimes meant that derelict sites have been ignored in favour of a green-field option, particularly when inward investment was the primary goal.

Specific funds were always available from both the Scottish Development Agency and its successor organisation Scottish Enterprise to remediate land for environmental purposes. In addition, in the 1990s Scottish Enterprise made use of the powers in the Act of Parliament that created it, to link more explicitly environmental renewal to economic after-use and to use land renewal as a tool for economic development.

This resulted in some very large-scale industrial development projects being undertaken, particularly in Western Scotland where the contamination from the legacy of primary and heavy industries was most severe. By using its abilities to undertake land reclamation and decontamination and combining them with the concepts of market failure Scottish Enterprise was able to create an environment where the private sector was willing to make significant investments. The old industrial neighbourhoods in Western Scotland tended to be located near good transportation links. The evidence of demand for greenfield sites along these same links showed that there was market demand for the location. The cost of the remedial treatment before construction could start was the factor discouraging private investment in these areas. Scottish Enterprise used its land powers to remove that barrier, in combination with the private sector investment that then created the economic after-use. In many cases this was also used to encourage investment in areas, or to provide specific types of facilities, that supported Scottish Enterprises wider economic development aims.

In recent times attention has turned to large derelict sites such as former steelworks. Land renewal in this case has principally consisted of removal of all existing buildings ground remediation and subsequently the installation of new infrastructure to develop the site for new, usually mixed use, developments. In Germany retention of existing buildings is often progressed in the first instance with demolition and removal as a secondary option.

The reason for the different approach is partially to do with culture, in that industrial heritage has a higher profile but tax advantages in the retention of buildings for tourism

related reuse are also a significant factor. It is also easier to find new uses for former industrial buildings as German fire regulations are more flexible than those in the UK allowing fire safety for an individual building to be considered on a risk management basis. This permits designs to proceed that would not comply with regulations in the UK as these in general insist upon the same standards in retained structures as in new buildings.

The Concept of Gap Funding

When Scottish Enterprise, which has an annual budget of £450m, was initially set up in the early 1990's many projects were carried out directly by the organisation with minimum joint working with the private sector. Over time, however, the nature of projects has changed to reflect a much greater degree of private sector participation and increasingly the organisation has become a project funder rather than a developer. This has resulted in many cases that the relationship of Scottish Enterprise to projects has been that of a gap funder.

Gap funding techniques allow a public sector organisation to fund only that element of the financing of a project which moves it from unprofitability and therefore not of interest to the private sector into profitability. This allows projects to proceed at the minimum cost to the public purse whilst providing the private sector with the incentive it requires.

The mechanism is particularly effective in the provision of industrial and commercial accommodation for lease. If accommodation is provided directly by the public sector then rental levels set tend to be lower than the private sector as the need to achieve profit to stay in business does not exist. If therefore sufficient property is directly provided by the private sector in an area the market can become distorted and reduced rent levels prevent the private sector from operating properly.

Gap funding is appraised using discounted cash flow techniques to assess the level of project shortfall that is then agreed with the developer. Whilst a number of assumptions have to be made in such an appraisal the method is generally reasonably accurate in predicting the true level of funding shortfall. Profit participation is not usually practicable with this mechanism as the funding gap calculated is absolute and applies to the lifetime of the development.

The Implementation of a project - the example of "Ravenscraig - Building a New Future"

The Ravenscraig site in Lanarkshire covers some 466 hectares and is currently the single largest derelict site in Scotland. Lanarkshire has over a third of all Scotland's derelict land, with the Ravenscraig site representing about 5% of Scotland's total. The site is located to the east of Motherwell Town Centre and comprises of the former Ravenscraig and Lanarkshire Steelworks, which closed in 1992 and 1981 respectively. Both sites have a long history of industrial use and number of coal pits and collieries were established. Both sites have undergone remediation treatment following closure.

A masterplan for the redevelopment of the site has been prepared and a planning application submitted. The redevelopment will be one of the largest and ambitious urban regeneration projects in Europe, creating a new community with 3,500 homes, a business and industrial park, a new town centre with major retail and leisure destinations and transport improvements including a new railway station and dedicated busways.

Development of the Lanarkshire site began in 1898, initially for use as a colliery, sand pit and brickworks. Construction of the steel and iron works occurred in 1912 and expanded over the site until its closure in 1981. Ravenscraig on the other hand was a comparatively more modern with the first phase of development beginning in 1954. The Ravenscraig plant was a fully integrated iron and steelworks comprising sinter plant, blast furnace, coke oven, by-products plant, power station, melting shop and casting bay. These activities produced waste materials, many of which contained organic and metal contaminants in oils, tars, slags, sludges and surries. Some of these were stockpiled on site, others contaminated the underlying ground.

When the Lanarkshire and Ravenscraig works closed, they were both subject to demolition and reclamation programmes to remove the industrial plant and manage the contaminated land and waste materials. The most heavily contaminated soil and waste material was deposited in a specially designed *secure containment facility* on site. Corus carried out demolition and clearance of the site between 1995- 1997.

At its peak, some 8,000 people were employed at Ravenscraig, reduced to 3,000 at the date of the closure. The initial response of the local economic development agency - Scottish Enterprise Lanarkshire - was to embark on a large-scale retraining programme for the redundant workers and to assist local companies in diversifying their customer base.

SE Lanarkshire also worked with Corus and the local authority to produce a development strategy for the site, which established the principle of a mixed-use development, and then in 1997 a detailed masterplan for the site. Following the marketing of the plans, a private sector development partner was selected to help implement it. In 1999 agreement was reached to establish a joint venture company to take forward the redevelopment of the site consisting of Corus, SE Lanarkshire and the private developer. Critical to putting the joint venture agreement in place was the ability of the various parties to take out an Insurance Policy regarding any potential environmental liability.

Work began in 2000 on a programme of advanced infrastructure works, known as the First Release Programme, which is jointly funded by SE Lanarkshire and the European Regional Development Fund through the Western Scotland RESIDER II Programme. The FRP works consists of the construction of a new spine road through the site to open it up for development and some initial earthworks and land reclamation to the first development site. The FRP has a number of sustainability principles built into both the design and construction including natural drainage, ecological and natural heritage measures and a voluntary social agreement with the contractor.

Following the joint venture agreement the Masterplan proposals were updated along with some twenty supporting or technical studies including a Sustainability Audit, bulk earthworks Strategy, Landscape and Public Realm Guidelines, Environmental Statements and Economic Impact Assessments. An outline planning application was submitted in July this year with the first development expected to be completed in 2003. The overall development of the site is expected to take up to 20 years to complete creating some 8,000 new jobs and leveraging in around £1billion of private sector investment into the area.

CLUSTER DEVELOPMENT IN NRW AND SCOTLAND

	Nordrhein-Westfalen	Scotland
Cluster Definition	<ul style="list-style-type: none"> ▪ Cluster as an industrial agglomeration. ▪ Cluster as a technological competence field. ▪ Geographical and technological definition. 	<ul style="list-style-type: none"> ▪ Cluster as an economic development process. ▪ Limited importance of geographic boundary.
Cluster Analysis	<ul style="list-style-type: none"> ▪ Porterian concepts and/or technological perspective. ▪ Few explicit methodologies. 	<ul style="list-style-type: none"> ▪ Porterian concepts as a starting point. ▪ Strong emphasis on community (shared values/mental models, basis for sharing trust). ▪ Mapping of industries, firms and stakeholders.
Cluster Policy	<ul style="list-style-type: none"> ▪ Top down. ▪ Cluster-specific approach. ▪ Confusing for regional actors. ▪ Defined around technological competence fields, not from the market along the value chain. ▪ Access to state funds suspected to be an issue. 	<ul style="list-style-type: none"> ▪ Top-down. ▪ Cluster-specific, cluster-informed hybrid approach. ▪ Light touch, facilitative role. ▪ Market and business driven. ▪ Access to state funds not a primary issue.
Measurement and evaluation	<ul style="list-style-type: none"> ▪ Resistance to evaluation. 	<ul style="list-style-type: none"> ▪ Experimenting with balanced scorecard. ▪ Evaluation infrequent but used to modify approach and shape policy when available.

Introduction

Comparing the approach to clusters in the two regions has not been a straightforward exercise. The widely differing political structures, population and business densities, cultural attitudes and general approaches to economic development meant that we could not compare like with like, as was the initial intention. However, upon realising this fact, we changed the nature of this study. Rather than examining which approach is best, we looked for complementarity and comparison.

In particular, NRW, due to its political structures, must pursue a policy-led approach. It lacks experience of a single organisationally focussed, pragmatic approach to strategy and development. Conversely, Scotland has a recognised strength in its strategic approach to cluster development yet has no policy. Furthermore, Scotland does not see the need for explicit policy development in this area.

The conclusions and recommendations that follow therefore focus on the areas where practices from one region will enhance, rather than replace, current practices in the other.

Approach to Cluster Development – Nordrhein-Westfalen

There has been a policy of cluster development in NRW (Nordrhein-Westfalen) since the beginning of industrialisation. In the Ruhr area the development of the Montanindustrie⁷ was supported by the state in such a way which is comparable to our current idea of cluster development, although this phrase was never used. A typical example from the 1980s is the media industry in Cologne; one of the region's major success stories. This growth began after the Second World War with the foundation of the Westdeutscher Rundfunk.⁸ Today, it employs 50000 people.

However this development was organic. One was not conscious of this new approach for regional structural policy. As such, it remained an issue for a few experts who discussed in small, closed circles the possibility of a broader application. One of the main target areas for this application was in the Ruhr which has above average unemployment.

The late start of this approach is explained, in the main, by the fact that a new economic perspective for the Ruhr area was unclear for a long time. No clear successor was identifiable for the declining Montanindustrie. Thus the structural policy in NRW was aimed at modernising the infrastructure, to build universities, promote technology transfer, improve the education/skills/training of the population and to redevelop brownfield sites.

Today less than 15% of the region's workforce is employed by the Montanindustrie Cluster, but only in the last few years did it become clear what was the main industrial activity of the other 85% of the 2m workforce. Today, the Ruhr area is gaining a

⁷ Rough translation would mean 'mountain industry'; it includes coal mining and also the related steel and heavy metal industries.

⁸ West German Radio.

higher profile. Twelve main industries have developed which include information industries, logistics, water, mining supplies, microelectronics, medical technologies, chemicals, tourism, new materials, design, heavy engineering and energy.

Since the beginning of the 1990s, there have been systematic attempts to establish the cluster approach in structural policy but only recently has it become a political topic. It has been only in the recent months that the approach has been gaining respect by all involved parties/participants.

All attempts at implementing this approach remained the result of a compromise between the state government and regional activists. This was due to the fact that, due to NRW's structural policy, an implementation of new approaches cannot take place without involvement of regional bodies. The state government is dependent on the co-operation of these bodies. If they had attempted to implement this approach with political pressure or had attempted to use sophisticated methods of evaluation, then the interest in this type of structural policy would not have grown.

In 2000 it became necessary to change paradigms in the regional structural policy in NRW. This was the consequence of the newly created Objective 2 programmes for the years between 2000 and 2006. Additionally, the International Construction Exhibition⁹ – IBA - had ended. The Ministry of economics has used this opportunity to give more profile to the cluster approach. As a result, a partnership called 'Wachstums - und Beschäftigungspakt Ruhr' will be created this year between the local authorities and organisations in the Ruhr area, solely to pursue this approach with greater vigour and to focus on the 12 named areas.

This is one area, where a noticeable difference to Scotland can be identified. In the Ruhr area alone, there are 52 local authorities which all carry out economic development. Apart from that, there are chambers of commerce and industry, guilds, industry associations, trade unions and institutions from science and research. A particular problem is the behaviour of companies who see themselves exclusively as competitors and have little inclination to co-operate with cluster initiatives. In these circumstances it will take some time to make this approach acceptable.

In the meantime, the state government is trying to widen the approach to the whole of the NRW. There have already been first successes.

Cluster Analysis and Evaluation

Traditional studies in NRW suffer from the fact that they do not pay enough attention to the demand-side of markets or the competition from other regions. When there was a question of following the results of the analysis or the creation of a broad political coalition, then the state government tended to pursue the latter option. However, should the support for the approach grow in the future, then the analytical tools for the evaluation of single initiatives will be able to play a more important role than until

⁹ IBA – High profile, state-led series of projects that regenerated former industrial, contaminated and brownfield sites into a series of leisure and tourism developments, e.g. Emscher Park and Landschaftspark.

now. However, in the current climate it is more important to influence the participants to act in the first place.

Cluster Definition

The cluster definition is broadly equivalent to the Scottish idea: “it is a group of industries and organisations linked by a common goal or practice.” However, as a result of the huge number of interests which have to be carried out by the state government and the variety of participating bodies, no strict concept of a cluster development policy can be pursued. Also, there are differing ideas of what the practical aspects of a cluster are. Quite often it is just the co-operation of the companies in one sector. It is only in the following phase that local authorities and organisations join the initiative and it is only during the very last stage that suppliers and customers join. In the first instance the agreement is restricted to pursue a common interest.

Another difference lies in the idea of the state’s role in the two countries. As the state is in greater demand in Germany than in Scotland, it means that bodies who participate in an initiative are more likely to be state institutions and as such are subject to the different political interests.

As a result, there are only very limited possibilities to delegate some activities to agencies or other non-state bodies. As such, it is the employees of the ministries who are tasked with the moderation of processes and to mediate. Third parties tend to be rejected for those roles. This is accompanied by an increasing reluctance to pay for those services. As a result, the state suffers from scarce personnel and the number of people who could take over these functions is very limited.

The regional situation plays a more important role in NRW than in Scotland. One reason for this is the size of NRW: with 18m inhabitants and close to 600,000 companies it is inevitable that there are many clusters which have developed in a long drawn out process according to different historical circumstances. The local authorities and their economic development departments are often owners/managers of specific infrastructure which are important for the individual clusters - such as technology centres in NRW - and, as such, they play a very important role. As a result, there is a requirement to define which local authorities should be involved in the issue and which are perhaps more peripheral i.e. stakeholder management – identification, recruitment, reward, etc..

If we take the 12 cluster examples for the Ruhr area the relevant initiatives are at a very differing stage of development. In the logistics cluster there is a state project/initiative which focuses on two geographical areas, one in the eastern Ruhr area the other one in the western Ruhr area. In the medical technology cluster, the organisation of cluster activities is only beginning. Business start-ups and university institutions are expected to take part, a consensus within some local authorities is now complete and the establishment of the cluster can begin. In the case of information technology, which is mainly concentrated in the eastern Ruhr area around Dortmund, there are more than 600 companies which are slowly growing together in an initiative which is led by the local authority.

An example which exists since 1997 is the ChemSite initiative of the chemical industry in the northern Ruhr area. Here, eight companies, Gelsenkirchen University, the regional development agency and several local authorities have come together to support the development of the chemical industry in this area. This mainly happens in two ways. On the one hand there are attempts to improve the rate of new firm formation in this sector. There have been approximately 15 start-ups employing approximately 100 people. A second strand of activity is inward investment promotion. In this area the companies together with the regional development agency try to attract investors, mainly from the USA. The competition from Rotterdam and Antwerp is enormous which meant that in the last few years several big investments of up to €1 bn were lost. The situation is slowly improving after appropriate industrial sites could be provided and the pipeline infrastructure is also being improved with state assistance.

The ChemSite initiative shows several elements of the cluster approach:

- All participants have a clear idea of the advantages.
- Companies, Associations, Research Organisations, local authorities and state government work together very closely.
- There is a joint strategy. Currently this is in the process of being discussed and re-orientated.
- The situation in the products markets and the relationship to competitor regions were analysed and evaluated in great detail at the beginning.

So far it has not been possible to include the supply chain and customer base into this process which means that the initiative has, as yet, remained an industry-specific initiative instead of broadening out to a cluster initiative as it could do. Work is currently taking place to improve this.

Summary

The cluster approach has been in existence in NRW for a long time however until very recently it received hardly any political attention. This has changed now. The state of the development of existing initiatives differs widely as does their self-awareness. As a result, all variations of clusters are in existence in NRW. The main characteristics are as follows:

- Fragmentation: In NRW there are a number of bodies who take part in structural policy. This makes the implementation of an approach very difficult and also makes it impossible to implement a common approach. However, the advantage is that once an approach has been implemented it is widely accepted.
- Policy driven: In NRW it is very difficult to completely delegate responsibilities to a separate or devolved agency. As a result, the demands for state action are higher. The disadvantage of this is that the usage of resources is politically motivated. The advantage is that once a decision has been taken there is a much higher chance of it being implemented.

- Not time limited: The demands that people have of the state make it difficult to pull back from initiatives after a pre-determined time-frame.
- Analysis and Evaluation: In NRW analysis and evaluation are not as important as in Scotland. This is the result of the current state of developments. Prior to that, the approach has to gain wider interest. Afterwards, those two factors will gain in weight.

Approach to Cluster Development – Scotland

For the purpose of this comparison, we have restricted our study to cluster initiatives in lowland Scotland – specifically the area covered by the Scottish Enterprise Network. The reason for limiting the study to one region (the remaining part of Scotland, covering 13% of the population, has Highlands & Islands Enterprise as its lead economic development agency) is to focus on the changes that cluster development has catalysed within the organisation itself (in terms of policy-making, its role, its approach to intervention and its structure) as well as in the market.

Cluster Definition

The Scottish Enterprise Network originally defined clusters as a noun - *‘a group of industries and organisations linked by a common goal or practice’*.

Worthy of note here is the lack of a geographic element. By default, Scotland assumes its clusters are national models. Regional concentrations are usually referred to as ‘growth nodes’ within the overall cluster. It is left to the cluster participants to define their own geographic boundaries (if any).

Latterly, the Scottish Enterprise Network has changed to using the term ‘cluster’ has as a *verb* – an economic development process – to describe their approach to a particular range of interventions.

Cluster Initiatives

Currently there are eight active, explicit cluster initiatives in which the Scottish Enterprise Network is involved. These were identified as part of a research exercise by Michael Porter’s Monitor Group in 1993. Divided into three ‘waves’ each cluster was selected, ultimately, for its growth potential and long-term sustainability. These are:

- Biotechnology - <http://www.biotech-scotland.org/>
- Creative Industries - <http://www.creativesotland.com/>
- Forest Industries - <http://www.forestryscotland.com/>
- Food and Drink - <http://www.scottishfoodanddrink.com/>
- Optoelectronics - <http://www.microelectronics.org.uk/>
- Semiconductors - <http://www.semiconductors.org.uk/>
- Energy (previously Oil and Gas) - <http://www.se-energy.co.uk/>
- Tourism-<http://www.scotexchange.net/business/business-se-clustersnewtourism.htm>

There are many other implicit cluster initiatives in Scotland. In recent months, Scottish Enterprise has begun to drop the term ‘cluster’ as the process it refers to is adopted throughout the organisation; there is no longer a need to distinguish the cluster approach as something different. Examples of recent implicit initiatives are:

- Financial Services
- Chemicals
- Textiles
- Aerospace
- eLearning

Figure 3 below shows the first wave of cluster initiatives and the characteristics of each cluster. Whilst the diversity in each cluster’s company base, in the gestation of the cluster and in the overall approach can clearly be seen, it was possible to apply a common framework to all.

Figure 1

Scottish Enterprise Network First Wave Cluster Initiatives

Cluster Characteristics	Biotechnology	Semiconductors	Food & Drink
Origin of Industrial Base	Organic	Transplant	Organic
Geographic Scope	Dispersed	Localised	Dispersed
Number/size and importance of firms	Sparse	Sparse	Dense
Breadth & Depth	Broad Shallow	Narrow Shallow	Broad Deep
Innovative Capacity	High innovation	Low innovation	Low innovation
Cluster Governance	All ring, No core (Research-led)	All core, No ring (MNE-led)	All ring, No core (SME-led)
Coordinating Mechanisms	Public-Private (BioAlliance)	SE	SE (initially), then industry
Overall State of Cluster Development	Latent	Policy-driven	Mature

Brown, R Cluster Dynamics Paper (1999), *Scottish Enterprise Network*.

The initial approach that Scottish Enterprise took was to build upon previously successful sectoral initiatives, which were largely state-led and interventionist. The main example here is the semi-conductor cluster.

Locate in Scotland (LiS)¹⁰ were highly successful in leveraging state and EU funds to attract manufacturing and assembly work from major multi-national enterprises (such as Motorola and National Semiconductor) to the central belt of Scotland, generating high numbers of medium to low value jobs in high unemployment areas. Recognising the cyclic nature of the semi-conductor industry (which, in recent months has seen the long-expected migration of assembly jobs from Scotland to Eastern Europe), LiS also put significant efforts into attracting high-value R&D to Scotland. This would strengthen linkages in the local value chain, making any decisions to decant operations from Scotland less attractive

Project Alba was conceived as a joint initiative between government, local agencies and academia. A high-tech campus was constructed, almost on a speculative basis, with a view to attracting overseas companies such as Cadence – thereby bringing high-value, knowledge-intensive jobs to the area. LiS based their locational marketing efforts around the bespoke facility, the quality of life in Scotland and the excellent academic track record of Scottish universities and graduates.

The lack of influence of local managers, when the key decision makers are outside the cluster locus, was recognised from the previous sectoral initiatives. To relocate an assembly plant to a region with a lower wage structure is a relatively simple exercise. To move an entire value chain, however, is much harder; the risk of severe and sudden job loss is therefore reduced. As we are now witnessing, this has provided a dampening effect on the employment cycle in Scotland.

The first wave of cluster initiatives highlighted the fragmentation that existed between national policy makers and local delivery organisations (such as Local Enterprise Companies, Enterprise Trusts, Chambers of Commerce and Local Authorities). In many ways, Project Alba ‘broke the mould’ of agencies acting in isolation, and other initiatives, such as the Food & Drink cluster, really began to embed this approach.

Food & Drink was an existing, mature cluster. The cluster team began by mapping the cluster; the core and related industries and the linkages between actors. This provided i) an overall framework for the industry to allow any interventions to be targeted much more effectively and ii) a context for local delivery organisations to work with the actors at micro-level. In other words, *clustering* became the practice of setting a meso-economic framework to direct micro-economic promotion and intervention with groups of firms, rather than individually.

In the case of the Food & Drink cluster, the interventions lay, in the main, around value-chain integration (including skills development and logistics). Various Local Enterprise Companies were then actively encouraged by the core (national) team to lead on these interventions, building on existing local relationships and skills and leveraging these at national level. The core (national) team provided a single framework and took a co-ordinating role. An example of this is the CAMIC project within the Food & Drink cluster - Scottish Enterprise Grampian, a LEC in the north-

¹⁰ LiS is the joint Scottish Enterprise / Scottish Executive inward investment agency. It works within a framework set by the Department of Trade and Industry (DTI) to attract foreign direct investment to Scotland. LiS is now renamed Scottish Development International.

east of Scotland, leads the market intelligence efforts for the industry in Scotland as a whole.

The Scottish Enterprise Network is only allowed to intervene in markets to resolve market failures.¹¹ This means that there are almost no examples of direct support or grant schemes within the Network's portfolio of services. The vast majority are indirect;¹² they attempt to bring markets into balance or address systemic failures. As an NGO (Non-Governmental Organisation) Scottish Enterprise is also in a position to inform policy development at national level, should this be required.

Cluster Analysis

Scotland recognises clusters according to the following typology shown in recent research on cluster initiatives in several European countries (Raines 2000, 28 f):

1. Value-chain clusters, delimited by a network of supply linkages;
2. Competence-based clusters, based on the technological expertise in a region;
3. Functionality-based clusters, cutting across industry boundaries along issues such as knowledge and knowledge management.

Although the eight (explicit) Scottish clusters were originally identified using Porter's Diamond (see fig 2), learning from the first wave of cluster initiatives was quickly factored into the process. These additional criteria are:

- Job and wealth creation;
- Growth prospects in the Industry - UK and internationally;
- The competitive environment - UK and internationally;
- Geographical dimensions of the cluster in Scotland;
- Status of cluster (emerging, mature, disconnected, declining, etc);
- Scotland's capability to shape the industry development (including the impact of regulation, market leadership elsewhere);
- Cluster fit with few Network strategy (and government policy);
- Current (and potential) Network involvement / connections with the cluster;
- Scottish Enterprise Network's capacity for involvement / influence / making a difference.

Each of the above were ranked as to whether the area was Very / Moderately / Not suitable as a priority cluster initiative. This focus on macro-economic growth, network connections, goal alignment and influencing capabilities (of Scottish Enterprise) made selection more effective. Scottish Enterprise had to be convinced that they were the

¹¹ The Scottish Enterprise Network was established under the Enterprise and New Towns (Scotland) Act 1990. Under the terms of the act, the Network is only allowed to intervene in markets where a market failure can be identified, i.e. an imbalance between supply and demand, caused by one or more factor conditions.

¹² For example, if a lack of skilled workers is identified as the root cause of poor quality or inefficient production, Scottish Enterprise may fund the development and promotion of training courses with local training organisations rather than give training grants directly to the industry.

right agency to be involved in developing the cluster and, if so, what their role should be.

Figure 2

Porter's Diamond



Source - Porter, M. (1990) *The Competitive Advantage of Nations*, Free Press, New York.

Cluster Management

Scottish Enterprise's modus operandi is now well formed. New cluster initiatives, whilst developed top-down, follow extensive consultation with the actors in the marketplace. One of the more recent illustrative examples is Creative Industries – a functional / value-chain hybrid cluster.

Creative Industries unites a number of traditionally disparate sectors via a common function – design capability. These sectors – architecture, games software, arts & culture, multimedia, advertising, publishing, TV & radio, music and film – are now sharing design expertise through a process we call co-creation. One of the best examples is the use of architectural design within games software. To make the gaming experience as real as possible and to future-proof the experience for some years, the latest architectural techniques and features are incorporated into the game.

The cluster process is time-boxed; the dedicated team that is charged with each cluster action plan is given three years to consult, plan, intervene and exit, ensuring that funding mechanisms and industry-led bodies are in place to continue any further action

needed. In Creative Industries, the formation of key industry groups, such as Scottish Screen and the Scottish Games Alliance is fundamental for the continued growth and co-creation within these industries once public-sector involvement ceases.

Scottish Enterprise uses the term ‘community’ in much of its references to the actors within each cluster. This term is used because actors with similar value systems are sought to build the core of the cluster. By aligning actors with similar attitudinal and mental models, trust can be established more quickly and this mitigates the internal rivalries and reduces transaction costs. It is more important that actors are linked attitudinally than technically; these links are stronger than a transient set of links based around current technologies.

This reflects the ‘light touch’ approach to cluster management; indeed, the word ‘management’ is not used either – Scottish Enterprise sees its role as one of *facilitation*, not management. Before initiating a cluster development programme, Scottish Enterprise evaluates the probability of the cluster community reaching critical mass and the community’s willingness to take charge of its own destiny.

Scottish Enterprise never seeks to own a community; indeed, such an arrangement would preclude a successful outcome and Scottish Enterprise would reject any initiative that required it to take such a role. It is only one constituent member of the cluster community, albeit a prominent one in the early stages of some clusters development. Critical to the long term sustainability of each cluster, or of regional competitive advantage, is a sense of ownership and leadership within the market itself. This low-key approach makes intervention and exit much easier and helps to change the dependency culture.

Similarly, the light touch approach and facilitation role, combined with the meso-economic framework, allows local economic promotion organisations (such as LECs, Chambers of Commerce and Local Authorities) the maximum flexibility in delivering interventions at micro level whilst ensuring that overall goal alignment is maintained. In other words interventions are not, typically, centrally-driven directives; the top-down framework harnesses bottom-up activities. This mitigates against the tensions always present between local and national agendas, although by no means eradicates them. This is illustrated by the emergence of Interactive Tayside – a local cluster initiative in one region of Scotland. Tayside has one of the growth nodes for Creative Industries (mainly based around games software) and some local agencies see this node as a distinctive (and perhaps even separate) cluster from the national one. Market forces, and the ability to reach critical mass, will either prove this distinction right or wrong over time.

Cluster Evaluation and Measurement

When trying to measure and quantify the impact of cluster initiatives, Scottish Enterprise has used a large number of methodologies and economic indicators; from standard measures such as jobs created/safeguarded, increase in exports to (where applicable) newer measures such as number of businesses adopting e-commerce and number of new networks created. The measures will vary depending on the nature of

intervention/activity within the cluster, e.g. inward investment for semi-conductors, commercialisation for biotechnology and value-chain integration for food & drink.

There is a consensus, however, that this does not explain the full picture. A blend of macro-economic performance measures (for the cluster as a whole) and micro-economic measures (to establish the success of individual interventions or projects within the cluster) is needed.

In an attempt to address both areas, a version of the ‘Balanced Scorecard’ approach (Kaplan and Norton, 1994) is now being tested. This should simplify and reduce the number of measures and targets whilst producing the desired blend of internal and external market indicators. It also provides enough flexibility to accommodate cluster-specific measures at micro-level whilst maintaining enough consistency to compare clusters at meso or macro-level.

As can be seen below, this includes some ‘softer’ measures as well as more traditional ones. Each Critical Success Factor (CSF) shown has 1-3 associated Key Performance Indicators (KPI) that can be easily measured to show whether the CSFs are present.

Figure 3

Balanced Scorecard for Cluster Evaluation

Critical Success Factors

<p><u>Economic/Financial</u></p> <ul style="list-style-type: none"> ● Levels of Investment ● Company Performance ● Market performance – Global, UK ● Employment Levels / No. Companies 	<p><u>Knowledge</u></p> <ul style="list-style-type: none"> ● R&D and Innovation ● International Awareness/recognition ● Integration of academia & business
<p><u>Skills</u></p> <ul style="list-style-type: none"> ● Appropriate skill levels & structure ● Improved value per employee ● Continuous learning & development 	<p><u>Cluster Process</u></p> <ul style="list-style-type: none"> ● Local Connections & Networks ● Appropriate Infrastructure ● International Connectivity ● Industry Leadership

MacCallum, N (2001), *Knowledge Management, Scottish Enterprise Network*.

Evaluation has, in recent years, begun to be embraced within Scottish Enterprise and Local Enterprise Companies as valuable aid to organisational learning. In general, evaluation is still carried out by external consultancies (to ensure objectivity) but it is relatively infrequent and lacks consistency in some areas. The establishment of a Knowledge Management directorate and KM practitioners within the Network has put the use of evaluation into context – it is a key knowledge asset to be used and leveraged. Practices are being standardised to improve consistency and the feedback

loop is becoming much tighter; learning points and best practice are actively being sought by the rest of the organisation, keen to avoid any issues or pitfalls of the past.

Summary

Whilst it is still too early to say whether the Scottish approach to cluster development has been successful (according to Porter (1998), numerous case studies suggest that clusters require a decade or more to develop depth and real competitive advantage), there are initial signs of moderate success in most of the Scottish cluster areas (Sim and Pollock, 2001).

The key characteristics of the Scottish approach are summarised as follows:

- **Market-led:**¹³ Where possible, the cluster is market led. The Scottish Enterprise Network tends to reject the lead role.
- **Facilitation:** It is a light touch approach, less interventionist than previous sectoral initiatives.
- **Co-ordination:** The cluster map provides a meso-economic framework that allows local agencies to target interventions more effectively and complimentary to the national goals.
- **Time-boxed:** From the outset, members of the cluster ‘community’ are aware that the Scottish Enterprise Network will exit after 3 years.
- **Adaptive:** Extensive use is made of research and evaluation evidence to adapt and improve the approach relevant to each cluster, its market and its growth potential.
- **A-political:** Great effort is put into mapping and managing stakeholder relationships to ensure that win-win scenarios are present for other organisations (public, private and third sectors) to ensure goal alignment.
- **Indirect Support:** Cluster funds are not paid directly to SMEs within the cluster; they are used to address market failures by stimulating the supply or demand side of the market, as appropriate. Cluster initiatives do not have any kind of open (slush) fund at their disposal.

Comparisons - Cluster Definition

A widely accepted issue that inhibits comparison of the concepts of clusters is that the term means different things to different people. One of the reasons for this is the fact that there is no ratified or *de facto* standard framework for examining clusters. Feser (1998) notes there is no cluster theory *per se*, but a broad range of theories and ideas that constitute cluster logic. Held claims that this approach can be harmful (Held,

¹³ The term ‘market-led’ is a shorthand way of expressing that the cluster could be either consumer-led, industry-led or policy-led depending on the prevailing market conditions and the nature of the imbalance between supply and demand.

1996, p.249) as it can have negative policy ramifications: ‘sadly, in the rush by various governments to employ clusters, some fundamental issues have been slighted, including appropriate research methods and even the definition of the cluster itself.’

This can be seen from the undernoted examples of different definitions used when examining clusters¹⁴.

‘Concentrations of interconnected companies and institutions in a particular field.’
(Porter 1998).

‘A concentration of competing, collaborating and interdependent companies and institutions which are connected by a system of market and non-market links.’
(UK DTI 1998).

‘Buyer-supplier relationships, or common technologies, common buyers or distribution channels, or common labour pools.’
(Enright 1997).

Although these definitions have much in common, not everyone views clusters the same way. The differences in the Scottish and German definitions have already been discussed in this paper; in Nordrhein-Westfalen it is an academic *term* used to describe industrial agglomerations, for Scotland it is a *process* of economic development to promote local business competitiveness.

Comparisons - Cluster Analysis

Much of the recent, global interest in clusters was influenced by the work of Michael Porter (Competitive Advantage of Nations, 1990). According to one study examining cluster initiatives across Europe, however, the majority of cluster programmes were not preceded by an in-depth regional analysis comparable with Porter's cluster mapping process (Lagendijk, 1999a). Moreover, Lagendijk claims that the widely accepted Porterian concepts of clusters have been interpreted very differently across regions, being translated into practical initiatives according to the specific needs of local and regional economies. This has been backed up by other cluster researchers (Raines and Asche, 2000).

In keeping with the findings of Bergman and Feser (1999), Scotland uses Porterian theory as a starting point, or a catalyst, to undertake cluster development and does not rigidly apply the theoretical framework as the only tool. From a policy perspective, the Scottish approach towards clusters is flexible in accommodating varying industrial, institutional, political and market conditions.

The Scottish approach is also more flexible in setting the geographic boundaries of individual clusters; these are determined by the market forces and infrastructure

¹⁴ Adding confusion to this is the fact that related terms, such as industrial districts, value chains, innovation systems, competence fields and business networks, are sometimes used interchangeably with the term clusters.

characteristics inherent in each cluster. This is in contrast to the Nordrhein-Westfalen approach where policy-driven spatial dimensions are applied.

In summary, the Nordrhein-Westfalen approach is very much policy and technology-driven (e.g. chemicals and textiles) rather than the Scottish approach of fostering and facilitating market-led initiatives (e.g. biotechnology, creative industries, food & drink).

Comparisons - Cluster Policy

According to Feser (1998), there are broadly two different types of cluster policies; i) those that focus specifically on identified clusters called '*cluster-specific strategies*' and ii) the improved implementation of individual development initiatives, called '*cluster-informed strategies*'. From our comparison between the Nordrhein-Westfalen and Scottish approaches, Nordrhein-Westfalen clearly sets cluster-specific strategies whilst Scotland uses a hybrid of the two.

In Scotland, the top-down (usually national) element of the strategy is cluster-specific, involving cluster mapping and strategic analysis of both global and local market growth potential. The action plan is then converted into a cluster-informed strategy, developed bottom-up in consultation with industry actors and stakeholders, to allow local agencies to harness the competitive forces and improve the effectiveness of local interventions. This builds a clear relationship between meso-level and micro-level economic promotion, ensuring overall goal alignment for economic agencies and industry alike.

Comparisons - Measurement and Evaluation

Although numerous methods are used to analyse and measure the viability and impact of clusters, the lack of unified theory means that there is no universally accepted method of cluster assessment and measurement either (Held, 1996). Different countries and regions tend to define clusters in a variety of ad-hoc ways, using a wide variety of analysis techniques, success criteria and measures.

Evaluation techniques from which clusters can be identified include industry-based input-output relationships, shift-share analysis, location quotients, industry growth forecasts and case studies. Each must be applied in context. The variety of different cluster evaluation techniques also owes much to the different practices and skills which are deployed by various economic development bodies and consultancies working in this growing field.

Having assessed many of these, Scotland is trying an approach based on Kaplan and Norton's Balanced Scorecard to capitalise on the strengths of individual methodologies and measures within a single framework. Nordrhein-Westfalen, still to implement a full, regional framework, has much to choose from and, as mentioned, with no clear 'best practice' winner.

Some cultural resistance to measurement and evaluation is still apparent in NRW; it may be seen as an overhead and a potential threat to funding if targets are not being

met and, if so, avoidance could be expected. In recent years, Scottish Enterprise has begun to overcome some of this resistance and avoidance by treating the information gathered as a knowledge asset and making it available to aid organisational learning. By placing equal value on learning and leveraging knowledge assets as on achievement of economic targets, the stigma of failure has been partly removed and actors are starting to be more open with information. Moreover, the values of knowledge-sharing and openness are characterised and rewarded through (mandatory) staff performance contracts.

Within economic development bodies, there is a balance to be struck between efficiency and effectiveness. In NRW, staff structures and departmental remits are optimised towards administration and large-scale implementation. In Scottish Enterprise, they are geared towards adaptability to market conditions. This reflects the direction from which lead responsibility is expected; state *vs* industry. Both regions can learn from the others approach in this respect, as the Scottish approach is more opportunistic and market-sensitive whilst the ministry in NRW has implemented projects on a scale and at a speed not seen in Scotland. We see complementary strengths across both regions.

Conclusions

Given the lack of unified theory, interpreted definitions and the variations in national (and regional) legislation and policy, no one can claim to have the definitive approach to cluster development.

Insofar as Scotland has tackled some of the constraints that continue to hamper development efforts in NRW, however, there may be some opportunities to transfer knowledge and experiences and attempt to implement them. Taking each issue in turn:

Definition – widening the definition of a cluster to involve the full value-chain around the core industry would help to dissipate internal rivalry within the company base and increase the range of market opportunities. Consideration of functional clusters (such as the design function inherent in Scotland’s Creative Industries cluster) and value-chain clusters (such as the Scottish Food & Drink cluster) would allow NRW to take a more market-led approach. Consideration could also be give to relaxing the geographic limitations to tackle the exclusion issue.

Implementation – we used the phrase “*setting a meso-economic framework to direct micro-economic promotion and intervention*” above to describe the philosophy behind the Scottish Enterprise cluster approach. This approach, including the widening of the cluster definition, could be examined from the NRW perspective to allow for a possible consideration of using indirect support mechanisms and addressing key aspects of market failure; rather than direct payment of funds or grants to SMEs within the cluster. This could provide the greater evidence of additionality and displacement effects being increasingly sought by the EU with regard to Structural Fund and State Aid policies.

Evaluation – a consistent approach must be taken towards evaluation and processes put in place to allow the findings/lessons to change policy and practice as quickly as

possible. NRW may have access to any of the Scottish Enterprise Network's knowledge management practices and techniques to identify transferable components. Similarly, Scottish Enterprise would be keen to learn from NRW regarding the effectiveness of any techniques tested.

Co-ordination - whilst NRW does not have the advantage of a single body tasked with the full range of economic development responsibilities (in the way that Scotland has Scottish Enterprise and Highlands & Islands Enterprise), establishment of a meso-economic framework is possible. The other Ministries have a key role to play in this ensuring greater probability of success.

As a vehicle to transfer any relevant knowledge or experiences between Scotland and NRW, we would propose further joint working. Consideration could be given to joint cluster initiatives. As highlighted in the following chapter on Sustainable Development, Environmental Industries could be one such area. One practical possibility would be a cluster initiative based around renewable energies.

NRW's cluster-specific approach, implementation abilities and clear focus on operational effectiveness are attributes that Scotland could do well to emulate for certain types of intervention. The fact that the NRW employs more than 6 times the number of people in environmental industries as Scotland (for a region 3 times the total population) shows that far greater progress has been made in these areas.

Scotland has a strong research base but has yet to commercialise much of this activity. There may also significant cultural barriers towards development of environmental industries; they do not seem to be valued in the same way as in NRW. We would therefore propose exploring technology and skills transfer opportunities between the regions that would assist Scotland in achieving its target of 18% of energy being provided from re-useable sources by 2010. The framework for achieving this would be based upon the Scottish Enterprise Network's cluster process, giving the Ministry of Economic Affairs and local companies in NRW first-hand experience of this approach.

SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL TECHNOLOGIES IN NRW AND SCOTLAND

	Nordrhein-Westfalen	Scotland
Implementation of Sustainable Development	<ul style="list-style-type: none"> ▪ More than 50 % of communities produced Local Action Plans in response to Agenda 21. ▪ EU Structural Funds require applicants to report on sustainable development targets. 	<ul style="list-style-type: none"> ▪ Local Action/Agenda 21 Plans drawn up by all Scottish local authorities. ▪ More focus on projects at community level. ▪ Active promotion of sustainable development through EU Structural Funds is a driver for the public sector.
Economic Importance of Environmental Technology (Green) Industries	<ul style="list-style-type: none"> ▪ Employs 2.04% of the total workforce. ▪ Turnover: DM 45.3 billion (1995). ▪ Dominant Sector: Waste Management. Concentrated in the Ruhr area. 	<ul style="list-style-type: none"> ▪ 6,000 employees. ▪ Turnover: £850 million (1995). ▪ Dominant sectors: Environmental management services; waste management; contaminated land treatment.
Key Drivers	<ul style="list-style-type: none"> ▪ Industrialisation of the Ruhr area. ▪ Public Opinion. ▪ Environmental Legislation. ▪ Subsidies and increasing public awareness. 	<ul style="list-style-type: none"> ▪ “Underpinning theme” in all Scottish Executive policy. ▪ Legislation and Planning system. ▪ National Waste Strategy. ▪ Environmental taxation. ▪ Supply chain pressure. ▪ Campaigning by the voluntary sector.
Key Blockages	<ul style="list-style-type: none"> ▪ Conflicting Industrial interests. ▪ Habits of People. 	<ul style="list-style-type: none"> ▪ Rising dependence on road transport. ▪ Low levels of awareness. ▪ Short termism among business and policy makers.

Definitions

Sustainable development brings together the objectives of lasting economic growth, environmental stewardship and social inclusion so that the needs of the present are met without compromising the ability of future generations to meet their needs (Agenda 21 / Bruntland).

Environmental (green) technology industries are a horizontal economic sector whose products, technologies and services remove or reduce the damage to the environment (end of pipe sectors), or avoid damage to the environment from the outset (preventative sectors).

Introduction

This chapter is a mapping exercise of sustainable development and environmental technology (green) industries in Nordrhein-Westfalen and Scotland to identify opportunities for future collaboration. The chapter starts with an analysis of current implementation of sustainable development in NRW and Scotland, focussing on the environmental technology industries as a future growth sector. There then follows a further discussion of the development of environmental technology industries, specifically end of pipe technologies (waste management) and preventative environmental technologies (renewable energies).

The following results summarise the findings of two workshops with experts from NRW and Scotland, a comprehensive literature search, extensive primary data collected and analysed by SISTech¹⁵, and contributions from people active in the field. The concluding section summarises the collaborative opportunities identified from the workshop discussions.

Sustainable Development

In 1983 the Secretary General of the United Nations engaged an independent commission under the presidency of the then Norwegian Prime Minister Gro Harlem Brundtland with an evaluation of important environmental problems. The resulting 1987 Brundtland report proposed greater emphasis towards the concept of sustainable development.⁴

As a result, more than 170 nations adopted Agenda 21 on the Earth Summit in Rio de Janeiro in 1992. Agenda 21 defines sustainable development as bringing together the objectives of lasting economic growth, environmental stewardship and social inclusion so that the needs of the present are met without compromising the ability of future generations to meet their needs.⁵ In response to the specific challenges of climate change, an agreement was made at Kyoto in 1997 to reduce greenhouse gas emissions. However in July 2001 an international conference in Bonn decided to compromise for a lighter, but mandatory, Climate Change Treaty to which the US refused to agree.

The concept of sustainable development recognises the fact that all human activities are inextricably linked and dependent on the maintenance of healthy eco systems. In addition, the term 'sustainable development' introduced a new timescale for the decision making process; away from the short-term (one to five years) to a timeframe that takes account of the impact of today's decision on tomorrow's generation. Sustainability is increasingly becoming one of the core drivers shaping life in the 21st century and is influencing new legislation, business and public awareness and fiscal policies. A commitment to sustainability therefore means that policies have to be implemented which guarantee:¹⁶

¹⁵ Scottish Institute for Sustainable Technology.

⁴ United Nations. General Assembly: Report of the World Commission on Environment and Development, August 1987, p. 54 and following.

⁵ Konferenz der Vereinten Nationen für Umwelt und Entwicklung: Agenda 21, June 1992.

¹⁶ DETR 1999.

- Social progress which recognises the needs of everyone;
- Effective protection of the environment;
- Prudent use of natural resources;
- Maintenance of high and stable levels of economic growth and employment.

Sustainable development policy in Nordrhein-Westfalen

The Rio process was received with great interest by the citizens, companies and policy-makers of NRW. More recently, public opinion has been very critical of the US withdrawal from the climate change agreement.

With respect to the goal of sustainable development, NRW emphasises the aspect of ecologically friendly economics and resource usage. In this field experts see the biggest need as acting for a reorientation towards sustainable development. Consequently, public interest in this topic and the number of realised projects in this field is considerable. Besides public opinion, an exceptional number of local, regional and supra-regional initiatives, institutions and institutes are the drivers of this development. More than 50% of the communities of NRW adopted decisions regarding Local Agenda 21.

Currently, the Länd government is starting a process for an Agenda 21 specific to NRW. Conducted by the Ministry of Environment and Nature Conservation, Agriculture and Consumer Protection, a working party of Secretaries of State was appointed in order to contribute to a more systematic achievement of the principle of sustainable development in the policies of the Länd government. Together with important players, projects are to be developed which help to establish the principle of sustainable development in practice.

The big urban industrial centres of NRW have been marked by economic structural change since the 1960s so the emphasis on sustainable development has been on economic development and social inclusion. Over this period, initiatives relating to environmental stewardship concentrated on problems related to structural change, for example, recycling of derelict land in the Ruhr area.

In September 2001 the Länd government of Nordrhein-Westfalen submits the NRW concept for climate protection ('Klimaschutzkonzept NRW'). As it is part of the Agenda 21 process, it shall be given to a broad public discussion with all societal groups. The government of NRW is going to carry out a detailed valuation of the results of the discussion and report on the implementation of projects within this election period.

There have been few initiatives combining environmental stewardship and social inclusion. The difficulty lies in the question of whether poorer parts of the population can afford an ecologically friendly lifestyle. The decision of the German government to gradually raise the tax on oil at the end of the 1990s was an attempt to balance environmental policies and social needs. Since then, petrol prices have been one of the most controversial topics on the political agenda.

The economic and social pillars of sustainable development clearly rank before the environmental pillar, not only in the policies of the Länd government but also with public opinion and in companies' priorities. This reflects typical conflictual situations between the economy and the environment (for example Garzweiler II open-cast mining) as well as the internalisation of environmental costs in market prices.

The new EU Structural Funds regulation has identified 'sustainable development' as a horizontal theme. Consequently, the TAURUS Institute was commissioned to carry out an ex ante evaluation on how sustainable development should be implemented in the NRW Objective 2 Programmes. As part of the appraisal process for Objective 2 Programmes, applicants are asked to demonstrate how their projects have addressed the issue of sustainable development, particularly the environmental aspects. The Ministry of Economics can refuse to award a grant if the project appraisal indicates that the applicant has failed to adequately address the economic, social or environmental impact of the project (although it is not known that that has happened).

Sustainable development policy in Scotland

In February 2000 the Scottish Parliament called for the Scottish Executive to "place sustainable development at the core of its work and commends the Scottish Executive for its commitment to integrate the principles of sustainable development into all government policies for the benefit it brings to the people of Scotland, now and in the future."

Traditionally, environmental, social and economic issues have been dealt with by separate organisations in Scotland although the issues themselves are inter-related. For example, unemployment and contaminated land are social and environmental problems caused by the decline of heavy industries and are especially evident in urban Scotland. In rural areas, there has been a long-term decline in both agricultural employment and biodiversity, linked to increasing mechanisation of farming and production subsidies.

However, it is only in the last few years that there has been recognition that the situation has changed so that more integration is needed to address issues which require action in one area to achieve benefits elsewhere. The main long-term challenges are the changing methods of working, together with wider acceptance of sustainable development as an overall aim. In practice, most support at project level has been towards pilot projects, particularly those focusing on environmental quality at community level.

More recent changes have increased the profile of environmental aspects of sustainable development in relation to business and economics. As well as a flow of legislation on environmental standards, much of it from Europe, the introduction of environmental taxes on energy use and waste disposal, combined with rising costs for water use and effluent treatment, have increased awareness of resource costs among businesses.

Scotland's economic growth is averaging 2.1% p.a. with manufacturing now occupying 20% of economic activity. Currently 75% of employment is in the service sector. In 1995 the Scottish environmental market had a turnover of £850 million with

6000 employees¹⁷. As new legislation is increasing the need for further clean up processes, design of alternatives or a reduction in the use of natural resources, these industries are likely to have experienced significant growth since 1995. The value of the global market of environmental technology businesses is set to increase from £240 billion to £430 billion by the year 2010, and the EU share is anticipated to be £82 billion. If Scotland is to take advantage of these new opportunities it needs to engage now. In order to create a more diverse and sustainable economics base, Scotland (with its reputation for innovation and research) should be ideally placed to harness the new market opportunities which sustainable development offers.

Implementing the Local Agenda 21/sustainability process throughout Scotland is vital if a shift in attitudes to the environment and the creation of new market opportunities is to be successful. All 32 Local Authorities in Scotland¹⁸ have now prepared a Local Agenda 21 Strategy, although significant challenges remain in terms of engaging the private sector and raising public awareness in order to implement the strategies.

All bills submitted to the Scottish Parliament must now be accompanied by a policy memorandum assessing their impacts on sustainable development, although there are doubts whether this has yet been given adequate attention. A Ministerial Group on sustainable development has now been established to encourage inter-departmental policy co-ordination.

Whilst the Scottish Executive has yet to develop an explicit strategy for embedding sustainable development, it is prioritising the issues of Waste (Resources), Energy and Travel and has stated its commitment to making sustainability a 'horizontal' or 'cross cutting' theme in all its major policies. For example, there is a strong commitment to sustainable development in the 'Framework for Economic Development in Scotland' (June 2000) which sets out the Scottish Executive's priorities to stimulate successful and sustainable economic development. In addition, the UK government introduced the Climate Change Levy in April 2001, and the Scottish Executive has set challenging targets under the Scottish Climate Change Programme (18% of power needs from a mix of renewable energy sources by 2010, compared with the UK target of 10%). This is supported by the work of the Scottish Energy Efficiency Office.

Meanwhile, the Scottish Environment Protection Agency (SEPA) is actively working with local authorities, businesses and the waste industry to implement the National Waste Strategy adopted in 1999. The Scottish Institute for Sustainable Technology (SISTech) was established by Scottish Enterprise and Heriot-Watt University in 2000 to promote awareness of environmental issues and sustainable technologies among businesses and encourage collaboration between research institutions and companies.

The new Structural Fund Programmes in Scotland take a more integrated approach to sustainable development than before, building on a range of study work undertaken during the planning process for 2000 – 2006. Two Scottish Programme areas, along with NRW, took part in the Commission's pilot study into the implementation of

¹⁷ MA Consultants Ltd 1995.

¹⁸ COSLA – Sustaining A Nation, March 2001.

sustainable development through the Structural Funds from 1997–1999 thereby demonstrating the benefits of sharing approaches and experience in this policy area. The environmental agencies were more closely involved in this process than in the past, complementing expertise already available on social and economic issues. Each Programme area has introduced procedures, specialist policy groups and awareness-raising programmes, to give practical substance to the horizontal themes.

Overall, there is now more emphasis on long term management of projects, on the improvement of links between inclusion aims and employment creation and on the links between business performance and environmental management. These changes are complemented by greater involvement of environmental and social partners in the decision making process, by the introduction of a number of monitoring indicators intended to capture the environmental aspects of the programme and by training, awareness raising and support mechanisms for partners at all stages. A number of projects have received support to improve their sustainable development performance as a condition of grants.

Environmental Technology (Green) Industries: A key sector in achieving sustainable development

Environmental Technology (green) industries are a horizontal economic sector. Their products, technologies and services:

- remove or reduce damage to the environment (*end of pipe sectors*) or / and
- avoid damage to the environment from the outset (preventative sectors).

The trend is to emphasise preventative technologies rather than end of pipe, since it is better (in terms of business efficiency and environmental impacts) to 'design out' environmental liability in the production process rather than tackle the problem once it has occurred. This approach is exemplified by the Agency for Efficiency in NRW, a government consultancy which advises companies on cleaner production technologies. One of the most important end of pipe sectors is the recycling of derelict and contaminated land. We make few references to this sector since an entire chapter focuses on this topic.

Statistics on environmental technology industries are not gathered systematically since they are a horizontal sector. In particular, environmental technologies integrated into production are not highlighted in the standard industrial classifications. In addition, there are “green” subsets of other industries, for example, Scottish Power renewables unit as a subset of Scottish Power. The difficulty in data collection can often result in an understating of the economic importance of green industries and their contribution to GDP.

Environmental Capabilities of Companies in NRW

The last survey of environmental technology industries in NRW commissioned by the Ministry of Employment was carried out by the KNI in 1998.¹⁰ KNI interviewed 1245 companies working in this field.

¹⁰ *ibid.*

KNI categorised the waste, soil, noise, air and water sectors as “end of pipe” technologies. The energy, urban ecology / building industry and eco-consumption sectors were categorised as 'preventative technologies.' The survey shows a number of 117,422 employees in 1996. This represents a share of 2.04% of the total workforce in NRW. The environmental industry had a total turnover of DM 45.3 billion in 1995 and invested DM 5.2 billion. In comparison, the chemical industry in NRW with 368,227 employees had a turnover of DM 68.2 billion in 1995. For the last years experts see a reduction of growth on a high level.

The end of pipe sector dominates the environmental technology industries. However, we have to consider that effective preventative environmental protection technologies cannot be registered statistically as green industries if they are integrated into the production processes. Waste management counts for more than half of employees, over 60% of the turnover and more than three-quarters of investments. 22% of employees in the environmental industry work in the preventative sector.

59% of the turnover of the environmental industry of NRW comes from the Ruhr area. 57% of all employees of the green industries work here and 57% of all investments take place in this area. The green industries of the Ruhr area are structured mostly through big companies: only 24% of the companies working in green industries are to be found in the Ruhr area. The end of pipe sector is clearly dominant.

Branches	Employees 1996	Rate of total employ. in %	Turnover Mio. DM 1995	Rate of total turnover in %	Invest. Mio. DM 1995	Rate of total investment in %
End pipe sectors	91.853	78,2	38.311	84,6	4.852	91,9
Waste	63.008	53,7	28.042	61,9	4.076	77,2
Soil	5.616	4,8	1.806	4,0	65	1,2
Noise	1.511	1,3	416	0,9	24	0,5
Air	5.805	4,9	2.068	4,6	134	2,5
Water	15.913	13,6	5.979	13,2	553	10,5
Prevent. Sectors	25.569	21,8	6.957	15,4	428	8,1
Energies	6.864	5,8	1.887	4,2	113	2,1
Urban Ecology / Building	11.235	9,6	4.355	9,6	271	5,1
Ecological Consump.	7.470	6,4	715	1,6	44	0,8
Green Industries total	117.422	100,0	45.268	100,0	5.280	100,0

Economic Importance of Green Industries in NRW Source: KNI, 1998

Clusters, as centres of communication, cooperation and innovation are important to the development of environmental technology industries. NRW established a diverse range of cluster initiatives oriented to the classical branches. For example, there is the

Future Energies Initiative which includes the Network of Competencies for Fuel Cells, the Railway Technology Initiative, the Ecological and Sustainable Water Management Initiative and the association of companies 'German Water.'

Environmental Capability of Companies in Scotland

The latest available figures on Scottish environmental technology industries date from 1995. At that time, companies which constitute Scotland's environmental industry turned over in excess of £2.5 billion, £850 million of which was directly attributable to environmental products and services. These companies employed in excess of 18,500 staff, 6,000 of which were actively engaged in 'environmental' employment (it is likely that these figures will be significantly higher now, and there is a need for further research).¹⁹ The Table below compares Scotland's environmental industries with those of the UK, Western Europe (including the UK), Japan and North America.

Comparison of Scotland's Environmental Industry with Other Regions

	Estimated Environmental Turnover £m	Estimated Environmental Employment	Estimated number of companies
Scotland	850	6,000	260
U.K.(inc. Scotland)	6,000	90,000	3,000
Western Europe	39,000	505,000	15,000
Japan	20,000	200,000	6,000
North America	57,000	850,000	33,000

According to the 1995 figures, the industry in Scotland is dominated by small to medium sized companies. Approximately 80% of companies had a turnover less than £5 million. The largest product category by far was Environmental Management Services representing over 40% of turnover and with nearly 50% of the companies offering this service. Behind this in importance came Waste Management, Contaminated Land Treatment and Air and Water Pollution Control. 82% of the industry's turnover was from the UK market.

Based on this survey, it is clear that Scotland has an environmental technology capability, although it is still developing, with the majority of companies performing adequately. Five product categories have the best strategic potential for development:

- Environmental consultancy services;
- Water treatment;
- Miscellaneous water pollution control;
- Waste disposal services;
- Environmental monitoring products and systems.

It should be noted that the survey did not include some important sectors that are now considered under the heading of "environmental technologies" and which have

¹⁹ *Scotland's Competitive Position in Environmental Technology Markets* MAI Consultants Ltd, June 1995 MAI: 324.

expanded significantly in the past six years. They include renewable energy generation and systems for energy management, materials recycling, and transport technology.

There are no national champions as yet identified but equally there are no failing sectors. This reflects the immaturity of the environmental technology market as a whole. The SISTech survey of Scotland's environmental technology industries carried out during 2001 indicates that the majority of businesses are found within these 5 categories. Scotland's overall competitive position is seen as medium. Whilst overall there are no world class industry groupings, certain companies within these groupings can be considered world class.

Scotland, and the UK generally, has failed to take the lead in any particular sector. For example, electrical power generation from wind was an area in which the UK had a technical expertise in the 1970s. However, the economic conditions were such that the UK did not take full advantage of this technical lead, with the result that much of the commercial and economic benefit went to Danish companies which benefited from Denmark's increasing commitment to this form of energy generation.

The existing geographic markets identified are the EU, the Far East and North America. Eastern Europe, and in particular the pre-accession countries, represents a significant potential market since they will be required to comply with EU environmental directives immediately on joining the EU.

There is a bias within Scottish environmental technologies towards activities such as waste disposal, land reclamation and water and sludge purification since these are currently high turnover activities. There is a danger that the domestic market for these activities is likely to shrink as good environmental practice is introduced.

Opportunities exist now for establishing world class environmental businesses. However, Scottish companies are 3 to 5 years behind some of their major competitors and will have to work particularly hard to successfully position themselves in the market. In addition it is concluded that the environmental market is increasingly becoming a global market and that to establish a competitive industry environmental goods and services must be exported.

The environmental technology industries are also highly dependent on research and innovation and Scotland is well placed with the range of research expertise in its universities and research institutes. These include many specialisms that are likely to assume greater importance in the future, such as bioremediation of contaminated land, urban water technology, environmental and industrial imaging, transport modelling and forecasting, sustainable construction techniques, remote environmental sensing, sustainable chemical technology, and energy recovery systems. One of the major challenges is to harness this new technology commercially, thereby helping to establish new environmental technology-based businesses in Scotland and strengthen those that already exist.

A further challenge, demonstrated by a recent study into the renewable energy industry in Scotland, is for Scottish-based companies to capitalise on the business opportunities that result from Government policies, regulatory pressures, and fiscal adjustments.

There is little benefit to the Scottish economy if the main suppliers of renewable energy systems, or resource management equipment, are overseas, or if Scottish sub-contractors are unable to respond to the requirements of primary contractors. The cluster methodology can help us to understand the current state of the value chain in these industries and to identify where public intervention can have the most impact.

To conclude, Scotland does have representation in environmental technology industries and there are identified areas where opportunities and expertise exist. Of these the new technology areas of monitoring systems and equipment may offer significant opportunities, particularly given the strong research and development activities which are currently being carried out in various parts of Scotland. There is a gradual move to green products, for example, planning conditions for buildings and design briefs incorporating higher standards of energy efficiency, all of which provide a growing market for green industries. Renewable energy and resources management, covered later, are key areas of opportunity.

Development of Environmental Technology Industries in Nordrhein-Westfalen

NRW consists of the big urban centres of the Rhineland and the more rural areas of Westfalia. Economic development and the development of green industries are in general comparable to the development in the rest of Germany. Only through the Ruhr area does NRW play a special part in the environmental industry.

New legislative regulations created additional costs for the industry in the first instance. However, a new export market for emission reducing technologies, filters and other devices to keep the air clean later emerged. National legislative regulations also paved the way for the development of the markets for water treatment and wastewater treatment technologies, recycling of derelict land and waste management. In 1994 Germany was second in the export of additive environmental technology (18.3% of the world trade) after the USA.

The Länder government promotes the export of environmental technologies within its foreign economic policy (e.g. joint stands of companies at international trade fairs). The environmental technologies from NRW often realises a quality standard which is clearly above the demands of many of the potential export countries. This means that the competitive advantage of an earlier introduction of higher environmental standards changes into a disadvantage. The companies of NRW must learn to sell technologies according to the market requirements and not necessarily the best technology according to technical development.

Despite the evident success of environmental policy, the road to an ecologically sustainable way of production is still long. Huge expensive environmental problems remain like the redevelopment of derelict land, the contamination of drinking water and many more continue to exist. Recently the German government warned of missing the climate target of Rio. Germany has to reduce the emission of carbon dioxide by 50-70 million tonnes.

The last emission report of the Länder Environment Office of NRW names industry with 74%, traffic with 14% and the small heating systems with 11% as the main

producers of carbon dioxide.²⁰ The reductions of carbon dioxide of industry are almost compensated by the carbon dioxide emissions of private households which produce them through cars (from 1990 to 1999: +12%) and heating systems (+6,5%).²¹

Recently the NRW government resolved on the NRW Climate Protection Concept. Nordrhein-Westfalen specifies a considerable number of initiatives and projects to reduce the emission of CO₂. If all measures are realised, NRW can contribute half of the German reduction volume.

The activities the NRW government is going to start are projects in saving energy and in renewable energies, promoting combined heat and power, usage of marsh gas, a pack of initiative to get a more sustainable transport and a wide range of other projects.

The instruments for encouraging ecologically friendly production developed on the Länder level of NRW include:

- the realisation of many model projects such as the International Construction Exhibition Emscherpark (IBA) and the close to nature redevelopment of the Emscher system; or the exemplary introduction of systems for environmental management into companies of selected sectors²²;
- the creation of networks / clusters between the players within different sectors of environmental technologies, e.g. within the framework of the NRW Initiative 'Future Energies' with the competence network 'Fuel cell' and the NRW Initiative 'Railway Technology';
- an indirect sales promotion of environmental products, e.g. through the building of the academy for further training for the Ministry of Inner Affairs in Herne, through the REN-programme which promotes the use of regenerative energy sources and an efficient use of energy;
- the promotion of companies working in the field of green industries, e.g. the building of the solar factory in Gelsenkirchen;
- the energy advice service of the Energy Agency of NRW and the Consumer Office of NRW;
- the improvement of the level of knowledge of small and medium sized companies about technologies of environmental protection which can be integrated in the production process through the Efficiency Agency of NRW;
- the development or support of the development of new environmental technologies and their realisation into products through universities and their transfer institutions, institutes, technological centres and supporting programmes such as the Technologieprogramm Wirtschaft;
- the internalisation of environmental costs through the introduction or increase of environmental taxes (e.g. waste water, problem waste).

²⁰ Landesumweltamt Nordrhein-Westfalen: Emissionskataster Luft 1996/1997 (Emissionsbericht).

²¹ MWMEV: Zukunftsenergien aus Nordrhein-Westfalen. 2001.

²² MWMTV: Betriebliches Umweltmanagement – Konsequenzen für den Umweltschutz und Standortwettbewerb. Ergebnisse der gewerblichen Modellprojekte in Nordrhein-Westfalen. 1998.

Development of Environmental Technology Industries in Scotland

The development of green industries in Scotland has been slow up until recently primarily due to the lack of enforcement of environmental legislation, so nascent businesses either developed markets overseas or failed for lack of markets, despite some support from the public sector. Recent changes - legislative and fiscal - have encouraged more activity, because better environmental performance now makes more economic sense. SEPA, the government's environmental compliance agency, is now well established. There is considerable room for improvement through, for example, an increase in green purchasing in the public sector.

Environmental legislation has been driven primarily by European Commission Directives. However, the inception of the Scottish Parliament has resulted in a major commitment to sustainable development in all new policy development. Implementation of sustainable development has been enthusiastically embraced by the Scottish Executive which has set up a government agency to ensure compliance with legislation (Scottish Environmental Protection Agency).

European Commission Directives set targets which the Member States must meet – the Scottish Executive has often set itself more challenging targets. For example, the UK target for production of renewable energy (New and Renewable Energy Policy) is 10% of power needs generated from alternative energies by 2010. The equivalent Scottish target is 18% under the Scottish Climate Change Programme. The Climate Change Levy introduced by the UK Government in April 2001 should encourage a shift by businesses and other organisations towards greater energy efficiency and use of renewable energy. The National Waste Strategy is another initiative supported by the Executive, which is intended to improve Scotland's performance in waste reduction, materials reuse and recycling.

Social economy organisations such as the WISE Group can be classified as a green industries in that part of their activities include carrying out energy efficiency audits in social housing and upgrading housing to reduce energy bills. Others, such as REHAB recycle used domestic appliances so that they can be brought back into productive use.

Renewable Energies in Nordrhein-Westfalen

Nordrhein-Westfalen is the leading energy region in Germany. It contributes 85% to German coal mining and 55% to brown coal mining. 30% of the electricity used in Germany is produced in NRW.²⁴ Since 1995 NRW has not used nuclear power in order to produce energy.

Seeing the finite nature of fossil energy sources and the resulting environmental damage, the German Chancellor Gerhard Schröder expressed during the Conference of the Member States in Bonn in 1999 the target of doubling the share of renewable energy sources in the production of energy until the year 2010.²⁵ The share of

²⁴ MWMEV: Zukunftsenergien aus Nordrhein-Westphalia. 2001.

²⁵ *ibid.*

renewable energy sources in the consumption of primary energy in NRW in 1994 was 1.4% and in the production of electricity 4%.²⁶

However, the use of renewable energy sources is not yet economical for many sectors. This is why NRW supports development and use of renewable energy sources and an efficient use of energy. In 1987 the programme "Efficient use of energy and use of inexhaustible energy sources (REN)" was installed. In the fiscal year 2001 there are DM 94.5 million at the disposal of the REN-Programme.

The REN-Programme supports demonstration and promotion projects, technological development, energy concepts and projects for district heating. From March 1988 to December 2000 the Länder government granted DM 873 million for 42,000 projects.

The Energieagentur NRW (Energy Agency NRW) in Wuppertal (with a branch in Duisburg) which was founded by the Länder government of NRW has been accompanying the REN-Programme for 11 years. Together with the Verbraucherzentrale NRW (Consumer Office NRW) it gives advice, neutrally and independently, about efficient use of energy, use of inexhaustible energy sources and contracting.

In April 1996 the former Minister of Economy, Wolfgang Clement, and the Minister for Construction, Dr. Michael Vesper, created a framework for all the different initiatives for renewable energies in NRW. The NRW initiative 'Future energies' "represents an offer to industry and medium sized companies, to energy producers and constructors, to research and science, to consultative companies and engineer's offices in order to promote an efficient production and use of energy and to increase the competitiveness of the economy through innovation."²⁷

Solar energy is given great importance for the structural change of the Northern part of the Ruhr area. In Gelsenkirchen in 1997 Shell Solar Deutschland GmbH laid the foundations for one of the biggest factories of Photovoltaic cell technology in the world. There emerges a new area of competence of the energy industry in NRW together with the research assignment of the Fachhochschule Gelsenkirchen²⁰, the demonstration installations of the Innovationszentrum Wiesenbusch (Innovation Centre Wiesenbusch) in Herten, the solar roof on top of the Centre of Further Education of the Ministry of the Interior in Herne and the 50 planned solar house areas in NRW. Investment in solar energy is encouraged by pricing incentives introduced by the Government, to stimulate demand for the technology and thereby assist it in becoming competitive with fossil fuels.

Of great importance to the issue is the competence network fuel cell NRW, the centre for fuel cell technology in Duisburg, the bio mass initiative NRW, the branch and technology initiative for geothermics NRW, the heat pump market place NRW and the development of gas turbines in Oberhausen (MAN).

²⁶ MWMEV: Energiepolitik in Nordrhein-Westfalen.

²⁷ *ibid.*, p. 20.

²⁰ A Fachhochschule is a kind of academy with a more exercise-oriented training than a university.

The NRW government is going to invite the chief executives of the energy industry for a new 'energy dialogue 2010+'. The target of the talks will be to work out sustainable and strategic options for initiatives in globalized and liberalised energy markets. Presently the data basis is worked out in form of the Energy Report NRW. Part of the conceptual work is done within the Climate Protection Concept NRW.

At the same time it is important to keep in mind that this new development also competes with existing markets of the energy industry. If NRW wants to meet the climate target of Rio, the consumption of fossil energy sources has to decrease further. In the traditional energy area of NRW, economical interests and jobs are behind the different energy sources. There is still no real balance between the players.

Renewable Energies in Scotland

Historically, Scotland's energy supplies have benefited from investment in extensive hydroelectric schemes. More recently, nuclear power has provided a significant proportion of the country's energy supplies, and this is classified as "renewable". Currently, geographical location and abundance of natural renewable resources such as wind and waves provide the main opportunities for the Renewable Energy Sector. Of the entire renewable energy sector, wind in particular is well developed.

There is a long history of innovation and application in this sector in Scotland; although in the early days very little financial or political support was available leading to the collapse of some of the pioneering companies before they could benefit from an increase in market demands. Fuel Cell technology has not yet assumed any significance in Scotland and it is currently at R&D stage with a number of research institutions such as: University of St Andrews, Robert Gordon University, Aberdeen and at Napier in Edinburgh. This section of the report therefore analyses the renewable energy sectors of Wind and Bio Mass, enhanced by advice given by the Scottish Enterprise Energy Unit in Aberdeen and the Industrial Power Association in Glasgow.

Currently the most advanced Renewable Energy sector (and the most economically viable) in Scotland is on-shore Wind production that currently comes with a very low unit cost price. All the companies in this category have reported a strong trend in market expansion and all anticipate accelerated growth. For example, Scottish Power has announced plans to build two wind farms. The first, outside Glasgow, will consist of 140 turbines (240 megawatt) at a cost of £150 million which will generate enough electricity to supply 150,000 homes. The second, at Forth, South Lanarkshire, will generate enough electricity to supply 70,000 homes. Both will be complete by 2003.

With a change in agricultural practices and an increasing drive for diversification, Bio Mass businesses also seem optimistic about their future. The picture however is not as uniform as it is within the wind sector. The majority of biomass companies are Scottish in origin, with a full range of components represented. The majority of Scottish companies are small and medium sized companies employing between 1 and 500 people and their R& D potential is relatively small.

The larger companies such as MICON (non-Scottish) already have a strong foothold in the continental market. The outlook for indigenous companies such as Proven Engineering also seems very positive, indicated by their move to new business premises. Overall all the companies who replied to the report survey forecast an increase in export opportunities, some by as much as 100% on the previous year. All indicated that their future market opportunities are predominantly outwith the UK. Nevertheless, it is often overseas companies who are now exploiting the market opportunities in Scotland, including Aerpac which manufactures wind turbine blades in Fife, and Vestas which has announced a major investment in wind turbine manufacturing in Campbelltown, Argyll.

Biomass production in Scotland is at a different stage of development compared to continental Europe²¹. In Scotland it is slowly developing as a fuel source with residues from forest operations becoming available as energy source. At present three purchase contracts have been awarded. As many forests in Scotland reach their economic maturity an increase in fuel source will become available, in addition short rotation coppice can offer diversification for the agricultural community. A power station based on chicken waste has now been established, demonstrating the variety of potential sources of renewable energy.

The recent establishment of the Scottish Energy Environment Foundation is an important step forward in developing collaboration in R & D. It involves Scottish & Southern Electricity and Scottish Power, and the Universities of Strathclyde and Edinburgh, plus the Scottish Executive and Scottish Enterprise. Its role is to advise MSPs, and also to take innovative technologies to the market. It has had 34 applications for support, and has a budget of £540K over 3 years. It's currently focused on electricity, and there is a lot of interest in switch gears and control mechanisms. As Scotland develops renewable sources there will be a need for substantial investment in the transmission and network systems, particularly to capture wave and wind energy on the west coast.

Another important development in promoting collaboration in the energy cluster is the merger of the Industry and Power Association, and the Renewable Energy Forum (70-80 companies) to form the Scottish Energy Industries Group.

Scotland's landscape is perceived as wild, remote and unspoilt by many of its European visitors and from elsewhere. This scenic quality is regarded as one of Scotland's biggest assets, with the tourism sector one of the largest contributors to the national GDP. The need to protect these resources from visual and noise pollution while at the same time contributing to national and international renewable energy targets is a delicate one. This issue is closely linked to public acceptance of renewable energy, which is of great importance if its growth rate is to be guaranteed.

Another constraint on future development in Scotland is the plethora of funding arrangements currently in existence. The current sources for funding range from Lottery funds, grants from Department and Trade and Industry, Scottish Energy Efficiency Office to Energy Trusts and European funding. This has led to:

²¹ Renewable Energy in Scotland February 2001.

- Complexity;
- Duplication of effort;
- A non-strategic approach to funding;
- Difficulty in collecting comprehensive and meaningful data;
- Competition among the various agencies and players.

There is also a need to facilitate a culture that is not averse to taking risks and is able to create long-term investment opportunities. Wind turbines are now big business with competition for good locations increasing across Europe.

In addition to the International Kyoto commitment, the UK Government has set a target of 20% (i.e. -20% on 1990 levels) for carbon dioxide reductions by 2010. The target for production of renewable energy under the New and Renewable Energy Policy is the generation of 10% of power needs from a mix of alternative energies by 2010, currently standing at around 2% with an intermediate target of 5% by 2004.

The target for Scotland is 18% under the Scottish Climate Change Programme leading to increased opportunities in the domestic market. The UK Government has allocated £310 million over 3 years to support renewable energy technology development, much of this coming from the Climate Change Levy which is encouraging organisations to invest in renewable energy sources. However, to be successful in the application of more renewable energy the following issues need to be considered, including²²:

- More development of renewable energy projects at urban locations;
- Encouragement of the renewable energy manufacturing capacity and supply chain in Scotland;
- Demonstrating small scale embedded renewable energy generation;
- Wider public acceptance of the need for renewable energy;
- Energy crops as product developments for Scottish agriculture and forestry.

The most important policy and legislative framework, which currently drives the sustainability market, includes the 1997 Kyoto Protocol where individual national targets are established to package six greenhouse gases below 1990 levels during the commitment period (2008-2012). These are: carbon dioxide, methane, nitrous oxide, hydro fluorocarbons, per fluorocarbons, & sulphur hex fluoride.

It is widely accepted that throughout Europe the renewable market share will double in the next few years²³ making this a very opportune time for expansion and growth. The EU Council of Ministers has adopted a resolution agreeing that there is a need to promote a sustained and substantially increased use of renewable sources of energy throughout the EU and urges Member States to implement national strategies for the promotion of Renewables. The EU's Sixth Framework Programme emphasises climate change and natural resource management.

²² Renewable Energy in Scotland – electricity Issues NIFES February 2001.

²³ EU White Paper on Renewables – The European Commission's White Paper on Renewables Energy for the Future.

Waste Management in Nordrhein-Westfalen

In Germany 312,000 people were employed in the Clean Process sector in 1997. Cleaning environmental protection reached a turnover of DM 62 billion.³³ Due to mergers, waste management is structured through big companies because the “business in waste” has become a profitable market. Almost all big German companies of the Clean Process sector (e.g. RWE Entsorgung, Trienekens) have their headquarters in NRW.

The green industries in NRW are shaped to a great extent by waste management because in 1996 this sector reached 61% of the total turnover of all environmental sectors and employs 60% of the workforce. In order to meet the Law of Cyclic Management (Kreislaufwirtschaftsgesetz) the companies invested DM 1 billion in waste management in 1995.³⁴ Between 1987 and 1996 the Clean Process sector experienced an average increase in employment of approximately 10%.³⁵

Although at lower levels of employment, the recycling sector also constitutes a growing market. Between 1997 and 1999 employment increased by 20%. At the same time, the German waste management industry grew by 9.8%.

Employees of the recycling sector in NRW paying social insurance

	Employees NRW	Growth NRW	Employees Germany	Growth Germany
1997	5,048	-	33,563	-
1998	5,490	+ 8.7 %	36,568	+8.9%
1999	6,078	+ 10.7 %	36,867	+0.8%
1997/1999	-	+ 20.4 %	-	+9.8%

Source: *Landesarbeitsamt NRW*

German waste legislation is based on the Constitution (Art. 74 No. 24) and concedes absolute legal competence to the Federal Government in this field. The Federal Law is supplemented by the legislation of the Länder (competing legislation). These Länder Waste Management Laws (Landesabfallgesetze) require waste management concepts, balances and plans for the disposal of the communities. The environmental legislation represents the leading force in the development of German waste management. Additionally, EU directives and decrees intervene more and more in national legislation.

Within the last 25 years waste legislation has developed from a pure regulatory law (Waste Disposal Law / Abfallbeseitigungsgesetz in 1972) of disposal and deposit to integrated waste management which gives avoidance and recovery of waste priority

³³ Eurostat: OECD/Eurostat. Development of a Manual and Framework for assessing the Environment Industry. Informal Working Group. Doc. Eco-Ind/1/1. Luxembourg 3/97.

³⁴ Manfred Lemke/Jürgen Bärsch/Herbert Klemisch/Frank Weishap: Umweltschutzwirtschaft in NRW. Strukturen, Beschäftigungspotenziale und Qualifizierungsbedarf. June 1998 p. 13 and following.

³⁵ *ibid.*, p. 30.

over its disposal (4. amendment of the Waste Disposal Law / 4. Novelle des AbfG in 1986; Cyclic Management / Waste Disposal Law in 1996). Consequently, production and consumption habits get closer to the ideal of cyclical management. This development must be seen against the background of a growing amount of waste and a predicted disposal crisis at the end of the 1980s.

Recovery of Packaging – Private Consumer in Germany

	1991	1994	1997
	Rate of recovery in weight percent		
Glass	53.7	70.1	83.3
White metal	34.2	58.1	83.7
Aluminium	5.2	30.4	77.8
Plastic	3.2	52.6	66.6
Paper	28.3	57.4	78.2
Boxes for liquids	0.0	40.6	61.6

Source: *Gesellschaft für Verpackungsmarktforschung mbh (GVM). In: Daten zur Umwelt 2000 - Umweltbundesamt*

According to the regulations of the Cyclical Management / Waste Disposal Law and especially according to “subordinate regulations” with product oriented rules for taking back and recovery (e.g. Old Car Directive in 1997, Battery Directive in 1998) the responsibility for products is transferred to industry. Germany introduced these directives before the European Commission although the German directives do not include all the aspects of the subsequent EU regulation.

According to the Polluter Pays Principle there is a change from public prevention to private responsibility.³⁶ The main problem of waste management in future will be the duality between the use of re-usable material in the waste and the removal of damaging substances.

The answer to the change of paradigms in terms of environmental policy must be product integrated environmental protection and a management of the stream of materials. Products must be analysed “from the cradle to the grave.” This requires more and more specific directives, systematic analyses and descriptions of material streams; and complex examinations of products in order to guarantee the ecological recovery of material.

The exemplary waste management of NRW (e.g. the technical ways in order to avoid waste or the keeping of deposits) is due to a high density of industry (coal, steel, metal and chemical industry) and the following amount of waste (historical dimension), and high population density and the resulting variety of demands (socio-economical dimension).

³⁶ The Packaging Directive (in 1991) containing a duty to take used packaging material back already led to the birth of a system of recycling, separation, processing and recovery of used material: the „Dual System Germany“. The Germans become more and more „collectors and sorters“ (see table 3).

The formulation of concepts of waste management within companies which have to contain measures for internal cyclical management and for a production process that avoids waste is specified in the legislation of NRW (Länder Waste Disposal Law in 1992) which precedes the Federal legislation. For almost 10 years there has been a Problem Waste Contribution for the disposal of problem and mass waste. It has been used to finance the recycling of derelict land in NRW and created financial incentives for an increasing rate of waste recovery. Furthermore, the Concept for the Disposal of Problem Waste (in 1996) is established in Länder legislation. It should be an orientation for industry which is encouraged to assume the responsibility for their own clean processes.

In October 2000 Nordrhein-Westfalen introduced an enactment, the material stream analysis, to judge thermal disposal measures in order to avoid a lowering of the environmental standards in waste recovery.

Regional quantity of waste/Rate of recovery (public waste disposals) without mineral building rubble

	Quantity of waste	Recovered / rate of recovery in %	Disposed	Thermally treated	Deposited	Mechanically-biologically treated
	Quantity in 1.000 Mg					
1990	21,238	~ 20 %*	-	-	-	-
1993	20,362	-	-	-	-	-
1996	17,590	7,555 /	10,019	3,188	6,831	-
1997	17,335	7,336 /	9,997	3,533	6,464	-
1998	18,763	8,128 /	10,635	3,566	6,656	229
1999	19,052	7,855/	11,197	3,745	7,112	236

**District Cologne Source: Abfallbilanz 1995/96, 1997, 1998, 1999, MUNLV*

From the perspective of sustainable development there are further steps required. The BUND (Association of environmental and nature protection in Germany) and the institute Öko-Institut e.V. demand a further ecologisation of waste management which puts more emphasis on regulations promoting avoidance and recovery of waste (e.g. waste charges which consider the Polluter Pays Principle, advice for waste management, environmentally justifiable energy prices). The current situation is marked by over-capacity in incinerating plants and deposits. There is the problem of fictitious recovery and waste export because of abstract regulations (lack of a practicable differentiation between the concepts of “waste for recovery” and “avoidable waste”) of the Cyclical Management / Waste Disposal Law.

Waste Management in Scotland

This section of the chapter concentrates on ‘Clean process’ industries. This excludes the domestic waste sector which is handled mainly through Local Authorities, although there are major opportunities for private sector involvement through public/private partnerships, and supply of technology and equipment to Local Authority facilities.

The Clean Process sector represents a wide range of processes located in Scotland, including:

- Air pollution - Includes air-monitoring equipment, gas scrubbers, dust collectors, Incinerators as well as installation and servicing of APC equipment.
- Recycling - Includes metals, paper and board, glass.
- Contaminated land - Includes processes which treat contaminated groundwater and contaminated land.
- Waste management - Includes collection, treatment, disposal, bio-remediation, sludge and oil treatment, and aerobic digestion.
- Water treatment - Includes aeration systems, separation technologies, chemical treatment, construction and operation of wastewater treatment system.
- Geothermal energy equipment - Includes monitoring and measuring equipment, data collection sample and analysis.

The majority of companies active in this area in Scotland are small to medium sized companies, with a number closely linked to University or research organisations. They form quite a significant part of the economy with turnover ranging from £½ million to £5 million annually for each company.

The current or imminent legislation at a European level affecting the 'Clean process' sector is: the Waste Electronic and Electrical Equipment Directive (final adoption in June 2002); the Packaging Waste Directive, which encourages higher recycling targets (currently the UK target is 25% with Scotland averaging less than 11%, in other European Countries it is nearer 80%) and the Battery Directive which will restrict the use of heavy metals in batteries. The Directives applicable in the area of Air and Noise Pollution are: Large Combustion Plants Directive; Ozone Directive; Ambient Noise Directive; and many more. A whole new generation of legislation is coming to the fore, which will bring with it a demand for a new style of resource management.

A significant 'driver' in the future will be the Integrated Pollution Prevention Control (IPPC) Directive which is introduced in the UK through the Pollution Prevention & Control Act, 1999. Its objective is to prevent or minimise emissions; provide high levels of protection for the environment as a whole; and to minimise the consumption of raw materials and energy. Increasingly the emphasis is shifted from recycling to reducing waste at source and improved use of raw materials, utilities and energy. The National Waste Strategy promoted by SEPA is intended to bring local authorities, waste operators and businesses together to improve levels of waste reduction, reuse, and recycling. The main priority is the reduction of volumes of waste going to landfill, especially biodegradable waste which generates methane (a greenhouse gas).

As the EU continues to promote the adoption of integrated processes, clean technology, and resource management as a cost-effective solution to environmental

problems in the EU, this market is likely to see further rapid expansion²⁴. This will help stimulate the development of these processes certainly within the EU market and should give suppliers the expertise and the products to compete in an expanding export market.

Constraints on future development

Many of the industries report that the Scottish market for waste, water, air pollution and recycling sectors is not yet as fully developed as in Germany. These companies expect only small growth in Scotland compared with increased growth elsewhere, perhaps not expecting that government targets will be followed through. Without strong Government intervention the market, for example in the recycling sector, is unlikely to reach the growth experienced in Germany. The competitive advantage that Germany now enjoys has been brought about by a series of Government interventions, Government grants (sometimes as much as 80%) and a shortage of land, for example for landfill. A positive public attitude is seen as vital to successfully change policies and actions.

Future opportunities for development

Recognising the vital importance of developing the market for recycle materials, the Remade project has been established by the Scottish Executive, Confederation of Local Authorities, Scottish Enterprise, and the private sector, to investigate new uses for such materials and promote their commercial development. As with solar energy in NRW however, some Government pricing incentives or favourable purchasing policies may be required to stimulate market adjustment and speed up technological development.

In the future the market is anticipated to bring together the remedial industry with industries active in design and innovation. In Scotland a number of such innovative ways of re-use, re-cycle and re-design exist. For example, Decocrate in Shetland uses recycled pulverised glass as construction material, thus cutting down on natural material as well as transport costs.

Companies with expertise in remedial reclamation, including chemical and oil, would be well placed to benefit from future opportunities to exchange and share knowledge. However the total European market for contaminated land reclamation currently stands at only 3% compared with the waste management sector at 40% of the overall environmental market, waste water treatment with 39%, and air pollution control and engineering services with 7% each. The proportion of contaminated land reclamation is likely to increase as new countries becoming member states with a similar industrial heritage as the former East Germany.

Finally, Scotland along with many other European countries has to deal with an increasing mountain of electronic & electrical waste. Currently over 42,000 tonnes of waste arising from electrical and electronic equipment (WEEE) was produced in

²⁴ The EU Eco Industry's Export Potential.

Scotland during 2000²⁵. The majority is in the form of large household appliances and the amount is estimated to grow at 10% per annum. SEPA has identified WEEE as a priority waste stream in the National Waste Strategy for Scotland. Few Local Authorities currently monitor the amounts of WEEE collected and currently little incentive exists to recycle components as there is as yet no market identified. This is an issue which will increase in importance and could provide a good opportunity to exchange knowledge and establish future markets.

Conclusions

- Although Scotland has a particular technical expertise in wind energy and has the greater potential (better natural resources) for the development of profitable regenerative energy resources (wind, water), actual development is higher in NRW. NRW is a European leader in fuel cell technology, recycling and waste reduction.
- Both NRW and Scotland have developed expertise in contaminated land reclamation and power generation from biomass.
- As the example of NRW demonstrates, green industries can develop to become a major contributor to GDP in their own right, and also support greater efficiency across industry as a whole. The economic importance of green industries is significantly higher in NRW than in Scotland.
- The Scottish approach to industry clusters could play an important role in the development and commercialisation of green industries. Better industrial data is required to provide a more accurate and up-to-date indication of the value of green industries, and for the growth of these industries to be monitored.
- Public opinion, environmental legislation and political will are key drivers for the development of green industries. Public opinion is also one of the most important barriers to the development of large scale renewable energy. Lack of awareness and interest affects the sector as a whole (e.g. insufficient use of recycled paper to generate viable market).
- More generally, measurement of progress towards more sustainable forms of development is a vital issue in both Scotland and NRW, requiring agreement on sets of indicators.
- Scotland's inclusive approach has led to more community involvement at an early stage both in project planning and execution, e.g. through small-scale community heating schemes. In Germany the community is seen as a consumer with the market providing technologically led solutions.
- The EU Structural Fund Programmes, and in particular Objective 2, have become an important mechanism for promoting sustainable development amongst the public sector.
- Despite the difficulty in accessing appropriate data it is clear that NRW has a much higher recycling rate in the waste disposal sector than Scotland.

²⁵ Environment Group Research Programme No 16.

ENTREPRENEURIALISM AND SUSTAINABLE NEW BUSINESS START-UPS

	Nordrhein-Westfalen	Scotland
Entrepreneurship	<ul style="list-style-type: none"> ▪ Increasing focus on education in promoting entrepreneurship. ▪ Physical and commercial infrastructure to support entrepreneurship. 	<ul style="list-style-type: none"> ▪ Strong commitment to education in promoting entrepreneurship. ▪ Very strong business environment for entrepreneurship.
Business Start-Up Strategy	<ul style="list-style-type: none"> ▪ Significant investment in business start-up. ▪ Strategy incorporated into political & institutional structures, using state/public finance. ▪ Concentrates on perceptions of institutional players. ▪ Detailed statistical information and planning process. 	<ul style="list-style-type: none"> ▪ Significant investment in business start-up. ▪ Strategy closely linked to industry using private finance and PPP. ▪ Focused on attitudinal change and individual perceptions. ▪ Lack of complete statistical information on progression and survival rates.
Access to finance	<ul style="list-style-type: none"> ▪ Extensive state and regional banking structures. ▪ Stable perception of banking environment. 	<ul style="list-style-type: none"> ▪ Focus on enabling mechanisms for informal capital networks. ▪ Issue of perception of availability of finance.

Introduction

"Entrepreneurs are essential agents of change who accelerate the generation, application and spread of innovative ideas and, in doing so, not only ensure efficient use of resource, but also expand the boundaries of economic activity."

This section of the report compares and contrasts frameworks and initiatives which are in place in Scotland and Nordrhein-Westfalen to promote entrepreneurial behaviour aimed at encouraging the start-up and growth of sustainable new ventures. It investigates and recommends areas for collaboration and practical ways forward in terms of knowledge sharing and project development.

Policy Principles for Entrepreneurial Economies - International Perspective

The Global Entrepreneurship Monitor (GEM) 2000 gives detailed comparisons on entrepreneurial performance between 21 countries, covering 42,000 individuals including 800 experts, including the G7 nations. The central aim was to bring together the world's best scholars in entrepreneurship to study the complex relationship between entrepreneurship and economic growth.

The study focused on three fundamental questions:

- Does the level of entrepreneurial activity vary between countries and, if so, by how much?
- Does the level of entrepreneurial activity affect a country's rate of economic growth?
- What makes a country entrepreneurial?

The key findings from this research identified underlying principles for developing economic policy to maximise entrepreneurial performance as follows:

- The level of entrepreneurial activity differs significantly between countries – ranging from Brazil where 1 of every 8 adults is currently starting a business to 1 in 100 in Ireland and Japan. The figure for Germany and the United Kingdom is 1 in 25.
- Entrepreneurship is strongly associated with economic growth: Among nations with similar economic structures (such as Germany and UK), there is a strong correlation between entrepreneurship and economic growth. All countries with high levels of entrepreneurial activity have above average economic growth.
- Policies geared towards boosting entrepreneurial activity should not be confined to the entrepreneurship sector: From the GEM results it is clear that fundamental features of the wider economic system play a critical role. Countries with higher levels of entrepreneurial activity are characterised by comparatively lower levels of corporate and marginal personal income tax rates. The most entrepreneurially active countries also have a greater ease of doing business with the government, more flexible labour markets and lower levels of non-wage labour costs.

- Most firms are started and operated by men, with peak entrepreneurial activity among those aged 25-34: Overall, men are twice as likely as women to be involved in entrepreneurial activity, Germany and the United Kingdom below the median for the study.
- Financial support is highly associated with the level of entrepreneurial activity: It is illuminating to note that informal private investments in emerging and new businesses dwarf the more formal venture capital outlays. For the United States alone, GEM estimates total private investments in entrepreneurial companies in 1999 to be more than \$63 billion. This is substantially more than the \$46 billion invested in start-ups by the professional venture capital industry during the same period, a year in which the U.S. venture capital industry hit a dramatic new high.
- Education plays a vital role in entrepreneurship: Providing individuals with quality entrepreneurship education (i.e., training in the requisite skills for converting a market opportunity into a commercial enterprise) was consistently one of the top priorities identified by the experts interviewed in each of the 21 nations.
- The perceived social legitimacy of entrepreneurship makes a difference: Two such indicators were the extent to which fear of failure acts as a deterrent to starting a new firm and respect for those starting new firms. These indicate a fundamental difference in social and cultural values between countries with high levels of entrepreneurial activity and countries where entrepreneurship is not an integral feature of everyday life.

Policy Implications

A set of straightforward policy implications emerges from the GEM initiative, although the implementation of these principles will vary from country to country, they are nonetheless of significant general applicability:

- The promotion of entrepreneurship, its role in society and the opportunities it presents for personal gain, appear to be critical for facilitating economic growth.
- Policies geared towards enhancing the entrepreneurial capacity of a society (i.e., the skills and motivation to pursue opportunities) will have the greatest impact on the level of entrepreneurial activity.
- Increasing the participation of women in entrepreneurship is necessary for long-term economic prosperity.
- For the greatest long-term impact, policies should encourage the involvement of people younger than 25, and older than 44, in the entrepreneurial process.
- Any government committed to sustained economic progress must ensure that all aspects of its economic system are conducive to, and supportive of, increased levels of entrepreneurial activity. This includes minimising taxation, ensuring access to labour, lowering non-wage labour costs, reducing the regulatory burden and making it easier to do business with the government.

- Policies should facilitate the development of a professional venture capital industry and create incentives for private individuals to invest directly in early-stage businesses.

National Findings - Germany and the United Kingdom

The GEM Report identified levels of entrepreneurial activity, unique national features and key issues for each of the 21 participating countries. The findings for Germany and United Kingdom respectively are as follows (although not NRW and Scotland specifically, the underlying findings will be pertinent):

Germany - Level of Entrepreneurial Activity⁴

- Germany has a below-average entrepreneurial activity rate (4.7 percent), but among the European GEM 2000 countries, it is below only Norway, the United Kingdom and Italy.
- As many as 1 in 25 German adults is investing in new business start-ups, making Germany 4th among all GEM 2000 countries and behind only Norway in the participating European group.
- The entrepreneurial activity rate for women is slightly below half of that for men, and close to the average for all GEM 2000 countries.

Unique National Features

- There has been a significant change in the entrepreneurial climate in Germany, particularly among younger people, where entrepreneurship is now an integral topic of debate in the business, scientific and political communities.
- Still, the prevailing social and cultural norms - with an emphasis on risk avoidance and social stigma attached to failure - are inconsistent with the encouragement of enterprise, particularly in eastern parts of the country and among older members of the population.
- Germany has a strong physical and commercial infrastructure to support entrepreneurs.

Key Issues

- Early-stage financing is creating two classes of new ventures: those in the “new economy” for whom ample finance is available and those in more traditional businesses still confronted by a risk averse and inadequately skilled banking sector. Across both groups there is evidence of a financing gap for relatively small amounts of early-stage capital. In terms of the total amount of classic

⁴ GEM 2000 p 31

venture capital invested domestically in 1999, Germany ranks second after the United States.

- Changes in the tax and legislative environment have not kept pace with those starting a business; entrepreneurs are still confronted with significant administrative obstacles.
- Research and development transfer from universities is hampered by a lack of clarity in terms of intellectual property rights and minimal incentives for academics to pursue entrepreneurial opportunities.
- Entrepreneurship remains largely ignored in schools and universities with very few programmes available and an acute shortage of staff with the skills required to teach in the area.

United Kingdom - Level of Entrepreneurial Activity⁵

- The rate of entrepreneurial activity in the United Kingdom (5.2 percent) is behind only Norway and Italy in the European group, although not significantly different.
- The rate of angel investment in new start-ups is 2.9 percent, above the GEM 2000 average.
- The percentage of entrepreneurial activity of women compared with men is 63 percent, which is among the four highest rankings and well above the average for all GEM 2000 countries.

Unique National Features

- The United Kingdom has a supportive business environment for entrepreneurs and its commercial and professional infrastructure is rated as one of the strongest among the GEM 2000 countries.
- The Government has made a sustained commitment to boosting entrepreneurship, launching in the past year the Small Business Service and the Enterprise Insight Campaign.
- The taxation regime has been significantly improved. Notable recent examples are a reduction in Capital Gains Tax and additional tax relief on Research and Development.

Key Issues

- Approximately one third of all experts identified 'education' as the most critical issue, with younger people receiving limited exposure to business issues.

⁵ GEM 2000 p 35

- A comparable proportion of experts focused on social and cultural norms being out of sync with an entrepreneurial society. The media is held to play a key role in this. Though it tends to celebrate entrepreneurial success, less tolerance is shown toward those who fail. Changes in the law relating to bankruptcy have an important role to play in this regard as well.
- In terms of finance, more new venture capital was raised in the United Kingdom in 1999 than any other GEM 2000 country apart from the United States. The United Kingdom ranks third with respect to total amount of classic venture capital invested last year, with high average amounts invested per company but in relatively few companies compared with other countries.
- National experts expressed concern about the unequal geographic distribution of new equity investment and a bias away from manufacturing industries. This is reflected in the figures that indicate, on a per capita basis, that the United Kingdom is the third-ranked major investor in information technology and the largest investor in consumer companies.

Scotland and Nordrhein-Westfalen - Strategic Direction

Having looked at the international picture, then narrowing down to Germany and United Kingdom, we now focus on the individual strategies of Scotland and Nordrhein-Westfalen to identify specific areas for knowledge sharing and strategic development. In Scotland the key instrument is the Business Birthrate Strategy (BBRS) whilst in NRW it is the Gründungs-Offensive Go!

The Scottish Business Birthrate Enquiry (BBRE)

“ ... to achieve a better understanding of how business start-ups contribute to economic development and to identify why Scotland has a lower business birth rate than other regional and national economies.”

The key findings of the BBRE were:

- New firm formation matters to employment growth. Jobs created by new firms in Scotland between 1978 and 1990 amounted to 125,000. This was greater than the jobs created in inward investment or in the expansion of big companies. (This was a significant finding because prior to the BBRE and the development of the Strategy, start-ups were probably generally viewed as of less importance to employment growth and economic performance than inward investment and general industrial development. The present recognition of the importance of new starts and the business birth rate to Scotland’s economic development may be one indication of the success of the Strategy in moving the issue to the centre of the economic policy debate in Scotland.)
- Scotland’s lower business birth rate meant that job creation through this route was 70,000 less during the 1978 to 1990 period than if Scotland had matched an average UK region such as the West Midlands. Job creation would have been

195,000 greater in Scotland if the business birth rate had matched that of the South East of England, the UK's fastest growing region.

- The BBRE concluded that there was a particular problem in the *translation of interest into action*. It was not that the Scots lacked interest in starting a business. Indeed, the research found that around 600,000 had a serious interest in setting up a new firm.
- For Scottish Enterprise, a critical issue in the translation of interest into action was *access to finance*. Following the BBRE, the strategy rejected the notion that availability of finance *per se* was the big issue. However, the research suggested that there was the issue of the *perception* of the availability of finance, which was a key reason for Scots not starting a business. In addition, the research concluded that there were real constraints on access to finance by new high-growth starts.
- The later development of Personal Enterprise Shows in the BBRs indicates that the issue of translating interest into action was viewed as more than a constraint on access to finance. The 'new start problem' was viewed more broadly as a 'personal development issue'.
- Scottish attitudes towards entrepreneurs were more negative than elsewhere: entrepreneurs were valued less highly, suggesting that the 'culture' in Scotland was less favourable to starting a new business.
- In general, cultural attitudes were viewed as not unimportant – a key factor in determining interest – but they were taken as being particularly relevant to the formation of informal support networks for potential entrepreneurs in Scotland, which evidence suggested were weak.

Scotland's Business Birthrate Strategy

Scottish Enterprise launched the Business Birthrate Strategy in October 1993. Its principal objectives were to:⁶

- Increase the number of new businesses created in Scotland;
- Increase the number of new starts that survive;
- Increase the number of new starts that subsequently achieve significant growth.

However, the Strategy went further than this and offered a specific target as its objective:

*"The objective is for Scotland to at least equal the UK average of the annual number of new businesses created per head of population by the end of the 1990s."*⁸

⁶ "Promoting Business Start-Ups: A New Strategic Formula". Review of Scottish Business Birthrate Strategy (BBRS). Fraser of Allander Institute for Research on the Scottish Economy. June 2001. P.4

⁸ BBRS. P.2

This in effect meant multiplying the start up rate by a factor of 3.5. It is now accepted that this target was over ambitious. To put it into context - over the much longer period, between 1980 and 1993, the UK birth rate rose by 19% overall - 1.3% per annum - while the UK's fastest growing region, the South East, experienced a 36% increase – 2.4% per annum. So, it took the leading UK region 13 years to generate much the same improvement in its business birth rate as the BBRs required Scotland to achieve in 6 years.

If the Strategy did not assist in achieving unrealistic short-term quantitative targets, it was highly impactful in helping to effect longer-term qualitative change. Indeed, if the target had been paramount it is likely that the Strategy would have developed quite differently, with probably a greater emphasis on the direct subsidisation of start-ups.

The Strategy had 6 main priorities:

- **Unlocking the potential:** to persuade a larger number of people in Scotland to take action to start a business and to encourage more positive attitudes towards entrepreneurship.
- **Improving the business environment:** to improve the encouragement given to new starts through formal and informal support networks in both public and private sectors.
- **Improving access to finance:** to help potential entrepreneurs gain access to appropriate funding in terms of bank lending, venture capital and business angel finance.
- **Widening the entrepreneurial base:** to unlock the untapped potential among women, the under 35s and non-homeowners to start new businesses.
- **Developing start-ups in key sectors:** to generate more new starts in manufacturing, high technology and business service sectors.
- **Supporting growing companies:** to increase the number of starts that subsequently achieve substantial growth across the spectrum of business activity.

Underpinning these priorities was a set of principles⁹ governing the application and development of the Strategy:

The Strategy articulated the need to change the national 'mind-set.' Negative attitudinal and cultural responses to entrepreneurship and risk had to undergo a transformation. In other words, the Strategy was not about trying to put in place a 'quick fix'. The Strategy recognised that a fundamental change in the attitudes to, and the practise of, entrepreneurship in Scotland could not be brought about by the actions of Scottish Enterprise alone. Here was a Scottish problem that required the participation of society as a whole if effective change was to be realised.

⁹ BBRs page 4.

The BBRS document listed a range of desired initiatives and programmes that would form the basis of the Strategy. These are too numerous to be looked at in detail here. What we can do is to identify the key programmes and map them to the main priorities that they were designed principally -but not necessarily exclusively - to serve. These priorities can be essentially reduced to three:

Changing culture and attitudes: with programmes designed to address the negative attitudes towards entrepreneurship revealed in the BBRE. These programmes focused on 3 key audiences:

- Institutional Scotland: the media and the support community for entrepreneurs, including financial institutions and business organisations;
- Scottish Enterprise Network and partners: the key delivery agency for the Strategy;
- Potential Entrepreneurs: the people in Scotland revealed by extensive research as “interested” in business start-up.

Improving the infrastructure: the support infrastructure both formal and informal. Programmes included improving access to finance and improving the quality of support offered by the Scottish Enterprise Network.

Unlocking the potential: encouraging more people in Scotland to start up through identifying how the start-up process typically works and then creating a mechanism to reach and activate the potential entrepreneurs.

Favourable Outcomes from the Strategy

Since 1993 the environment for the promotion and sustenance of new firms in Scotland has improved considerably. In nearly every area where the Strategy has sought to promote change – in education, finance, networks etc – there has been change for the better. Moreover, there is evidence of positive attitudinal change towards, and interest in, entrepreneurship. While it is not possible to attribute all of this to the Strategy, the changes are all consistent with its aims.

The general focus on and interest in ‘entrepreneurship’ has increased. Attitudes within higher education to ‘entrepreneurship’ appear to have changed, with acceptance of the possibility and legitimacy of teaching entrepreneurship by traditional education providers and a large and rising percentage of students now exposed to the practical possibilities of starting a business.

The availability of finance, both of equity and loans appears to have improved, with now less than 50% of potential entrepreneurs in a 1999 MORI survey reporting finance as a perceived constraint on start up compared to nearly 80% in 1992. In addition, there is evidence of improved access to finance for science-based spinouts from the Universities.

The development of the *Small Business Gateway* has facilitated one-stop entry and reduced confusion on the nature and availability of support. There is some evidence to

suggest that the quality of new starts has improved. However, because of a lack of monitoring information this is difficult to demonstrate.

The Nordrhein-Westfalen Action for New Businesses Gründungs-Offensive Go!

The background to the Nordrhein-Westfalen business start-up initiative is characterised by a set of regional economic conditions: The labour market has been confronted with a number of serious problems owing to redundancies in numerous major coal, iron and steel companies. The sweeping restructuring process in those industries has strongly influenced the economic performance of the entire state, while affecting the Ruhr in particular.

In contrast to the situation in the Ruhr, those regions where small and medium-sized businesses are of far greater importance to economic activity have kept pace with the other states in western Germany. During the first half of the nineties, new jobs were almost exclusively created in the small business sector, and especially by new business start-ups.

Next to those more general problems there was also a need for action in individual sectors. For instance, the *IfM* small business research institute in its review of the *Go!* initiative found out that the proportion of university graduates in the population in Nordrhein-Westfalen is some 15 per cent below the figure for Germany. This implies certain restrictions as regards the development of advanced industries.

However, the background to the *Go!* initiative is not only determined by the state's specific economic situation but also by Nordrhein-Westfalen's institutional structures. On the one hand, the far-reaching structural changes which have caused heavy social and regional adjustment burdens have brought about close co-operation between policy makers, industry, trade unions and other relevant public institutions with a view to solving major problems ("Rhenish capitalism"). On the other hand there is a broad spectrum of institutions that help start new businesses and safeguard their interests.

Objectives and strategic focus of the *Go!* action for new businesses

The *Go!* initiative was launched jointly by the Nordrhein-Westfalen government and industry in 1995 with the aim of:

- increasing the number of new business start-ups;
- stabilising post-start businesses;
- contributing towards a social environment favourable to start-ups and small business in general (creating a "new culture of entrepreneurship").

These key objectives form the basis of the following fields for action:

- developing the *Go!* Structures;
- offering information and advice on how to start and operate a new firm;
- improving access to finance;
- mounting a public relations and advertising campaign;
- launching pilot projects for devising innovative approaches and structures.

Developing the *Go!* Structures

Considering the existing institutional background described above the *Go!* initiative had been explicitly conceived as a concerted action by the state government and industry, with all those involved performing their tasks on the basis of stable network structures.

Once a year, the Economics Minister and the heads of the various associations and organisations gather for a summit meeting to discuss and determine the policy guidelines and the main priorities. The steering group is responsible for coordinating operations. It is composed of the managing directors of the institutions involved and headed by the competent deputy-secretary with the Economics Ministry.

The Economics Ministry serves as the focal point of the *Go!* as it services the meetings of the steering bodies and provides all central services including public relations activities and support to the regional partners. The ministry thus acts as a catalyst and clearing house which supports and motivates the partners in the *Go!* project, brings together partners upon their request and helps to find and implement solutions to specific problems.

The *Go!* partners have formed 37 regional and local networks that reflect the structure of the central steering bodies and provide immediate assistance to new businesses. These *Go!* networks are the driving force behind the action for new businesses and the commitment of the local actors is vital to the success of the initiative.

Information & Advice: The institutions engaged in the *Go!* initiative are agreed that it is absolutely essential that those who want to start a new firm should first take advice and draw up concrete plans for their business. One of the main priorities of the networks therefore is giving information and counsel to those interested in starting a business. Thanks to these efforts start-ups are now prepared more carefully and thoroughly: Before the *Go!* initiative was launched, only 20 % of those starting a business sought advice whereas the percentage has now risen to over 60 %.

In addition, the government has extended its '*Beratungsprogramm Wirtschaft*', a programme under which counselling services by private-sector management consultants are sponsored with public funds.

Improving access to finance: The *Go!* campaign has yielded a number of proposals for developing the existing programmes available from Nordrhein-Westfalen. Under those programmes the government sponsors bank lending by subsidising interest rates or by furnishing loan guarantees. Examples include secondary loans granted to growing companies or towards business acquisitions and special financial assistance given to women setting up a new firm. Moreover, state and federal government subsidies have been incorporated into a single sponsoring system in a move to facilitate applications for public funds. Several projects (see appendix 2) have been established to improve access to venture capital, with a view to promoting innovative businesses and the increasing importance of the services sector.

Public relations: When attention was focussed on the regional level it turned out very soon that the success of the *Go!* initiative depends on a compelling and effective public relations strategy. It was therefore essential to develop a common trademark for all activities and partners. The campaign was eventually mounted under the trademark '*Gründungs-Offensive*', or action for new businesses, and the *Go!* logo. The persuasiveness of the trademark was a major contributing factor in making those numerous partners in the regional and local networks identify themselves with the common *Go!* strategy. That "corporate spirit" and the support provided to the regional and local partners towards their own targeted public relations activities greatly helped to coordinate and advance the campaign as a whole.

The principal objectives of the public relations campaign were, first, to address potential entrepreneurs and encourage them to take advantage of the central *Go!* info-line and the information and advice activities and other events organised by the local *Go!* partners; and second, to address the public at large in a move to bring about a change in climate by fostering positive attitudes towards entrepreneurship.

Comparison between Scotland and Nordrhein-Westfalen

Both Scotland and NRW have had a significant investment in business start-up in recent years. Both regions embarked on a strategy with almost identical objectives. Taking into account the differences in scale of project due to the differing population bases a number of comparisons can still be made:

- BBRB is considerably closer to industry and acts as a non-governmental institution whereas the *Go!* initiative is incorporated into existing political and institutional structures.
- BBRB chiefly enlists financial support by private sponsors whereas *Go!* still relies heavily on public funds (especially state government funds) and has only recently set out to secure private sector funds for individual projects ("public-private partnerships").
- BBRB is more focussed on attitudinal changes and the long-term impact on individual perceptions whilst *Go!* concentrates on the perceptions of the institutional players.
- Both regions have as a priority the wish to increase the level of capital available to start-up and small businesses – whilst the *Go!* experience has been to harness the extensive state and regional banking structures, the Scottish experience has been to develop the enabling mechanisms for informal capital networks to be created.
- In the case of BBRB detailed planning for future development is hampered by a lack of complete statistical information on progression and survival whereas the NRW Chambers of Handicrafts and registration of businesses provides significant information sources and benchmarks

STRUCTURAL FUNDS IN NRW AND SCOTLAND – AN OVERVIEW

	Nordrhein-Westfalen	Scotland
Eligibility for European Structural Funds Under Objectives 1 (transition) and 2	<ul style="list-style-type: none"> ▪ 2.9 million people in Objective 2 eligible area. ▪ 1.1 million people in Objective 2 phasing-out area. ▪ 22% of total population covered by structural funds programme. ▪ €970 million investment in 2000-2006. 	<ul style="list-style-type: none"> ▪ 370,000 people in Objective 1 phasing-out area. ▪ 2 million people in Objective 2 eligible areas. ▪ 1.6 million people in Objective 2 phasing-out areas. ▪ 80% of total population covered by structural fund programmes. ▪ €1,115 million investment in 2000-2006.
Implementation system	<ul style="list-style-type: none"> ▪ ‘Subsumed’ system, implementing structural funds within pre-existing domestic policy & systems. 	<ul style="list-style-type: none"> ▪ ‘Differentiated’ system, implementing structural funds within distinct and dedicated channels.
Influence of Structural Funds assistance	<ul style="list-style-type: none"> ▪ Significant structural funds investment co-financed by regional public sources, reflecting high level of commitment to regeneration activities. ▪ Shift in resources from ‘hard’ infrastructure projects to SME development, technology and innovation since 1988. ▪ Distinct regional co-financing budget line ensures high level of financial absorption, compliance and policy cohesion. 	<ul style="list-style-type: none"> ▪ Shift in resources from ‘hard’ infrastructure projects to SME development, technology, innovation and ESF since 1988. ▪ Reinforced regional identities through developing and extending partnerships. ▪ Partnerships play a significant role in programming and implementation. ▪ Emerging policy influence and exchange around issues including Community Economic Development, sustainable development and equal opportunities.
New developments around policy cohesion / partnership process	<ul style="list-style-type: none"> ▪ Historically achieved a high level of policy cohesion, now balanced with commitment to full partnership processes and increased opportunity for distinct implementation and improved visibility of Structural Funds. ▪ Monitoring and evaluation processes more rigorous. 	<ul style="list-style-type: none"> ▪ Focus on partnership processes and distinct implementation systems continue, now balanced with renewed importance being placed on policy cohesion, and geographical & thematic targeting.

INTRODUCTION

An important shared context for economic development in Scotland and NRW is the long history of accessing European Structural Funds. Between the areas, the Funds represent a common thread of financial support, public policy and project regulation. The two regions share similar experiences in many respects, but there are also important differences, particularly in the delivery and management systems.

Under the geographical objectives of the Structural Funds (Objectives 1 and 2) NRW and Scotland receive almost the same financial contribution from the Structural Funds in the period 2000-2006. The financial allocation for the NRW objective 2 programme is €970 million; Scotland receives €1,115 million for its objective 1 phasing-out programme in the Highlands & Islands and its three objective 2 programmes. In addition to that, both regions benefit from European Social Fund (ESF) funding under Objective 3 and various Community Initiatives. In NRW the eligible area for Objective 2 covers a population of 2.9 million, plus 1.1 million in the phasing-out area. In Scotland 370,000 people live in the Objective 1 phasing-out area, 2 million in the Objective 2 area and 1.6 million in the Objective 2 phasing-out area.

The relative importance of the Structural Funds, however, is very different between NRW and Scotland. In NRW only 22% of the total population of 18 million live in an eligible area, whereas in Scotland almost 80% of the whole population lives in areas which receive assistance from either Objective 1 or 2.

The NRW Objective 2 area is almost identical with the Ruhr coal and steel region, but also includes some adjacent cities which also suffer under the decline of one of these industries. The phasing-out area consists of better developed parts of the Ruhr and two small rural areas (Eifel in the south west of NRW and parts of Eastern Westfalia) which were funded by Objective 5b in the previous programming period. The highly urbanised Rhineland with the major cities Düsseldorf, Cologne and Bonn and the semi-rural areas of Westfalia do not receive assistance from Objectives 1 or 2.

The NRW Structural Funds area has remained largely stable over the last decade, which underlines the importance of the Ruhr as the primary target region for structural policy in NRW. With heavy job losses in the coal and steel industries and their suppliers, a lack of SMEs and business start-ups and high unemployment rates, the Ruhr is a typical example of an Objective 2 region. In the nineties this region has been among the largest recipients of Objective 2 funding in Europe.

Similarly, the image and the economy of Scotland and its regions have changed radically over the past two decades. The traditional economic base - founded in the coal, steel, shipbuilding and heavy engineering industries in the central belt and based on fishing and agriculture related employment in rural areas in the north and south - has been transformed. The changing structure of employment, with growth concentrated in the service sector and in the growth of electronics and other high-technology industries, has contributed to the changing image and presented opportunities and challenges. Continuing structural weaknesses of the economy are:

- poor levels of business creation rates and retention;

- high and persistent levels of unemployment and non-participation in the labour market, particularly among: young people; older men; and concentrated in disadvantaged communities;
- low skill levels, both among those excluded from the labour market and in the workforce;
- poverty and social exclusion;
- peripherality and rural diversification issues.

In terms of scale of resources, the investment through Structural Funds – while small compared to national public expenditure - has been significant at a local and regional level. As experience of managing and using the Funds increased, the range of initiatives and number of organisations involved also grew in complexity.

A decade of investment by European Structural Funds in Scotland and NRW has resulted in significant number of new projects impacting on the physical, economic and social situation. The purpose of this chapter is to consider:

- The particular strengths of different methods of implementing European Structural Funds and the opportunities to learn from each other;
- The extent to which the implementation structures used help to add value to the wider process of economic development.

Nordrhein-Westfalen

Strategic Orientation, Partnership and Management in NRW

In the German federal system the governments of the 16 Länder are mainly responsible for regional policy and for the implementation of the Structural Funds. At the federal and the regional level there has always been a high commitment to regional policy throughout the last decades. The federal and the regional governments co-operate in a joint task of 'Improving the Regional Economic Structure' which consists of an incentive scheme for job-creating private investments and for infrastructure necessary for job creation. In addition to that, many German Länder have their own regional policy instruments to address specific regional economic problems. In NRW several specific aid programmes particularly for coal and steel regions and region-wide technology and SME programmes exist.

After the reform of the Structural Funds in 1989 the German Länder did not set up distinctive administrations and systems for the management and implementation of the Structural Funds, but combined them in strategic and administrative terms as far as possible with the pre-existing national and regional aid schemes. This was also the case in NRW, with the notable difference that NRW combined the Structural Funds primarily with its own regional policy instruments and less with the joint schemes of the federal and the regional governments.

The reform of the Structural Funds in 1989 coincided with a re-orientation of regional policy in NRW. Following a steel crisis in 1987 and in response to an ongoing job decline in the mining sector, the NRW government launched several programmes and initiatives to counteract their economic and social effects:

- The 'Future Initiative Steel and Coal Regions' ('Zukunftsinitiative Montanregionen' - ZIM), which was later extended to the whole of NRW as 'Future Initiative NRW' ('Zukunftsinitiative NRW' - ZIN). These developments were based on a regionalisation strategy. Regional conferences, based on a broad partnership including the local authorities, the employers' and workers' associations, the universities and other regional key players, were established in 15 sub-regions to agree regional development concepts and co-ordinate development projects.
- The 'International Building Exhibition (IBA) Emscher-Park', 1989 to 1999, was a dedicated strategic initiative to improve the living and working conditions through innovative projects with a high cultural and architectural quality covering a large part of the Ruhr area. It attracted about DM 1 billion of structural Funds in support of a total value for the initiative of about DM 5 billion.

The principles of NRW regional policy and Structural Funds at that time were very similar:

- Both were based on a partnership approach with monitoring committees in the Structural Funds matched by regional policy conferences in NRW, both including a broad representation of governmental and non-governmental actors. For various reasons, the nature of the partnerships' involvement was stronger in the regional policy conferences than in the implementation of Structural Funds in NRW.
- The programming approach of the Structural Funds corresponded with the regional development concepts in NRW, both running over a multi-annual period.
- The Structural Funds and NRW regional policy used a wide range of diverse policy instruments, tailored to the specific needs of the regions and going much beyond the scope of the aid schemes for private investments and infrastructure which were common in Germany at this time.
- While evaluation became an increasingly important element of the Structural Funds in the nineties, research studies accompanied the regionalisation process of NRW structural policy.

"In the case of North Rhine-Westphalia a highly efficient implementation of regional policy can be seen to have been made possible by the long experience with regionalised structural policy. Attention should in particular be drawn to the marked reliance on decentralisation in determining the overall approach to regional development and regional policy implementation."²⁶

The Structural Funds were regarded mainly as a financial contribution from the European Union, to supplement NRW financing of existing regional initiatives and regional aid schemes in NRW. They were subsumed under the pre-existing regional policy of NRW, but not managed as a differentiated policy.²⁷ The financial assistance

²⁶ 'Factors Influencing the Spending of Structural Funds Money', Working Document for the European Parliament, Luxembourg 1997 (R Noetzel, Th Stumm).

²⁷ Taylor/Bachtler/Rooney classified the implementation systems of EU Structural Funds into two categories according to whether project generation and selection systems fitted into pre-existing domestic policy or whether they are considered as separate, dedicated instruments with distinct channels for decision-making. The first category of programmes, which are typical for Germany,

by the Funds was channelled into existing and newly developed NRW aid programmes. Like all German Länder, NRW combined Structural Funds with national programmes with the notable difference that NRW combined them primarily with its own regional programmes, whereas the majority of German Länder combined them with the joint task of the federal and the regional government.

The main characteristics of the Structural Funds implementation and management system in NRW 1989-1999 were:

- Different Ministries of the NRW government were responsible for implementation: the Ministry of Economic Affairs had a coordinating role for the geographical objectives and Community Initiatives and the ERDF, the Ministry of Labour was responsible for the ESF and the Community Initiatives related to them, and the Ministry of Environment and Agriculture had the lead in the objective 5b and LEADER programmes which, however, were of minor importance in financial terms.
- The programme measures were mainly implemented by these two Ministries, but in some cases by other Ministries e.g. for environment, equal opportunities, town planning, education and research. Subordinate administrations such as the Bezirksregierungen (district administrations) were responsible for technical tasks such as checking payment claims and financial controls. Thus the implementation procedures reflected the responsibilities of the different Ministries and administrations. This ensured the coherence of the Structural Funds with the sectoral policies in NRW but it proved more difficult to pursue a distinct regional development strategy.
- Project applicants did not, and up until now do not, apply specifically for Structural Funds assistance but for assistance from regional aid schemes through which the Structural Funds are channelled. There are no separate application forms, selection criteria or decision-making processes for the Structural Funds. Applicants are awarded funds for projects which may include an EU contribution. The EU contribution is decided by the administrative unit responsible for an aid scheme, depending on the eligibility of the project for Structural Funds. The applicant will be informed about the EU contribution only after the funding for a project is decided. In some cases this has made it difficult to ensure the visibility of Structural Funds in the regions.
- An important advantage of the NRW system of implementation is the establishment and operation of a separate budget line for co-financing Structural Funds. It was set up after the reform of the Structural Funds in 1989 by the NRW Landtag (regional parliament) and helped offer financial packages to private and public beneficiaries which combine the EU and the NRW contribution. This budget was partly financed by altering existing regional aid programmes. Private beneficiaries receive their funding as a single element from these two sources. Public beneficiaries, particularly local authorities, normally only bear a contribution of about 20% of the total project costs. The gap between the EU contribution and

Austria, and Spain, is called 'subsumed', the second, dominating in the UK, Belgium, the Netherlands, Denmark, and Sweden, are 'differentiated' programmes. Taylor, Sandra/ Bachtler, John/ Rooney, Marie Louise: Implementing the New Generation of Programmes: Project Development, Appraisal and Selection, Glasgow 2000.

this rate is filled by the co-financing budget line. Since this budget line is managed by the Structural Funds co-ordinating unit in the NRW Ministry of Economic Affairs, it is an effective instrument for ensuring compliance of projects selected by the sectoral units with the programme strategy. It gives the programme co-ordinators more influence on the management and implementation than in other 'subsumed' systems.

"Budgetary mechanisms, which contribute significantly to ensuring EU co-financing, are being successfully implemented in North Rhine-Westphalia. In the Land budget, in addition to the ERDF-revenue title, there are two expenditure titles for programme implementation. These are an expenditure title for the ERDF and a further one for the Land contribution to co-financing. This structure ensures that the hurdle that has to be cleared before co-financing can be cut is set higher."²⁸

- An unusual element of the NRW management and delivery system is the delegation of project appraisals, payments and controls to the Investitions-Bank NRW for several aid schemes. The Investitions-Bank NRW is a subsidiary of the WestLB, a public bank with the Land NRW as a major shareholder. It was established to assist the NRW Ministries in managing aid schemes, particularly for private beneficiaries, but also for infrastructure projects.

Evaluations of the NRW Structural Funds programmes started early in 1992 on a voluntary basis. A mid-term review was carried out for the Objective 2 programme 1994-1996 and for several Community Initiatives. Again on a voluntary basis, this mid-term review was updated for the Objective 2 programme 1997-1999 together with five case studies of the long-term effects of important measures and major projects. Although the evaluations were always taken very seriously by the programme co-ordinators, there was little debate of the results outside the Structural Funds experts' community. Accountability is seen more in a political sense: all Ministries involved in the implementation of Structural Funds are accountable to the Landtag (regional parliament) which applies somewhat different criteria than the EU for defining the success of a programme.

- Horizontal themes, particularly the protection and the improvement of the environment and the promotion of female labour, were important elements in the NRW Structural Funds programmes from the beginnings at the end of the eighties. In the first programming periods this was primarily implemented by including specific priorities and measures. In all objective 2 programmes since 1989 more than 20 % of the total expenditures were spent for measures related to the renewal of ecological damages and the improvement of the environmental quality. NRW (together with Eastern Scotland) participated in a network "Promotion of sustainable development under EU structural funds programmes" with a study "Sustainability Assessment of the NRW Objective 2 Programme 1997-1999". The equal opportunities aspect was addressed by regional agencies 'Women and work' which were funded by a separate measure of the objective 2 programme since 1989. With these measures the NRW objective 2 programmes were among the

²⁸ R Noetzel, Th Stumm (1997).

most innovative in Europe in this respect, but so far they lacked a coherent mainstreaming philosophy.

"As a result of the comparison of categories with the measures of the Operational Programme the following picture emerges: Approximately 28 % of the measures cannot be classified into one of the categories because they have no clear impact on sustainable development criteria. 4.2 % belong to the category 'business as usual'. The largest share of the measures can be categorised as 'Minimisation of social problems and environmental pollution', and no less than 26.6 % of the measures can be seen as 'Re-orientation towards sustainable development.'²⁹

Strategic and Administrative Re-orientation in NRW for 2000-2006

Based on the on-going evaluation of the 1997-1999 Objective 2 programme³⁰, a long-term ex-post-evaluation of the previous periods and a broad consultation of the partners in the regions and the associations, NRW developed a new strategy for the programming period 2000-2006. Part of the ex-post-evaluation was a strategy paper with recommendations of the consultants for the new programming period. This was first used for an intensive debate within the NRW Ministries. This resulted in a discussion paper approved by the NRW cabinet in June 1999 as a starting point for further discussions with the local and regional actors and with the economic and social partners.

A series of workshops and conferences was held throughout 1999 to discuss the new strategy and the development priorities. Together with the government's discussion paper, a total of 24 detailed statements by the different regional, economic, and social partners formed the basis for the new programming document. Never before such an open and inclusive debate had taken place to prepare a new structural funds programme in NRW. All participants in this debate were aware that this programme would likely be the last EU structural funds programme of this size forever and that this chance had to be used for a long-lasting legacy. Core elements of this strategy are:

- Since infrastructure and the physical environment is no longer seen as the main bottleneck for regional development in the Ruhr, higher priority is given to business-related measures, with a parallel shift of financial resources from infrastructure measures to business and start-up measures and to innovation and technology. This includes the possibility of utilising revolving funds as part of a wider business development strategy.
- NRW openly pursues a cluster development strategy (fields of competences) within its new Objective 2 programme. Discussion of this strategy is included elsewhere in this report.

²⁹ "Untersuchung des Nachhaltigkeitsaspekts beim NRW-EU-Programm Ziel 2 für die Jahre 1997-1999", TAURUS Gesellschaft für Umwelt-, Regional- und Wirtschaftsberatung (K Sauerborn, M Tischer), Trier 1999.

³⁰ MR-Regionalberatung/ Institut für Wohnungs- und Immobilienwirtschaft, Stadt- und Regionalentwicklung (INWIS)/ Netherlands Economic Institute (NEI): Evaluation des NRW-EU-Ziel-2-Programms 1994-96 und 1997-99. Delmenhorst, Bochum, Rotterdam 2000.

- The infrastructure measures, although with a reduced financial allocation, will be more directly linked to the cluster developments e.g. through cluster-orientated business parks and research facilities. A new type of infrastructure emerges.
- Quantitative objectives have been more precisely defined and derived from a SWOT analysis and a regional development strategy.
- The private sector will play a more important role in the new programming period. The financial allocation for SME-related measures and for business start-ups has grown. As a new measure, a revolving loan fund for promoting growing SME's without appropriate securities to allow them to obtain commercial loans was included. With this measure NRW wants to explore possibilities of
- Although in principle most of the measures continue to be implemented as part of general regional policy aid schemes, the number of specific Objective 2 measures and initiatives - derived directly from the Objective 2 strategy and exclusively funded under Objective 2 - has increased; and further emphasis is given to Objective 2 objectives and strategy within those projects which continue to be subsumed in national aid schemes.
- Four cross-cutting objectives (sustainability, equal opportunities, social inclusion, and innovation) are integrated more explicitly in the programme than in the previous period by following a mainstreaming approach. In addition to specific measures to promote these four objectives which partly existed in the past (e.g. integrated environmental technologies, future energies, greening of derelict land and emission reducing infrastructures, integrated development of urban problem areas, promotion of female employment), indicators representing the cross-cutting objectives will be included in the monitoring system.
- Monitoring and evaluation will become a more integral element of the programming process and will be used to scrutinise projects proposed for funding by the sectoral departments in a more systematic way than in the past. The monitoring system has been refined on the basis of past experiences and a set of qualitative indicators was developed to assess the impact of all projects and measures on the four cross-cutting objectives.

To ensure a proper implementation of the new strategy, several adjustments were made in the programme management and administration. Some of the changes, however, were necessary to comply with the new regulations, particularly with the financial control regulation. The most important management arrangements for the period 2000-2006 are:

- The Ministry of Economic Affairs has been nominated as managing authority. The different sectoral departments and subordinate administrations remain responsible for project appraisal and selection, checks of payment claims and financial controls. They have the function of intermediate bodies. A new monitoring sheet has been developed and sectoral departments will have to demonstrate ex-ante the compliance of project proposals with the programme objectives, strategy and eligibility criteria. This helps the managing authority to secure the accordance of project decisions with the overarching strategy.
- A new Objective 2 secretariat, the development of which is loosely derived from comparison with the Scottish model, assists the managing authority in the technical

handling of the monitoring system, in advising the sectoral departments about the eligibility of projects, in acting as a first-stop-shop for project applicants, in writing the implementation reports and supporting the evaluation, in preparing the monitoring committee meetings and in communication activities. The Objective 2 secretariat is based in the premises of the managing authority and is run by a private consulting company.

- Monitoring will begin with the project selection process in which the sectoral departments are responsible for project appraisal and selection in the first instance. However, in a second step they must verify the compliance of a proposed project with the eligibility criteria and the Objective 2 project selection criteria. During the implementation of the programme monitoring sheets will provide information about the outputs and results of the funded projects. These data, which will be gathered in a computerised data-base, will form the basis for the programme evaluation.
- The Investitions-Bank NRW, which is already involved in the financial management of several aid schemes of the Land NRW, has been nominated as the paying authority. It will also take over some of the financial checks and audit obligations.
- Following the principle of 'one monitoring committee per programme' in the new Structural Funds regulation, the national monitoring committee for all German Objective 2 programmes had to be replaced by a monitoring committee in each Land. In accordance with the partnership approach of NRW regional policy in general, NRW used this alteration to realise a full partnership in the Objective 2 programme. The monitoring committee members are mostly high level executives or elected political representatives at the local level. In order to focus the debates in the monitoring committee on strategic decisions, a working committee was established to prepare the monitoring committee meetings and to decide technical questions.
- Major arrangements were necessary to adjust the financial management and controls to the requirements of the new EU Financial Control Regulation. The German budgetary system differs in many respects from the EU system which has led to many difficulties in the past. The necessary changes are not easy to implement because of the frequent subsuming of EU aid schemes under existing national schemes. In such cases both EU and national rules have to be respected although there is little overlap between both.
- The implementation of the NRW Objective 2 programme is supported by a newly established agency in the Ruhr, the 'Projekt Ruhr GmbH'. It was set up as a project driver: it helps to develop mainly big and complex projects, to refine regional development strategies, to build networks and to co-ordinate between public and private actors. The 'Projekt Ruhr GmbH' builds on the experiences of the 'International Building Exhibition (IBA) Emscher Park' in steering complex development processes.
- A pro-active communication strategy will be implemented in the future. The target group consists of intermediaries dealing with the programme in the different public authorities and non-governmental organisations, potential project applicants, and the broader public including politicians. Seminars and workshops, a website,

newsletters, brochures, press releases, a hotline and more are elements of the communication strategy. The computerised data-base with the monitoring results will progressively be used as an input for the website. Its medium-term aim is to make the NRW Objective 2 programme an example for e-government.

Although NRW has experiences with a regional policy for decades, the Structural Funds had an important influence on domestic policy. Worth mentioning are a more coherent development strategy derived from a thorough SWOT-analyses, an improved monitoring system, and a more rigorous approach in project appraisal. NRW learned much from the co-operation with Objective 2 regions of other EU members states, bilaterally and in networks. In this sense, the Structural Funds helped to exchange best-practice experiences in regional policy in general.

But the different EU regulations relevant for the Structural Funds also led to more bureaucracy. Particularly important are the rules for the financial management and control. A serious difficulty is the partial incompatibility between the EU and the NRW budgetary system which are based on different systems and have only little overlap. This made it necessary to set up parallel management and control systems, sometimes resulting in the doubling of activities. In this sense, NRW made the experience that the EU Structural Funds are threatening the diversity of political and administrative cultures in Europe.

SCOTLAND

Strategic Orientation, Partnership and Management in Scotland

Scotland and Scottish regions have been accessing European Structural Funds on a programming basis since 1988 and on a project basis well before then. In terms of scale of resources, the approach has been primarily regional in nature, supporting a series of programmes in the Highlands and Islands, West, East and South of Scotland. However, engagement with the Funds has developed and diversified in Scotland since 1988, resulting in encounters with the widest possible range of initiatives including local and thematic programmes (such as RECHAR, RESIDER, RENEVAL, LEADER, URBAN, EQUAL and the Territorial Employment Pact). In particular, the development of Scotland's distinct involvement with the Funds is well reflected by the devolution in 2000 of the national programme for training and skills support through ESF and Objective 3 to a Scottish Operational Programme, the Scottish Executive and a lowland-Scotland wide programme management system.

An important context for Scotland's use of Structural Funds since 1988 has been administrative devolution, which was effective prior to legislative devolution in the establishment of the Scottish Parliament in 1999. This administrative devolution was supportive of a distinct and effective approach to economic development and the use of European Fund. Despite - unlike other European regions receiving Funds - at that time lacking 'regional' parliamentary scrutiny and support even in 1996 Scotland was viewed as having significant advantages over English regions in terms of economic development. These advantages included administrative autonomy, ministerial

representation, trade promotion and often a lobbying presence in Brussels.³¹ Scotland has pursued a distinctive economic development policy, through the creation of special enterprise bodies (Scottish Enterprise and Highlands & Islands Enterprise, and before that, the Scottish Development Agency and the Highlands & Islands Development Board).

Particularly relevant for the effective implementation of Structural Funds was the perceived advantage in terms of administrative autonomy and co-ordinating capacity – an advantage which has been reinforced and developed with the establishment of the Scottish Parliament and Scottish Executive.

Management systems since 1988

Structural funds programmes in Scotland have, broadly, been implemented through a three-tier system of partnership committees, encompassing a Single Programming Document or Operational Programme Monitoring Committee (setting the programme's strategic direction); a Programme Management Committee (managing the day-to-day operation of the Programme including making decisions on project applications); and thematic Advisory Groups on issues such as business development, spatial development; community economic development or the labour market (responsible for undertaking detailed appraisal of projects).

Political accountability is ensured through the role of a Scottish Executive minister in overseeing the Funds (including appointing the Monitoring Committee) and the legislative scrutiny provided by the Scottish Parliament. The responsibilities and composition of the committees are approved by the Monitoring Committee. Monitoring Committees operate at a strategic level, a role which has been reinforced in the 2000-2006 Programme, and involve a wide range of local and regional public sector organisations, including environmental and equality agencies. Development for the 2000-2006 programmes has seen the membership extended to elected local authority representatives, members from community groups and representatives from the private sector and trade unions.

It is however at advisory group and Management Committee level where the Scottish system appears most innovative, as project appraisal is performed by specialist groups of applicant organisations or partners (and external experts) and project decisions are taken by a senior committee representing these partners. The structure achieves a high level of partner involvement in project appraisal and decision making, reflecting the considerable support and commitment of the main agencies involved in economic development in the region. The regional agencies have taken an increasingly active and participative role in the management and implementation of Structural Funds interventions in Western Scotland.

Supporting these processes and committees in Scotland are a range of regionally organised programme management executives, working on behalf of the partnerships

³¹ 'Regional Government in Britain: An Economic Solution?' Harding A et al, 1996, quoted in European Structural Funds and the United Kingdom, the Royal Institution of Chartered Surveyors, February 1997.

to undertake management and administrative functions delegated to them by the Scottish Executive (Managing Authority). Researchers assessing the role of European partnerships within regional development concluded that these arrangements were innovative in a number of ways including:

“the creation of large, inclusive partnership structures at regional level, the establishment of independent secretariats to administer the process, and the introduction of new policies, such as economic and Social Cohesion and Community economic Development. The degree of decentralisation by the Scottish [Executive] is perhaps the most interesting feature from an EU perspective.”³²

The Programming Process

The premium set on partnership processes in Scotland has effectively imbued the programming process in each region with extensive requirements for partnership and local involvement in strategic development and planning. As detailed by the European Policies Research Centre (EPRC) like most regions across Europe, Scottish regions have experienced a ‘learning curve’ of development, with 1997-99 programmes based on superior analysis, strategy setting and quantification techniques and founded in an increasingly ‘bottom-up’ process of programme preparation compared to Programmes in previous years. This includes an “on-going, interactive process of analysis, consultation and feedback among a wide range of partners (especially local partnerships), with more sophisticated planning techniques.”³³

The results of these moves to improved plan development are reflected by the processes used in Scotland for the preparation of the 2000-2006 programmes. Allowing for regional differences and distinctions, the consistent elements of plan development and programming processes across Scotland were:

- The Programmes were developed by Plan Teams representing the economic development agencies in the regions, chaired by the Scottish Executive and serviced by the programme management executive.
- Expert groups on the environment, equal opportunities, innovation and sustainable development were either established or accessed during the Programme’s development, supporting an iterative process of review and design.
- Consistency of approach across Scotland and additional input from national organisations and the Economic and Social Partners was provided by a Scottish Co-ordinating Team which reviewed progress on the development of all Structural Funds Programmes in Scotland and provided guidance on strategic policy issues. Experience suggests that reliance on locally responsive partnerships can raise expectations at local level which make a wholly consistent approach difficult to achieve.

³² ‘The European Structural Fund Partnerships in Scotland: New forms of governance for regional development?’ M Danson, J Fairley, M Lloyd and I Turok, in *Scottish Affairs*, 1999.

³³ *The Evolution of Objective 2 Programmes*, J Bachtler and R Michie, EPRC, February 1998.

- Consultation was an important and consistent feature of the development of the Programmes. This involved regular meetings of the partnership Plan Teams responsible for directing the development of the Programme, assessments of the Programme by expert environmental and equal opportunities organisations, consultation questionnaires issued to all partners and large scale meetings held to discuss partnership views.

Bureaucracy, regulation and accountability

Responses to bureaucracy, regulation and accountability vary across the regions of Europe despite the fairly standard application of rules and regulations by the Commission across regions. Since 1988, bureaucracy and regulation have increased in Scotland around the Funds, with increased requirements from the European Commission (for example around the scale of information required in planning or reporting documents or new financial absorption rules), from the Scottish Parliament and Executive (on co-ordination with national policies or publicity requirements) and from the regional partnerships or executives (on monitoring indicators or the horizontal themes of equal opportunities and sustainable development).

Perhaps due in part to the devolved nature of the funds administration, Scottish and regional rules have often been added to Commission regulation. While each change individually is intended to support (and in most cases achieves) increased quality in the use of the Funds, cumulatively the process from the perspective of project sponsor or partner is complex. This has understandably given rise to a significant tension between the aims of local, responsive delivery, and the need to obtain adequate levels of information for monitoring and evaluating the impact of the Funds at different levels of accountability.

From that complexity however has emerged a system which is reasonably good value, routinely measurable and rigorously accountable at local, Scottish and European levels. In the context of a new Scottish Parliament and increased legislative scrutiny, gains in the accountability of the management and implementation of the Funds in particular have been valuable.

Project development, assessment and appraisal

As outlined above, as the system of implementing Structural Funds has developed, in both Scotland and across Europe, there have been drives towards both wider participation and increased regulation. In general, 'participation' and 'regulation' have been reflected in the way in which projects are assessed and appraised where, as in other regions across Europe:

“The processing of applications has become more professional: formal and systematic selection procedures have been introduced in many regions with some regions developing sophisticated methods for scoring, weighting and ranking projects (especially in the UK and the Netherlands). A more rigorous approach to project appraisal has been adopted by more regions. Effective computerised management information systems have been

introduced although such systems have on occasion caused problems and hindered programme implementation.”³⁴

In Scotland, accompanying the principle of peer-group project appraisal has been a developing system of selection and scoring criteria, approved by the Monitoring Committee, which sets the context for objective assessment of applications. The scoring system has been used as a tool. The Scottish regions have in general retained a final recourse to local knowledge and expertise, where a project score or ranking is still tested in a discussion by advisory groups. This ensures an element of flexibility in the system and should preserve the ability to encourage new and innovative approaches. At the same time, the competitive and open nature of the application process encourage the development of projects which reflect the priorities of applicants, which may or may not be identical to emerging or existing national priorities.

As the partnerships have widened to include voluntary and community groups, environmental and equality agencies, the range of organisations taking part in the appraisal system has widened. The effect of this broadening partnership can also be charted in the nature of the selection criteria and scoring systems used. Elements such as links to local employers and organisations, physical accessibility, impact on equal opportunities or the environment are more prevalent in the appraisal systems and are given greater importance in scoring.

Co-finance, financial absorption and efficiency

Across Scotland, structural funds are allocated through a competitive bidding process based on detailed project applications by partners. The process is a reflection of the ‘challenge fund’ nature of much non-core financial support in the UK. Structural Funds share their competitive style with the bodies which distribute funds raised by the National Lottery, University Challenge Fund and, in England, the Single Regeneration Budget. The potential effects of this competitive process are:

- The drive to support the highest quality projects must be balanced with the drive to commit available budgets;
- Involvement in the funding process is necessarily widened beyond those departments or organisations with access to central government finance;
- The search for co-finance becomes a fundamental issue, at times mitigating against strategic direction, coherence with national policy aims, and co-ordination or the involvement of smaller organisations;
- Financial absorption becomes a factor of partnership and involvement rather than government commitment;
- As public sector co-finance is not assured, private sector co-finance becomes a necessary element of the financial package. At its best, this promotes an increasingly innovative culture of ‘cocktail’ financing, though it carries with it potential challenges to public accountability and tensions between public and private interests.

³⁴ J Bachtler and R Michie, 1998.

In fact, evidence from evaluations suggests that balancing the drives for both quality and budget commitment has been achieved in a positive way in Scotland. The Interim Evaluation of the 1997-99 Western Scotland objective 2 Programme for example confirms that:

“In spite of the shortage of funds, Advisory Groups have had more ‘bids’ than resources. This has allowed only the best projects to be selected, or at least poor quality projects to be rejected... The commitment level is amongst the highest (if not the highest) in the UK. It has been achieved while rejecting inadequate projects and lowering intervention rates to substantially below the maximum. This is a credit to the Advisory Groups and Programme Executive.”³⁵

Monitoring and evaluation

One key management and implementation shift since 1988 in Scotland has been the increasing role of monitoring and evaluation within the Structural Funds field. In particular, Scottish programmes have placed a strong emphasis on developing systems of monitoring indicators for all levels of programming, using benchmarks and setting quantified targets, and distinguishing between output, result and impact level. The culture of local and central independent evaluation – at both programme and project level – has also been reinforced.

Monitoring and evaluation have therefore had increasing importance in Structural Funds programmes in Scotland since 1988. As a consequence of the far-reaching involvement of the Funds as co-financers of a wide scope of economic development activity in Scotland, these improvements have played a role in reinforcing the importance of monitoring and evaluation within the public sector:

“One of the major benefits arising from the regular evaluation exercises has been the improved credibility of programmes within the wider regional partnerships. The participation of partners in the evaluations exercises themselves has had a positive impact, improving information channels and heightening awareness about the programmes within the regions.”³⁶

Role of dedicated Management Executives

A fundamental review of the process of Structural Funds management across Scotland was conducted between November 1999 and April 2000, under the guidance of an independent committee set up by experts and overseen by the Scottish Executive Minister with the responsibility for the Structural Funds. The review drew lessons for all aspects of programming and management, in particular to support streamlining and transparency within the processes. The review reflected the fact that across Europe systems for the implementation of Structural Funds have developed and matured with the common use of local delivery mechanisms, advisory groups and secretariats.

³⁵ Interim Evaluation of the Western Scotland 1997-99 Objective 2 Programme, Ekos Ltd, 1999.

³⁶ J Bachtler and R Michie, 1998.

The review of the Structural Funds management process concluded that programme management executives in Scotland should be dedicated free-standing administrative units. They should be designed to provide the essential linkage between the regulatory and political requirements of the European Commission and the Scottish Executive, and the more focused and locally based aspirations of the partners. The PME should be accountable both to the Scottish Executive as managing authority (and thus to the European Commission) on the one hand and the Partners on the other.

Scottish evaluators note the effect of the unique position of the management executives places them in a position not just to administer the programmes but to act as a conduit for experience sharing between partners to promote good practice and innovation, to assess institutional capability and support capacity building, and to analyse changes and gaps in policy development and delivery.

Policy coherence and co-ordination in Scotland

As the previous section suggests, the management of the Structural Funds in Scotland has evolved over recent years on the principle of partnership, interpreted in the light of circumstances in different parts of the country. Of increasing importance, especially in the preparation for the 2000-06 round, and in the new context of devolution in Scotland, has been the principle of embedding management of the Structural Funds both in national policy frameworks, and in area based strategies for economic, physical and social development.

In recent times, Ministers in Scotland have been explicit in their desire to see Structural Funds used, in the 2000-06 round, to leave a lasting legacy for the future. Much added value can emerge from using the Funds to make connections between different policy areas, and the Commission's increasing emphasis on horizontal themes provides an excellent opportunity to develop these connections in a systematic way. The challenge is to ensure that good practice and added value is embedded in the practice of partners engaged in economic and social development in the future.

Policy frameworks

In terms of economic development, the principle guiding strategy from the Scottish Executive is the "Framework for Economic Development in Scotland." The Framework is an operational document, intended to be the driver for thinking and action in policy areas. These will determine the specific action-oriented initiatives and policies for the future. The main objectives and principles detailed in the Framework have served to focus Structural Fund objectives in line with the commitment of Scottish Ministers made in FEDS that "*Structural Funds are used effectively and efficiently and leave a lasting legacy in a way that complements their overall policy objectives.*"³⁷

³⁷ The Way Forward: Framework for Economic Development in Scotland, Scottish Executive, 2000 (www.scotland.gov.uk/library3/economics/feds-00.asp)

Equally, the Scottish Executive moved forward on the issue of community planning in 2000. This innovative approach will involve local authorities working with their partners in specific areas to jointly plan and deliver services that meet the needs of local communities. In approaching these issues the Scottish Executive aimed to help lead the development of community planning as a national policy priority while also allowing each local authority the freedom to develop with its partners, those local community planning processes which best respond to their own unique circumstances. This would mean ensuring that there was local ownership and commitment to the process so that as much as possible might be achieved through ‘bottom-up’ engagement of partners. Community planning policy therefore had a clear impact on European Structural Funds Programmes in Scotland.

Finally, the ‘Smart Successful Scotland’ strategy, published in 2001 provided a strategic framework for the Enterprise Networks, the main public sector enterprise development bodies in Scotland responsible for delivering a wide range of business, site and human resource development. The strategy set clear objectives and priorities for the Networks and addressed many of the issues of changing economic environment – globalisation, technological development and the knowledge economy – which are at the heart of Structural Funds investment.

Social inclusion and Community Economic Development and related Area Based Strategies

A vision of social justice underpins the Scottish Executive’s policies for Scotland. The Social Justice Strategy established priorities: empowering communities to make decisions and influence others; building skills and confidence; providing the right services and products; and preventing a growing digital divide. These issues coincided with the aims of the European Structural Funds, which were designed to improve the economic and social cohesion of the targeted regions.

In fact, social inclusion issues and community economic development (which supports social inclusion through local economic initiatives) had been piloted and developed through Structural Funds investment in Scotland during the 1990s. *“Support from the Structural Funds was the key stimulus to CED in the disadvantaged regions of the UK in the mid-1990s”*³⁸ and the development of this kind of investment spread in the 1990s through most UK Structural Funds programmes.

The development of CED as a political and conceptual impetus is a key example of policy influence and exchange between regions, the European Commission, Structural Funds and wider public policy. Examples of good practice in two urban areas in the UK were the primary influence on the European Commission’s emerging policy directives on CED in the 1990s:

“Merseyside and (particularly) Strathclyde had developed economic regeneration programmes with substantial local community input which had been running for a number of years. To enhance this learning process [DG Regio] of the European Commission contracted a team . . . to research the

³⁸ HW Armstrong et al, 2000.

state of CED in the UK programmes and provide guidelines on how CED should be designed and implemented in the future.”³⁹

The European Commission’s policy on social and economic exclusion resulted in a new policy priority within the Structural Funds and, consequently, CED initiatives in all UK Structural Funds programmes in 1994-96. Piloting and investment under the Structural Funds programmes has played a role in the development of the social inclusion approach in Scotland. At the very least the two policies can be seen as mutually supportive. More likely, community economic development is one example of a policy influenced, transferred and reinforced between regional, national and European levels.

Horizontal themes

All Scottish Structural Funds Programmes are mainstreaming the horizontal themes of sustainable development and equal opportunities in the new programming period. Cross-Scotland effort is supporting these developments, through policy guides (‘Sustainable Development on Structural Funds Programmes in Scotland: Key Messages’, Scottish Executive and ‘Equal Opportunities Toolkit’, Scottish Executive and Equal Opportunities Commission – (both documents available at www.scotland.gov.uk/esf) and other joint working. Again, the partnership approach has been critical, through, for example, the East of Scotland European Partnership, which has developed an integrated methodology for building sustainable development into project preparation and appraisal systems; elements of this work are finding their way into other areas of public life through, for example, training for those managing programmes; partner and applicant training; establishment of policy groups for the themes with cross membership to advisory groups; and a considerable increase in the significance of the issues within the selection and scoring criteria.

To an extent these developments represented formalised arrangements for long-running commitments to the issues. For example, a Ministerial team on Sustainable Scotland has been established, and the Scottish public policy commitment to equal opportunities extends back a considerable number of years. Nevertheless, the formal establishment of a Scottish Equality Strategy represents a powerful development for equal opportunities in Scotland, and in particular commits public agencies to a mainstreaming agenda.

As EPRC researchers have noted, across Europe regions preparing for and implementing Structural Funds have not always wholly welcomed these mainstreaming developments. Despite the policy cohesion on the horizontal themes between Scotland and Europe, the scale of commitment to equal opportunities and sustainable development in the Structural Funds programme is at least as much due to Commission pressure and local partnership interpretation of European guidelines as to a supportive Scottish public policy context. Future success in mainstreaming the horizontal themes however, as with CED, will perhaps be due to maximising and exploiting these common agendas.

³⁹ Ibid.

Influence of Structural Funds assistance in Scotland

The measurable results of Structural Funds investment are evident across Scotland. From large-scale site redevelopment, business centres, colleges and local community facilities to marketing initiatives, training and intermediate labour market schemes, business investment funds and local employment initiatives. Yet the effect has gone beyond the value of investment:

“EU structural policies have had an important impact on the institutional infrastructure for economic development in Scotland, as well as the tangible programme for physical infrastructure, training, business development and environmental improvement. The EU has encouraged more consultation on and collaboration between development organisations than occurred in the past. In many areas the regional partnerships have provided a unique vehicle for inter-organisational communication and co-operation at a broad spatial scale.”⁴⁰

The Funds have worked with the grain of investment and strategic direction of the various bodies who are responsible for the full extent of economic development investment. To an extent, the Structural Funds partnerships have as a result of their engagement in “Programming”, contributed to the reinforcing of regional identity and a regional level of policy-making in Scotland. More recently, the programming approach has also led to the nascent development of a regional identity across the two local authority areas in the South of Scotland. The value of investment is still an important issue but Structural Funds in Scotland have gone beyond being perceived as a vehicle to draw down funds to one which can influence partnership building:

“The Scottish Partnerships do appear to be more effective and strategic in some respects than many of their counterparts elsewhere. They are not dominated by central government; there are fewer conflicts than elsewhere, partly because the larger ones have independent executives to promote collaboration, communication and fair play; some have made deliberate efforts to involve a wide spectrum of interests in the process, including the voluntary sector and locally-based initiatives; and some have introduced novel policies (such as community economic development) and procedures (such as expert advisory groups and consultative forums) in response to identified weaknesses.”⁴¹

As a result of their role in reinforcing regional identities and building both institutional capacity and partnership, the Structural Funds have become policy ‘influencers’ in the Scottish context. At best, these partnership arrangements have led to more innovative policies, (arising from wide consultation, involvement and skills transfer), more cohesive policy programmes across a range of agencies and, through the aggregation of budgets, greater impact. “In addition, the strategic approach to regional planning has spread beyond the Structural Fund programmes into national and regional policy

⁴⁰ M Danson et al, 1999.

⁴¹ M Danson et al, 1999.

measures⁴² and to a limited – but important - extent the Funds are working as policy influencers leading to wider change in Scottish Structural Funds policy. In some cases – such as documented above around Community Economic Development and the horizontal themes - that may be resulting in policy transfer to the wider Scottish public sector and in some case policy exchange between Scotland and the EC.

CONCLUSIONS

This chapter has examined two models for implementing European Structural Funds, one in NRW which has broadly implemented Structural Funds within pre-existing domestic policy and systems and one in Scotland which implements the funds within distinct and dedicated channels. The evidence reveals that a range of implementation options are available across regions where, in the context of common rules and regulations from the European Commission, Structural Funds can be used in different ways in varying circumstances.

The strengths of the NRW system have emerged as the ability to achieve significant Structural Funds investment co-financed by regional public sources in support of national or sub-national priorities, reflecting high level of commitment to regeneration activities; and the distinct regional co-financing budget line ensuring a high level of financial absorption, compliance and policy cohesion.

While Scotland has achieved a similar significant level of investment and financial commitment, the differing implementation system has distinct strengths. The devolved and partnership-based system has resulted in reinforced regional identities; played a role in developing and extending partnerships, which have benefits into wider economic development arrangements; and achieved a fluid relationship with national policy, acting both as a support of policy, and as a significant influencer, for example, around issues including Community Economic Development, sustainable development and equal opportunities.

Recent experience has seen a gradual change in the NRW system, moving from a focus on an increased scale of activity from the Funds to a focus on adding value. To an extent, while NRW has historically achieved a high level of policy cohesion, this is now balanced with commitment to partnership processes and increased opportunity for distinct implementation. In Scotland a gradual shift can also be charted. In the context of preparation for the 2000-2006 Programmes, the historically distinctive and devolved system has moved towards a higher level of policy cohesion and co-ordination familiar from the NRW experience.

These changes occurred not only as a result of the experience of implementing programmes in regions but following ongoing exchange between regions through networks such as IQ Net.⁴³ There is considerable potential for ongoing learning and exchange between the regions.

⁴² J Bachtler and R Michie, 1998.

⁴³ IQ-Net is an EU-funded network of regions undergoing economic and social conversion. The network involves a structured programme of debate and applied research.

The future of Europe is set to impact beyond the existing boundaries of Member States. Central and Eastern European countries preparing for EU membership, and preparing systems for the administration of Structural Funds, face issues which reflect some of the discussion above. There is a need to build local partnership capacity and strong regional structures, but in the context of clear economic, social and environmental policy directions at national level. The Structural Funds, and the management structures developed for their implementation, can play a very important role in building the framework for achieving these aims. The experiences recounted above suggest a continuing role for regions which have shared experience, like Scotland and NRW to share and spread the lessons of existing practice to the Central and Eastern European countries preparing for EU membership.

Conclusions and Proposals for Future Actions

Having compared various issues, a number of threads have appeared which offer the opportunity for interested parties to engage in future collaborative activity between the regions. Before indicating these in detail, a few general comments regarding the project are in order.

One of the key questions legitimately to be asked is what is the value of this type of project? As a result of this project we feel that the answer is possibly not the one that has traditionally been given. The true value of the exchange of experience and comparison in this context is not the copying or transplanting of whole procedure or methods, but rather the fact that a better understanding of others leads us to understand ourselves better. The benefit of the comparison has meant that by seeing how each region is viewed by the other we have been better able to understand those parts of our systems that are capable of taking on board potential changes or adapt the learning of others to our situation.

In general we have observed that the NRW context is one of stable, powerful public institutions for economic development; a long term approach to policy; a sectorally based regional policy and an inclusive mentality for policy and project development with all players being involved – whether active in the field or not. The possible drawbacks to this context is that it can sometimes be less flexible and responsive to urgent issues arising. The Scottish approach is characterised by a very reactive, flexible organisational matrix; with participation in project or policy development from those intimately involved and stakeholder management of the wider community. Strategic orientation, analysis and ex ante evaluation are all very visible in the Scottish context. In NRW the emphasis is more learning by doing based on the widest consensus available from the public sector actors

The participants in this project believe that this project has furthered a number of policy goals in both regions. The activities undertaken during the project implementation have resulted in a number of experts and practitioners in the relevant field of economic development meeting and exchanging information and views of their respective systems and projects. As a result clear areas for further exchange and learning have been identified, specific opportunities for mutual project development and delivery are outlined and a number of lessons learned in the utilisation of EU support have been identified and made capable of informing other Member State regions.

The Specific conclusions of this report together with the suggested opportunities are as follows:

Land Reclamation and Environmental Renewal

The analysis undertaken in this project has shown, not unexpectedly, that the primary legislative frameworks in the two regions are drawn from completely different backgrounds. These differing structures are so embedded that it would be extremely difficult to copy in a wholesale fashion the methodologies of the other region. However, within both the NRW and Scottish implementation arrangements for land

reclamation and environmental renewal, there are areas of technique and operational philosophy that are worthy of further mutual exploration.

As is seen elsewhere in the report, the differences in the institutional mentality between NRW and Scotland give opportunities for profitable exchange of experience in the future. In the physical development arena, the Scottish mentality of enablement may have specific project opportunities for NRW whereas the NRW ability to have as fully participative members all parties interested in a project may give Scottish projects food for thought.

Over the past 30 years, both regions have undergone fundamental adjustment to their economic base. The mass employment primary industries that used to pervade the landscape have largely disappeared or have modernised in such a way that their employment has greatly reduced. As a result, both regions have an immense experience in the techniques, methodologies and structures required for large-scale environmental renewal of brownfield land.

In the light of enlargement this experience is of potential value to those regions within accession states facing the same challenges of industrial reconstruction that NRW and Scotland have experienced. In facing the issues of the 21st century competitive environment these regions may not have thirty years to undertake this change. Being able to understand how NRW and Scotland handled this change may well assist accession regions in speeding their transition to a post-industrial economy.

Clusters / 'Competence Fields'

Analysis of this section of the report showed that Scotland has a sophisticated and advanced set of methodologies for identifying industrial clusters, specifying the resources to assist those and creating the implementation tools. In particular, the Scottish emphasis on analysis and evaluation was of significant interest to the NRW team. The NRW methodologies are based on utilisation of political and administrative structures in that region and as such tend to be more institutionally rooted.

As a result, there is an opportunity for identifying key aspects of the Scottish methodologies for evaluation and analysis of the demand side of the markets and industrial infrastructure of potential clusters. This may provide additional information to assist the NRW regional authorities in their facilitation and coordination role amongst a wide variety of economic development actors in their region, all of whom are engaged in the delivery of assistance to the companies of the identified cluster.

Similarly, the Scottish evaluation methodologies may well be of assistance in the monitoring and benchmarking of ongoing success of intervention of the Land authorities in developing the cluster assistance package. This objective evidence is of significant help in securing additional financial and other resources, particularly from the European Union, as it displays both the progress achieved with the resources utilised to date and the additionality that will be shown for resources utilised later.

Sustainable Development and Environmental Technology Industries

This chapter has shown that NRW is a European leader in environmental technology industries primarily as a result of early adoption of 'green' issues as a valid political priority. As a result, the economic driver for implementing environmental technological improvements in industries, that in Scotland is sometimes outweighed by short term financial constraints, was given an additional impetus by legislative force.

This has resulted in a significant competitive advantage for NRW environmental industries. This advantage results both from the fact that the industry is more mature than elsewhere in the EU but also because many of the German environmental legislative concepts have been adopted as EU-wide policies or regulations. The increasing level of environmental legislation from the EU that will be required to be adopted in Scotland gives a significant opportunity for learning and exchange of experience from NRW in the implementation with companies of environmental technologies. There are a number of specific actions identified by the project team for potential collaboration between NRW and Scotland. These are contained in Annex 1.

Progress towards more sustainable forms of development is a vital issue in both NRW and Scotland and both regions have implemented sustainable development policies in the form of Agenda 21 action plans and through the Structural Funds. Whilst integrated sustainable development has been taken on board by both regions it is recognised that the mainstreaming of sustainable development across policies is an incremental process and that both regions can share practice in this field in the future.

Entrepreneurialism and Sustainable Business Start-Ups

One of the most interesting observations in this section of the report was the fact that notwithstanding the major differences in the political, legislative, organisational and infrastructural frameworks in the two regions, they came up with identical objectives in new firm and small business policy. However, these objectives do reside within differing structures and it is here that the ability to identify differences in technique while seeking the same goals will provide opportunities for mutual cooperation. From the NRW perspective, there are opportunities to learn from the Scottish emphasis on the perceptions of entrepreneurship and education.

There is no comparable structure in Scotland as the Chambers of Crafts or the information and registration role that the Chambers of Commerce play in Germany. There is potential merit in investigating how and to what extent the availability of statistical and baseline information can inform the ongoing development of strategy and implementation and whether there are techniques adopted by NRW that can be adapted to the Scottish context.

The Scottish perception of investment risk is coloured by the general banking environment. While the BBRS identifies there is no lack of finance available, there is a perception of issues with the financing of new firm formation. The German banking structure is unique in its regional perspective but more importantly, from a Scottish viewpoint, the economic environment in Germany has been of low inflation and steady

growth over the last several decades. As a result, the criteria for investment risk and the perspective of the banking environment is worthy of examination.

Structural Funds

As with the other chapters, it is clear that the Structural Funds are implemented in quite different institutional and policy frameworks in Nordrhein-Westfalen and Scotland. Whilst each area is attempting to use similar financial means to deal with similar economic structural conditions and change, each has developed systems appropriate to the prevailing circumstances in the area – a strong emphasis on partnership and local identity in Scotland, and an emphasis on policy coherence in Nordrhein-Westfalen. It is also clear, however, in both cases, that the systems are fluid and must respond to forces for change.

Throughout this study, the emphasis has been on observing the different behaviours as described by a small team of “front line” professionals, not in order to translate wholesale a new system, but to offer others the opportunity to consider whether existing systems might be able to be adapted in small but significant ways by the adoption of practices which have been seen to work in other areas. In the Structural Funds case, it is clear that earlier, similar work, not least through the networking of IQ Net, has enabled Nordrhein-Westfalen to adapt the principles and practices of some elements of the Scottish “Programme Management Executive” model to the NRW situation. There are also elements of the Scottish approach to using the Structural Funds in support of Community Economic Development which might bear further examination for possible learning within Nordrhein-Westfalen.

In the rapidly developing policy environment in Scotland, there is a growing need to ensure the improved assimilation of Structural Funds expenditure and Scottish level policy. The experience of Nordrhein-Westfalen in such integrative approaches could well have further lessons for future development of the Scottish model.

There are potentially lessons, too, for colleagues in the Central and Eastern European nations to learn from the experiences of Scotland and NRW. Scotland and NRW have undergone a serious restructuring process and made enormous progress towards an innovation-oriented, competitive and sustainable economy. This was supported by an efficient use of the EU Structural Funds. Central and Eastern European nations preparing for the Structural Funds after accession may regard the two regions as examples to learn from. Both regions are willing to collaborate with central and eastern European regions as existing partnerships demonstrate (NRW with Upper Silesia, the Czech Republic (Moravia), Hungary and Romania and Scotland with the Czech Republic).

There are key underlying principles which are essential for an efficient use of the Structural Funds in both regions. Regional partnerships, a clear strategic orientation, a rigorous monitoring and evaluation of the policy results and impact and a need for regional and sectoral policy coherence are necessary in all regions.

It would not be advisable, however, for any region simply to copy one of these two approaches. Strategies and measures which work well in one region do not necessarily

work well in others. Each region operates in a specific legal, administrative, and cultural environment. Scotland and NRW, however, are valuable examples because they represent the opposing 'differentiated' and 'subsumed' systems, showing a wide range of strategic options. The choice of system was not entirely deliberate, but responded to a given environment and changing conditions. Copying and learning are two different things. Central and Eastern European regions can learn from this comparison between two regions and find a system which is most appropriate for their domestic environment. Both Scotland and Nordrhein-Westfalen are willing to assist them in this task.

ANNEX 1

PRIORITIES AND MEASURES UNDER THE RELEVANT PROGRAMMES 2000-2006

NRW Objective 2 Strategy 2000-2006 – Priorities and Measures

Priority 1: Business and start-up finance

- 1.1 Investment grants for creating new and securing existing jobs
- 1.2 Loan capital
- 1.3 Funds for business start-ups by university graduates
- 1.4 Start-up premium for SME's
- 1.5 Wage subsidies for unemployed (ESF)

Priority 2: Innovation and development of competencies

- 2.1 Technology and innovation
- 2.2 Start-up initiative
- 2.3 Business development initiative
- 2.4 Integrated environmental technologies
- 2.5 Information and Communication Technologies
- 2.6 Tourism, culture and leisure industries
- 2.7 Consumer and business related services
- 2.8 Renewable energies and rational energy use
- 2.9 Regional development strategies and interregional co-operation
- 2.10 Training, consulting and coaching of unemployed (ESF)

Priority 3: Innovation-related infrastructure development

- 3.1 Premises for manufacturing and service industries
- 3.2 Greening of industrial sites and emission-reducing infrastructures
- 3.3 Technology and training facilities
- 3.4 Logistical services and infrastructure
- 3.5 Integrated employment projects for unemployed (ESF)

Priority 4: Support for particular target groups

- 4.1 Vocational training for young people
- 4.2 Integrated development of urban problem areas (ERDF+ESF)
- 4.3 Integrated development of rural areas
- 4.4 Improvement of the labour market opportunities for women

Priority 5: Technical assistance

Scotland Objective 2 Strategy 2000-2006 – Priorities and Measures

East of Scotland

Priority	1	Strategic Economic Development
Measure	1	SME Creation and Development
	2	Access to Risk Capital
	3	Technology and Knowledge Transfer
Priority	2	Strategic Locations and Sectors
Measure	1	Strategic Locations and Sectors (Revenue)
	2	Strategic Locations and Sectors (Capital)
Priority	3	Community Economic Development
Measure	1	Community Engagement and Capacity Building
	2	Spatial Targeting
	3	Thematic Activity
Priority	4	Technical Assistance
Measure	1	Programme Management
	2	Other costs

South of Scotland

Priority	1	Competitive Enterprises
Measure	1	Enhancing Advisory Structures for SMEs
	2	Encouraging Investment in SMEs
	3	Developing Innovation, Technology and the Information Society
Priority	2	Competitive Locations
Measure	1	Sites, Premises and Locations
	2	Marketing and Promotion
	3	SME Access to Capital
Priority	3	People and Communities
Measure	1	Developing Community Support Structures
	2	Area Regeneration Actions
Priority	4	Technical Assistance
Measure	1	Programme Management
	2	Other Costs

Western Scotland

Priority	1	Develop the Competitiveness and Innovative Capacity of the Region's SMEs
Measure	1	Enhance Access to Finance for SMEs
	2	Enhance SME Advice and Support Services to Develop a Competitive and Innovative Business Base

	3	Develop a Competitive Workforce
Priority	2	Develop the Region as a Competitive Location
Measure	1	Develop the Region's Competitive Locations
	2	Develop SME Facilities to Support Competitive Sectors and Clusters Outside Strategic Sites and Urban Regeneration Areas
	3	Marketing and Promoting the Region as a Competitive Location
Priority	3	To Increase the Economic and Social Cohesion of the Region
Measure	1	Community-based Regeneration
	2	Routes to Opportunities
Priority	4	Technical Assistance
Measure	1	Management and Implementation (ERDF)
	2	Management and Implementation (ESF)
	3	Research and Development (ERDF)
	4	Research and Development (ESF)

ANNEXE 2 – Potential Areas for Collaboration

The following projects present opportunities for future collaborative working between NRW and Scotland:

Project 1 - Implementation of Agenda 21

Both Nordrhein-Westfalen and Scotland are required to implement Agenda 21. There are several initiatives at all levels of private and public activity. There may be benefit in contrasting approaches to community involvement to arrive at a more inclusive adoption of Agenda 21.

Actions

- Scoping exercise to identify the process of introducing Local Agenda 21 to the communities in both NRW and Scotland.
- Investigate the interaction of other public agencies in the development of Local Agenda 21.
- Determine the extent of community engagement and ownership.
- Identify, analyse, and share lessons from, actual implementation projects and initiatives under LA21.

Project 2 - Performance Indicators for Sustainable Development

In order to increase understanding of sustainable development issues, priorities and solutions, monitoring indicators appropriate to organisations and businesses are required. Scotland has considerable experience in this field, at the level of communities, local authorities and nationally, but could benefit from an exchange of experience of indicators and monitoring frameworks linked to technical aspects such as waste and energy issues. A common, workable framework for monitoring both environmental businesses and the environmental performance of mainstream businesses would also be helpful, given the issues identified earlier in this chapter. The initial focus might be on Waste and Energy issues, given their economic importance for both Scotland and NRW.

Actions

- Evaluate the strategic position of both countries in sustainable development.
- Identify a series of core indicators which have common applicability which can be used as a demonstration of collaborative thinking which can be presented at EU level and to accession countries.
- Compare the integration of the Horizontal Themes of Sustainable Development, Equal Opportunities and Innovation in the respective Objective 2 Programmes.

Project 3 - Renewable Energies

As a result of the adoption of Renewable Energy targets by 2010 by countries all over the world it has been estimated that by 2020 the global market for wind energy will be \$133 billion and the Renewable Energy market in total will be \$250 billion by 2020.

The Renewable Energy technology in wind, biomes and fuel cell both current and future is an area with outstanding potential for collaboration.

Actions

- Identify the capacity of the Renewable Energy industries in both countries to exploit expected growth in the global market.
- Examine design methods of integrating these technologies into one “Powerpack” for local application in housing and commercial development.

Project 4 - Energy Efficiency

There is a huge drive in both countries to raise awareness of all consumers to the benefits of energy efficiency.

Actions

- Compare the strategic approach to energy saving by the Scottish Energy Efficiency Office and their German counterparts.
- Compare delivery and public sector support in both countries.

Project 5 - Water Management

Clean water is fundamental to quality of life and water management industries are at the forefront of developing new technologies which address the specific needs of the water industry.

Actions

- Assess ongoing activity in water treatment including polluted water arising from contaminated land.
- Achieve a collaborative understanding of water treatment particularly in areas of aeration systems, separation technologies, chemical treatment, construction and operation of wastewater treatment systems.
- Provide Best Practice examples in wastewater minimisation.

Project 6 - Sharing of experience and technology in waste management and recycling

NRW is well ahead of Scotland in terms of waste management and recycling, although Scotland has some emerging technology that could be of interest in Germany (e.g. land reclamation, concrete technology, energy from tyres).

- Gathering of lessons from the NRW experience which may help Scotland to speed up progress towards its waste reduction and recycling targets.
- Making these lessons available also to the Accession States.
- 2-way transfer of recycling technology, and development of research and commercial partnerships to speed up innovation and exploitation (e.g. via 6th Framework Programme for R&D).

Project 7 - Develop joint approach to WEEE Directive

The Waste Electronic and Electrical Equipment Directive will be adopted in June 2002. Both NRW and Scotland would benefit from collaborative working to develop a joint strategy to recycle electronic and electrical waste, including identifying and establishing future markets.

Actions

- Jointly establish a methodology for quantifying the amount of electronic and electrical waste to be taken back within an identified timescale.
- Examine the infrastructure which will be required to “treat” the return material.

Project 8 - Partnership with Accession States

The lessons learned from Projects 1-7 could be integrated into a document of best practice which is capable of addressing the needs of accession states relating to issues outlined above.

Bibliography

Boekholt, P. and Thuriaux, B. (1999) Public Policies to Facilitate Clusters: Background, Rationale and Policy Practices in International Perspective, in Roelandt, T. and den Hertog, P (eds), *Boosting Innovation: The Cluster Approach*, OECD, Paris.

Brown, R. (1999) Cluster Dynamics, *Scottish Enterprise/Scottish Enterprise Network, Glasgow*

Enright, M. (2000) The Globalisation of Competition and the Localisation of Competitive Advantage: Policies toward Regional Clustering, in Hood, N. and Young S. (eds) *Globalisation of Multinational Enterprise and Economic Development*, Macmillan, London.

Feser, E. (1998) Old and New Theories of Industry Clusters, in Steiner, M. (ed) *Clusters and Regional Specialisation*, pp.18-40. London: Pion Limited.

Heinze R., Hilbert, J., Nordhause-Janz, J and Rehfeld, D. (1998) *Industrial Clusters and the Governance of Change*, in Braczyk, H., Cooke, P. and Heidenreich, M. (eds) *Regional Innovation Systems*, UCL Press, London.

Kremer, U. (1999). Ergebnisse der wissenschaftlichen Begleitung und Auswertung von regionalwirtschaftlichen Vorhaben im Rahmen und im Umfeld des Projekts "Regionalwirtschaftliche Kooperation und arbeitsorientierte Strukturpolitik in Nordrhein-Westfalen (REKON)", *ISA-Consult, Bochum*

Legendijk, A. (1999a) 'The Emergence of Knowledge-Oriented Forms of Regional Policy in Europe', *Tijdschrift voor Economische en Sociale Geografie*, Vol. 90.pp110-116.

Legendijk, A. and Charles, D. (1999) Clustering as a New Growth Strategy for Regional Economies. A Discussion of New Forms of Regional Industrial Policy in the UK, in Roelandt, T. and den Hertog, P (eds), *Boosting Innovation: The Cluster Approach*, OECD, Paris.

Maggi, C (2000) Key Factors of Economic Change in Northrhine Westphalia, *MESO Project, INEF, University of Duisburg, Germany*

Meyer-Stamer, J and Waltring F (2000) Behind the Myth of the Mittelstand Economy – The Institutional Environment Supporting SMEs in Germany, *MESO Project, INEF, University of Duisburg, Germany*

Porter, M. (1990) The Competitive Advantage of Nations, *Free Press, New York*.

Porter, M. (1998) 'Clusters and the New Economics of Competition', *Harvard Business Review*, November-December, pp.77-90.

Raines P and Asche P (2000) A review of Cluster Development Theory and Policy, *European Policies Research Centre, University of Strathclyde, Glasgow*

Rehfeld, D., Baumer, D. and Wempel, M (2000) Regionalisierte Strukturpolitik als Lernprozess. Verbundspezifische Projekte im Rahmen einer regionalisierten Strukturpolitik. Erfahrungen in Ziel 2 Regionen. Zwischenbilanz, Best-Practice und Konsequenzen für zukünftige Projekte, *Institut Arbeit und Technik, Gelsenkirchen*

Roelandt, T. and den Hertog, P. (1999) Cluster Analysis and Cluster-Based Policy-Making: The State of the Art, in Roelandt, T. and den Hertog, P (eds), *Boosting Innovation: The Cluster Approach*, OECD, Paris.

Rosenfeld, (1995) 'Bringing Business Clusters into the Mainstream of Economic Development', *European Planning Studies*, Vol. 5, pp.3-23.

Sim, H. and Pollock, R. (2000) Green Shoots – Early Signs of Economic Growth, *Scottish Enterprise, Glasgow*

Contributors

Editorial Team

Russell Simpson (Chair)
Colin Brown
Herbert Jakoby

Scottish Enterprise
Scottish Executive
Ministerium für Wirtschaft und Mittelstand,
Energie und Verkehr des Landes Nordrhein-
Westfalen

Kirsty Macdonald
Wulf Noll

Scotland Europa
Ministerium für Wirtschaft und Mittelstand,
Energie und Verkehr des Landes Nordrhein-
Westfalen

Writing Teams

Land Reclamation
NRW

Rolf Heyer, Landesentwicklungsgesellschaft

Andrew Tate, Scottish Enterprise

Clusters

Grant McKenzie, Scottish Enterprise
Wulf Noll, Ministerium für Wirtschaft und
Mittelstand, Energie und Verkehr des Landes
Nordrhein-Westfalen
Jörg Meyer-Stamer, Institut für Entwicklung und
Frieden, Duisburg

Sustainable Development

Alexandra Landsberg, agiplan
ProjectManagement GmbH, Mülheim an der
Ruhr
Pat McHugh, Scottish Enterprise

Entrepreneurialism &
Sustainable Business Start-ups

Angela Copland, Scottish Enterprise
Ulrich Cichy, Ministerium für Wirtschaft und
Mittelstand, Energie und Verkehr des Landes
Nordrhein-Westfalen

Structural Funds
Partnership

Carolyn Sawers, Strathclyde European

Colin Brown, Scottish Executive
Herbert Jakoby, Ministerium für Wirtschaft und
Mittelstand, Energie und Verkehr des Landes
Nordrhein-Westfalen