

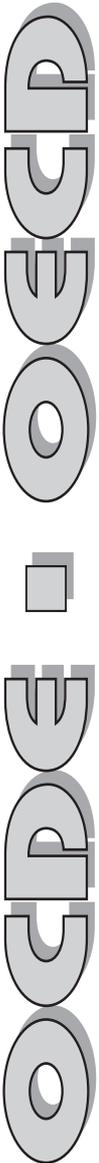
ENHANCING THE COMPETITIVENESS OF SMEs
IN THE GLOBAL ECONOMY: STRATEGIES AND POLICIES

Workshop 2

**LOCAL PARTNERSHIP, CLUSTERS
AND SME GLOBALISATION**

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FOREWORD

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INTRODUCTION AND SUMMARY

1. This paper addresses the phenomena of clusters of firms and inter-firm networks, the competitive advantages that can derive from membership thereof, and the definition of public policy towards both. These organisational forms and related policies are considered in the context of the increasing international integration of markets for goods, services, capital and labour. Different perspectives are presented, reflecting economic analysis of what policy should entail as well as the insights of practitioners concerned with the daily implementation of policy.

2. The globalisation of economic activity and the tendency for firms in related lines of business to locate and operate in close physical proximity have become dominant forces shaping economic development. Globalisation is shown to be consistent with the localisation of competitive advantage in various industries and activities. Increasingly, the need to adjust to global competition, and the examples of prosperous regions whose economies are built on localised groups of firms, have caused local, regional and national governments to turn to policies based on enterprise clusters (a cluster is an agglomeration of firms in a related line of business. A cluster can contain a small or large number of enterprises, as well as small and large firms in different proportions. Some clusters, such as many of Italy's industrial districts, are comprised principally of SMEs). Indeed, cluster development policies have proliferated in developed and developing economies, in central and peripheral regions, and in nations and regions with disparate philosophies on the role of government in economic development.

Why should policy makers be interested in inter-firm networks and clusters?

3. Membership of clusters and networks can enhance the productivity, rate of innovation and competitive performance of firms. Clusters and networks can allow small firms to combine advantages of small scale with various of the benefits of large scale. Public policy on clusters and networks can help SMEs realise the opportunities and meet the challenges associated with globalisation. Essentially, a policy on clusters provides a framework for dialogue and co-operation between firms, the public sector (particularly at local and regional levels of government) and non-governmental organisations. This dialogue can lead to efficiency-enhancing collaboration amongst firms, such as in joint marketing initiatives, the creation of mutual credit guarantee associations, joint design and sponsorship of training, a more efficient division of labour among enterprises, etc. Such a dialogue can also lead to an improved quality of policy and government action (such as in training, the provision of information, and infrastructure supply). In a period of globalisation, inter-firm networks hold the promise, *inter alia*, of allowing small firms to compete on a par with larger companies. Networks can allow firms to engage in accelerated – and peer-based – learning. They can facilitate the reconfiguration of relationships with suppliers, and offer scope for increased efficiency through collective action. As with clusters, networks can pave the way for greater specialisation amongst small firms, opening opportunities for economies of scope and scale. While not all networks need be geographically concentrated, networking of different sorts is central to the competitive advantages derived from membership of a cluster.

Policy principles

4. While many cluster development programmes share distinct similarities, there are often differences in the target industrial base, the level of government involved, the nature of public action, the cluster selection process, and even in the understanding of what a cluster is. Consequently, varied approaches are found under the “cluster” rubric. This variety complicates the specification of “best practice” policies. Nevertheless, a set of broad guidelines can be identified.

5. Guidelines on policy towards clusters must be premised on a view of government as supporting existing and emerging clusters rather than trying to create them from scratch. A policy aimed at developing entirely new groups of firms in selected sectors can entail high costs, high risks, serve as a screen for outmoded forms of industrial targeting, and give rise to destructive competition should many regions follow the same policies in pursuit of the same industries. Cluster development views firms and industries as part of larger inter-linked systems. It is difficult for governments to create such complex systems through policy. Accordingly, an indirect role for government is preferable.

6. A tenet of the guidelines outlined here is that a clusters policy should essentially aim at encouraging networking and collaborative behaviour among firms as well as better targeted public programmes and investments. At the same time, these public programmes and investments should not go beyond the traditional public remit of rectifying market failures and providing public goods. In other words, a policy on clusters should aim to provide services that all firms merit access to, whether they are clustered or not, but in a more targeted fashion. While a clusters policy should be guided by the same adherence to market rationality as should inform policy towards all firms, the particularity of working with clusters is that, owing to the physical proximity of firms and institutions, there can be more opportunities (at relatively low cost) for promoting inter-firm collaboration than would otherwise be the case.

7. Policy – in which local and regional authorities are critical – should entail a clear targeting of market failures, and a realisation that any one set of detailed policies is unlikely to be optimal in all settings. Instead, programmes should be tailored to local economic and social realities to provide differentiated approaches leading to greater variety and prosperity across all localities. Cluster policy should also be informed by an understanding of the different economic and governance structures found in different localities.

8. The text box below contains policy guidelines on clusters and inter-firm networks. These guidelines are complemented later (Sections 3 and 4) by a more detailed description of practical steps and issues to consider in policy design and implementation.

Box 1. Policy Guidelines on Clusters and Networks

Policy towards networks

- Implement broad campaigns to introduce the networking concept to businesses. It is important to create informed demand for network services, with networks preferably addressing precise market-driven objectives.
- A degree of financial support, in feasibility work, start-up activities, and the costs of network brokerage, is to be expected. However, funding should be modest, and should be phased out as participants start to engage more formally and obtain benefits.
- Work with realistic time-frames: a commitment of 3-4 years is usually required for a significant business network programme.
- Ensure the presence of experienced network brokers. Establishing broker teams and facilitating exchanges among them can help maintain effectiveness and motivation.

Policy towards clusters

- Facilitate local partnerships involving private actors, NGOs and different levels and sectors of government so as to arrive at agreements on individual responsibilities (for example in co-locating complementary public investments with related concentrations of private investment).
- Let the private sector lead in cluster-development initiatives, with the public sector playing a catalytic role.
- Where possible, match initiatives to the most suitable level of government. Ideally, this will correspond to the geographic scope of the cluster. The “right” level of government should also have substantial influence over relevant programmes and expenditures.
- Some prioritisation among clusters is generally necessary due to limited resources (selection criteria might include the opportunity for the sponsor to add-value, and the existence of organised nuclei of actors in the cluster). There may also be benefits to working with a portfolio of clusters.
- Initially adopt a low risk/early return focus. It is useful to generate small but evident gains through collaborative effort at the outset. As success develops, higher risk/longer term activities can be introduced.
- Target real market failures. The process of identifying and understanding how, for example, under-provision of public goods and co-ordination failure constrain a particular cluster can point toward fruitful areas of public-private or private-private co-operation.
- Seek to lock-in benefits of existing or embryonic clusters by:
 - Facilitating access to accommodation for new and small firms (given the widely reported difficulties faced by small firms, and particularly start-ups, in gaining access to industrial real estate). This facilitation can take different forms, but the public role should essentially seek to leverage and reduce risk for corporate property investments in industrial real estate.
 - Promoting the establishment of suppliers associations and learning circles, and other forms of collaborative undertaking that are made possible by virtue of physical proximity among firms (such as mutual credit guarantee associations).
 - Allowing specialisation and local adaptation in university-industry linkages including experimentation in incentive structures that can encourage local linkages to industry.
 - Ensuring effective technical support and information services. Markets may under-supply some business services and certain types of information, especially to small firms. Policy should address market failures where these are significant and aim to induce private provision as early as possible.

- Ensuring access to specialised infrastructure, communications and transport.
- Inward investment may help stimulate a cluster. If seeking to attract investments then:
 - Have local, regional and national authorities disseminate information about the cluster – and the locational advantages it offers – throughout the business community of a region or country.
 - Focus investment promotion efforts on linkages within a cluster considered weakest (such as gaps in the chain of local suppliers).
- Consider complementing the national collection and organisation of statistics by adopting a frame of reference that would illustrate the geographic concentration of related groups of firms. Data organised according to the Standard Industrial Classification (SIC) omits the extent of inter-linkages among firms in a given locality belonging to different branches of manufacturing(or services).
- Support initiatives at sub-national and international levels to promote co-operation between SMEs within trans-national innovative clusters.
- Evaluate the initiative throughout, not just at the end of the process. In this way, evaluation can help measure progress, identify midcourse corrections if necessary, and focus efforts on overcoming problems.
- Create a mechanism for terminating an initiative if it fails to produce results, as not all programmes can be successful.

A Policy Don't on Clusters

- Policy makers should generally refrain from seeking to build entirely new sector-specific clusters of firms. There should be an element of market-test before significant public resources are committed to a cluster. Adopting this practice may help avoid situations in which sub-national bodies compete in implementing identical cluster development strategies. Similarly, cluster initiatives should not be used to introduce distortionary industrial policy intended to target “national champions”, “sunrise sectors”, etc..

1. Globalisation and localisation

9. Two seemingly competing tendencies, the globalisation of economic activity and the localisation of industries, have captured the interest of scholars, economic development professionals and policy makers in recent years. While trends towards globalisation of industries and companies might appear to reduce the importance and distinctiveness of (sub-national) regions, a tendency towards localisation of certain industries and economic activities seems to do exactly the opposite. Simultaneous globalisation and localisation tendencies have created policy challenges for national and local governments. One response to these challenges has been a dramatic proliferation of development policies based on clusters of firms and industries.

1.1. The globalisation of economic activity

10. One of the most important trends in the world economy has been the globalisation of economic and business activity. Driven by a range of policy, economic and technological variables, international economic activity of all kinds has been on the increase. World trade has grown significantly faster than world output over the last few decades and foreign direct investment flows have grown faster than world trade. In 1996, the world-wide stock of foreign direct investment reached USD 3.2 trillion and sales by foreign affiliates, roughly USD 7 trillion a year, were some 30% greater than world exports.¹ Foreign portfolio investment has increased in importance as well. Private holdings of long term foreign securities

1. UNCTAD (1997).

by United States residents and entities alone reached an estimated USD 1.1 trillion at the start of 1997.² And finally, international currency transactions, at USD 1.8 trillion to USD 2.0 trillion a day, dwarf all other forms of international economic activity.

1.2. *The localisation of competitive advantage*

11. As globalisation has accelerated, interest in localised groups of firms in related industries has grown. This has been due to successful examples of such “clusters” found in growing or prosperous regions, in disappointment with economic development models based on large firms, and on the sheer ubiquity of the phenomenon.³ Regional⁴ clustering can be seen in the industrial districts of Northern Italy or Spain, the metalworking and machinery clusters of Germany, Switzerland and the American Midwest, the high technology agglomerations of Silicon Valley, Route 128, Cambridge, and Sophia Antipolis, the company towns of Ludwigshafen, Toyota City, and Seattle (Boeing and Microsoft), the fashion capitals of Paris and Milan, and the metropolitan business service centres of Hong Kong, New York and London.⁵ It can even be seen in the emergence of clusters of firms in non-location sensitive activities not normally thought of as subject to clustering at all. Omaha in telemarketing, South Dakota in credit card processing, Ireland in back office processing for financial services, Sydney in information processing, Bangalore in software services, and Manila in data entry are only a few examples of mobile activities that one generally thinks of being decentralised FROM places rather than being decentralised TO places. The fact that even such “placeless” activities have shown tendencies to cluster indicates the strength of the phenomenon.⁶

12. Large multinational firms that contribute to globalisation also contribute to the clustering process. In many industries, including motion pictures, pharmaceuticals, and financial services, as well as in activities such as auto design, electronics design, and biotechnology research, multinational location decisions are actually increasing the geographic concentration of economic activities. Financial and managerial centres, such as New York, London, and Tokyo, appear to be consolidating their influence. Most major Western financial institutions have their Asia-Pacific regional headquarters in Hong Kong or Singapore. German banks buy British merchant banks, but then move their merchant banking headquarters to London. Meanwhile, European pharmaceutical companies perform biotechnology development in US biotechnology clusters, Asian semiconductor firms design their chips in Silicon Valley, and international auto companies design prototypes in Southern California. In each case, the decisions of multinational firms have reinforced pre-existing clusters.⁷

13. While the clustering phenomenon is not present in all or even most industries (in fact the geographic profile of different industries varies widely), it is an important part of the economic landscape. For example, it has been estimated that there are around 380 clusters of firms in the United States operating across a broad spectrum of sub-sectors, which together they employ some 57% of the workforce of the United States and produce 61% of the country’s output.⁸ Local industrial districts account for some 30% of

2. International Monetary Fund (1997).

3. Enright (1991, 1996, 2000) and Storper (1992).

4. In this paper, “region” will be used in the sense of subnational regions, regions within nations, rather than supranational regions, regions that encompass several nations, except where clearly specified otherwise.

5. Enright *et al.* (1997), Saxenian (1994), Conejos *et al.* (1997), Becattini (1989), Brusco (1992), Goodman and Bamford (1989), and Pyke *et al.* (1992).

6. Enright (2000).

7. Dunning (2000), Enright (2000), and OECD (1995).

8. See Rosenfeld in OECD (1996).

total employment in Italy and in 1994 produced 43% of Italy's exports. In particular, clustering is found throughout prosperous regions such as North-Central Italy, Baden-Württemberg and Bavaria in Southern Germany, London and the M4 region in the Southern United Kingdom, North Sydney in Australia, and several others.

1.3. *Reasons for localisation*

14. In general, globalisation will tend to lead to the concentration rather than dispersion of economic activities if its driving forces have a greater impact on marketing than on production.⁹ The forces promoting localisation include economic and sociological rationales as well as the contribution that localisation can make to innovation.

1.3.1. Economic and sociological

15. The economic reasons for the geographic concentration of particular industries involve the presence of unique natural resources, economies of scale in production, proximity to markets, labour pooling, the presence of local input or equipment suppliers, shared infrastructure, reduced transaction costs, and other localised externalities. Unique natural resources and extreme economies of scale in production provide the most straight forward, and perhaps least interesting, rationale for localisation. For example, Quebec has substantial hydroelectric generating capacity used in the aluminium industry. Economies of scale operate in large commercial airframes, large commercial jet engines, and some chemical products, allowing for a limited number of efficient-scale facilities world-wide. Proximity to markets helped establish the textile industries of Prato and the Kyoto area, the pharmaceutical industry in the New Jersey area, and the auctioneering and insurance industries of London, among others. While proximity to consumer markets need not be an advantage in a world of efficient global transportation, for products that are difficult to transport or that require ongoing close interaction with customers, proximity to markets can still be advantageous.

16. Labour pooling, the presence of local input or equipment suppliers, and shared infrastructure all involve supply-side externalities or agglomeration economies. Labour pooling that allows either a higher level of specialisation, and therefore efficiency, or that allows for a more efficient labour market, can be a force for localisation. The large labour pools associated with the motion picture industry in the Los Angeles area, for example, allow producers to bring together a unique workforce for each film. The presence of local suppliers can likewise provide quicker and more efficient access to local companies. This is true in industries in which companies are among their own largest customers (such as chemicals and certain financial services), or in industries where there is rapid change in inputs and equipment. Shared infrastructure provides support beyond that which can be provided by a single company. The cargo services industries of Hong Kong and Singapore, the chemical industry of the US Gulf Coast, the flower industry and food industries of the Netherlands, and most tourism centres benefit from shared infrastructure.

17. Localisation can reduce the costs of transactions, including the costs of negotiating and monitoring contracts. When suppliers and buyers operate in close proximity, negotiations and monitoring can become less costly. This will be true if information is transmitted through personal contact, if communication costs increase with distance, or if communication degrades with distance. In addition,

9. The rationales for the existence of regional clusters, and localised industries in general, have been explored by several authors dating back to Weber (1929) and Marshall (1920a, 1920b) and including Enright (1991), Krugman (1991), and Doeringer and Terkla (1996).

some localised industries develop standardised contracts and transaction mechanisms that lower the cost of negotiation. This is the case in financial markets, in textile clusters in Italy and Japan, and in agricultural clusters in New Zealand.

18. Furthermore, reputational effects and the potential for sanctions may limit opportunistic behaviour by transacting partners in clusters.¹⁰ Sociological analyses focus on how cultural similarities, community cohesiveness, interdependence among local firms, repeated interaction, and familiarity allow firms to trust that their counterparts will not act opportunistically. This trust can facilitate the smooth functioning of fragmented clusters made up of many participants.¹¹ Supply-side agglomeration economies and reduced transaction costs can therefore allow for a greater range and fluidity of organisational structures than either a geographically dispersed configuration or a single large firm. As a result, they can make clusters more able to adapt quickly to changing circumstances.¹²

1.3.2. *Genesis and growth of clusters*

19. Although existing literature provides a wealth of explanations for the development of clusters, it generally does not tell us why particular clusters have arisen in specific locations. It might be clear why some clusters have developed near natural resources, but it is less clear why industries with limited dependence on such resources have located in particular places. Many clusters had their origins in some specific local factor condition, local demand, or related industry. Specific natural conditions figured in the early development of the Solingen (Germany) cutlery industry (local sources of iron ore, wood for furnaces, and water power), the Carrara (Italy) stoneworking industry (marble deposits), and the silk industry of western Japan (proximity to China, consistent and moist climate). Pools of specific expertise were important in the establishment of the electronics and biotechnology industries around the San Francisco Bay Area and Boston and the optics industries of Rochester and Wetzlar (Germany). Specific local demand led to the establishment of the Bologna packaging machinery industry, the textile machinery industry of eastern Switzerland, and the factory automation equipment industry around Turin. Location near market cities aided the initial development of the Prato textile industry and the Solingen cutlery industry. Other industries, such as the Basel pharmaceutical industry and Japan's carbon fibre industry, grew out of related industries (dyes and synthetic fibres respectively).¹³

20. The forces that foster the subsequent growth of regional clusters are not necessarily those that gave the location its initial advantage. The creation of industry-specific knowledge, development of supplier and buyer networks, and local competitive pressures that have forced firms to innovate have spurred the growth of many regional clusters, even after the cluster's initial advantages were superseded. Solingen's natural advantages eroded as electricity replaced water power, coal replaced wood in the forges, and high quality steel became generally available. By the latter portion of the twentieth century, the expertise of the Solingen workforce and the area's focus on the cutlery industry was far more important to the local industry's success than natural advantages. Carrara originally exported indigenous marble, but now has a thriving industry in which stone from all over the world is imported, cut, and then re-exported. The specialised expertise of the Carrara stonecutters more than compensates for the expense of importing and re-exporting heavy slabs of stone. Similarly, the capabilities of Basel's scientists and technicians is far more of an advantage to the local pharmaceutical industry today than proximity to the local dye industry.

10. As described in Scott (1986), Enright (1991, 1996), and Lundvall (1993).

11. Harrison (1992), Piore and Sabel (1984), Sabel (1992), Becattini (1989), Best (1990), Staber *et al.* (1996), and Chandler *et al.* (1998).

12. Enright (1995).

13. Enright (1991).

21. The structure of some clusters can also lead to high rates of enterprise start-up. The inter-firm specialisation which clusters can permit allows individual entrepreneurs to start firms that concentrate on only a small phase of production in a given industry. In other words, a low degree of vertical integration in firms belonging to clusters can also lower barriers to entry for entrepreneurs. Secondly, as clusters often contain many buyers and sellers in different parts of the production chain, the pressure to innovate is great, while conditions conducive to innovation are often present. A fertile environment is thus created for innovation via enterprise creation.¹⁴

1.3.3. *innovative performance in clusters*

22. The growth and persistence of regional clusters results from the development of pressures, incentives, and capabilities to innovate provided by the local environment. These allow certain regional clusters to compete successfully against dispersed competitors. Innovative performance, in turn, is a function of innovative investment, technological opportunities and the effectiveness and focus of innovative activity. Investment in innovative activity, in turn, depends on the incentives to innovate and the appropriability of gains from innovation, both of which depend on the nature of rivalry and market structure found in the industry. The effectiveness of innovative activity is a function of the skills and knowledge of researchers, managers and workers, the information available to them, and the firm's ability to bring innovations to the marketplace. The direction and focus of innovative activity is also affected by the opportunities and problems perceived within an industry.¹⁵ Each of these features can be influenced by localisation.

23. The literature on innovation suggests that informal, unplanned, face-to-face, oral communication is critical.¹⁶ It is precisely in this type of communication where geographic concentration provides a distinct advantage, even in an age of rapid communication and information systems. The geographic concentrations of firms, suppliers, and buyers found in many clusters provide short feedback loops for ideas and innovations. This is particularly important for products and services that emerge through an iterative process between producer and customer, or in industries in which suppliers or buyers are important sources of new products or services. The Sassuolo ceramic tile industry, the Silicon electronics industry, the Scottish oil and gas industry, the Wetzlar optical industry, and numerous others have found proximity to specialist local suppliers to be a major contributor to innovative performance.¹⁷ In addition, regional clusters often attract sophisticated buyers from outside the region that provide additional insight into advanced market demands. Buyers from around the world, for example, go to the textile, apparel, and shoe clusters of northern Italy and to the representatives of similar industries in Hong Kong.

24. Clusters often become repositories for industry-specific skills and capabilities that add to the innovation process.¹⁸ Over time, knowledge cumulates, skills are handed down from person to person, and industry-specific knowledge becomes common knowledge within the cluster. Talented people, both locals and outsiders in some cases, are drawn into the cluster. Clusters such as Prato's or Biella's in wool textiles, western Japan's in textiles, Murano's in glass, and Geneva's in luxury watches have built upon centuries of experience. At the same time, pharmaceutical clusters in New Jersey and Basel, aerospace clusters in Los

14. OECD (1998).

15. Enright (1991).

16. Utterback (1974), Saxenian (1994), and Enright (1998).

17. Russo (1985) and Enright (1991).

18. Marshall (1920a) pointed out that people in such communities discuss new developments in the industry, improve upon them, and combine them with other ideas.

Angeles and the south of Paris, chemical clusters around Osaka and in the German Rhineland, and others, attract talented people internationally.

25. Regional clusters often provide focal points for investments and new business activities. Local industry associations provide commercial research on foreign markets. Local governments often make contributions to industry-specific infrastructure. Local universities frequently provide industry-specific research and specialised training. Such investments allow firms within the cluster to leverage their own investments in innovative activities. In addition, regional clusters can provide the suppliers, information, and role models that create a favourable environment for innovative spin-offs. Many clusters, in fact, have developed largely through the formation of spin-offs. Numerous of the packaging machinery companies in the Bologna area can be traced to a single firm, as can several Wetzlar optical firms, several Piacenza area factory automation firms, and virtually every semiconductor companies in Silicon Valley.¹⁹

1.4. *Globalisation and localisation: resolving the paradox*

26. The numerous examples of regional clustering provide evidence that even as competition and economic activity globalise, competitive advantage can be localised. Of course, the apparent paradox is really no paradox at all. Globalisation can result in a geographic spread of economic activities, but it also can allow firms and locations with specific sources of competitive advantage to exploit their advantages over ever wider geographic areas, often, though not always, at the expense of other areas. As long as globalising forces move at a faster pace than forces that influence the geographic sources of competitive advantage economies will become in some ways more distinct, rather than less distinct. Globalising and localising tendencies make “place”, in particular the attributes that determine whether a given place will benefit or suffer from the globalising and localising tendencies, more important, rather than less important, to a region’s economic well-being.²⁰

1.5. *The effects of globalisation on cluster evolution*

27. Clusters evolve over time. This evolution tends to be influenced by changes in the competitive environment, technology, market demands, and firm strategies.²¹ Two particular aspects of interest are the impacts of globalisation and changes in the industrial organisation of regional clusters.

28. One clear impact of globalisation on clusters is an increase in international competition. Clusters of small and medium sized firms in developed economies are coming under increased pressure from competition as products mature, technology becomes widely available, and companies seek lower cost locations for production. At some point, in a variety of industries, the advantages of proximity can be overcome by cost considerations in a typical product life cycle. This implies that such clusters must continually seek higher order advantages.

29. Another consideration is the globalisation of the clusters themselves. This can take several forms. The simplest is the expansion of exports of the end goods or services produced within the cluster. This tends to maintain or even strengthen existing relationships within the cluster. A second form involves increased export sales by the cluster’s suppliers of intermediate goods and equipment. This can involve a fraying of relations within the cluster as producers of end goods see their local intermediate goods and

19. Saxenian (1994) and Enright (1991).

20. Enright (1993), Enright (2000), and Scott (1998).

21. Enright (1995).

equipment suppliers “arm the enemy”. In industries in which most of the know-how is embodied in components (as in personal computers) or in capital equipment (as in semiconductors), the “created competition” can be acute. In ceramic tiles, for example, the leading competitors to Italy’s Sassuolo cluster in Spain and Brazil have used Italian equipment to improve their positions in the world market. In such situations, the net benefits or losses to the cluster depend on the gains made by the inputs and equipment suppliers versus the losses of the end goods producers.

30. A third form of globalisation of a cluster occurs when producers of end goods begin to import components or equipment, or even to outsource production activities itself. Benetton and IKEA have created international sourcing networks that involve production away from their home clusters. Such actions can actually improve the prosperity of the home economy. Taiwan Province of China and Hong Kong have seen their light manufacturing clusters decentralise to the Chinese Mainland or other locations in Asia. In Hong Kong’s case, decentralisation of the vast majority of its manufacturing has resulted in an eight to tenfold increase in production controlled by Hong Kong firms in the last two decades. The result has been a much more prosperous economy than would have been the case otherwise.²²

31. Another type of globalisation involves extensive foreign direct investment to serve foreign markets by end goods or service producers or suppliers of intermediate goods and equipment. In some clusters, such as the financial and business service clusters of New York and London, such foreign investment actually improves the overall position of the original cluster. In other clusters, such as the chemical and pharmaceutical clusters of Germany, Switzerland, and the United States, it extends the competitive position of the firms, and supports an expansion in the home cluster of management, finance, and research and development. Some clusters globalise through simultaneous investments by several components of the cluster. Japanese auto companies, for example, have tended to reproduce their home clusters abroad by encouraging major suppliers to build facilities near their foreign plants, with the lead firms providing the opportunity for suppliers to internationalise.

32. Changes in the industrial organisation of a cluster involve changes in the number, type, and relative power of firms in the cluster. Over time, many industries have seen clusters of small and medium sized firms consolidate into one or a few dominant firms. Examples include the auto cluster in Southern Germany, the chemical and pharmaceutical industries of the Rhineland, and medical equipment industries around Munich. Recent examples come from Northern Italy. In Turin, what were some 20 machine tool and factory equipment companies all serving FIAT in the 1960s and 1970s came together over time to form Comau, FIAT’s factory automation equipment subsidiary, by the early 1980s. A single firm, Mandelli, has absorbed much of the factory automation equipment cluster around Piacenza through growth and acquisition in the 1990s.

33. Although the consolidation and concentration of many clusters has increased over time, some clusters have shown the opposite behaviour. The Prato textile industry went from a vertically integrated configuration dominated by a few firms in the middle of the twentieth century to a de-integrated fragmented configuration by the end of the 1970s. In general, the evolution of clusters responds to technological, market, organisational, and strategic change. In many cases, these are responses to economic forces that the public sector can do relatively little about. These tendencies, however, highlight the fact that private and public interests can diverge, which should be taken into account in cluster development initiatives.

34. The impacts of globalisation and consolidation on regional clusters can create a number of public policy dilemmas. Governments can try to keep local firms informed about global developments that influence or revolutionise their industries. They can support education that allows for the upgrading of

22. Enright *et al.* (1997).

technical and managerial skills. However, there should be an understanding that economies must evolve and indirect support should not result in subsidies that fly in the face of economic reality.

35. With respect to the globalisation of clusters themselves, governments tend to be hesitant to support clusters if they believe that the benefits will go to other locations as the cluster globalises. Similarly, governments are loathed to see public investments internalised by a single firm or a small number of firms. Economic activities will always tend to migrate to the most favourable locations and organisational forms. There is little that public policy can or should do directly about that other than ensuring that competition remains in the relevant industry. If a government is afraid that support of clusters will result in benefits leaving the area or becoming entrenched in a single or a few firms, then it needs to rethink the support it provides and factor such concerns into decisions on providing public goods and services.

2. Cluster development initiatives

36. The globalisation-localisation nexus described above indicates that as economic activity globalises, the nature of local economies has become more important to the development process. As a result, there has been increased interest in policies to support clusters. In the last decade, dozens of regions, states, provinces, cities, and local communities have instituted development plans based on clusters. Experiences range from spontaneous bottom-up private initiatives to centrally-promoted interventions. In North America, several states and provinces in the United States, Canada, and Mexico have undertaken cluster initiatives. In Latin America, cluster initiatives have been undertaken in Argentina, Brazil, Chile, Colombia, Costa Rica, Guatemala, Nicaragua, and Venezuela. In Europe, cluster programmes have been undertaken in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Spain, and the United Kingdom. In the Asia-Pacific, initiatives have been implemented in Australia, Malaysia, New Zealand, and Singapore. In Africa, Morocco, South Africa, and Senegal have been early adopters of cluster programmes. In addition, multilateral organisations, such as the OECD, UNIDO, the World Bank, UNCTAD, the European Commission, and others are assessing and using cluster strategies as tools for regional and local development.

2.1. Market failure and cluster strategies

37. Government action toward clusters should be justified by reference to market failures. Several specific market failures can be important for clusters of SMEs. These include *under-provision of public goods*, and *co-ordination failures*. Also important can be failures affecting small and medium sized firms more generally, such as in the supply of industrial real estate and certain technical and financial services.

38. *Public goods*, such as education, training, infrastructure, and certain types of research can be under-supplied by markets. This is a classical market failure that all governments seek to overcome through public (or public-private) means. Small and medium sized firms, however, have a particular challenge in this area. Fragmented small and medium sized firms often find it difficult to articulate their requirements with sufficient coherence and carrying power for public authorities to respond. As a result, public goods that might benefit entire clusters of firms often are not forthcoming. In addition, small and medium sized firms often find it difficult to articulate and elicit a response to public “bads” (features that constrain whole groups of firms) which might arise from government policies or regulations. In many instances, small and medium sized firms do not have access to information about technologies, markets, competitors, new suppliers, or potential collaborators. Such firms often lack the resources to keep abreast of all the information that is relevant to their business. Moreover, for some types of information, private supply may

be unforthcoming – especially where non-excludability from information is reinforced by the sheer proximity of actors in a cluster.

39. *Co-ordination failures* occur when information is available and is understood, but is not acted upon because disparate actors cannot organise themselves to act in concert. It often is difficult for small and medium sized firms to organise joint activities. They might lack the capacity or the trust necessary to act in concert. Even if they do not, it is often difficult to find a forum and a neutral facilitator to aid inter-firm co-ordination. In many instances, potential joint gains simply fail to materialise.

40. There can also be problems in connection with the private provision of *industrial real estate*, especially for new enterprises. Corporate property investors are often averse to the risk which unknown business propositions carry. For private real estate developers, the book value of the property is important both for the balance sheet and for the prospective onward sale of the property. Private property developers therefore frequently demand a quality of covenant from prospective tenants which is prohibitive (entailing, for instance, the presentation of audited accounts for previous years showing profits in excess of the annual rental, or guarantees, or one year of rent in advance). Few new companies possess such assets to offer as a guarantee, even if they have good business plans accepted by external financiers. And by definition they cannot demonstrate a track record. Even in economically dynamic environments there can be inherent difficulties in being an owner/manager of accommodation for SMEs, with facilities more likely to be used for office space or housing.²³

41. In some cases the private supply of certain business services has been reported as problematic. The reasons why this might be so have to do with the fact that many small firms often have an insufficient internal division of labour to permit the development of specialised skills in-house in different business functions. Some of these services may therefore need to be contracted-in. But because the required volume of services is often small, and some of the services themselves indivisible, the market may under-supply substitutes for the skills lacking in some small firms. Anecdotal evidence suggests that effective extension services in industry can be important but are rare. If the market for certain business services appears not to work well, appropriate regulation to encourage private supply will often be preferable to public provision.

42. The physical proximity of actors within a cluster provides scope for collaborative endeavour aimed at addressing some areas of purported market failure. For example, mutual credit guarantee schemes, common in many of Italy's industrial districts, aim to facilitate the access of firms with viable projects to bank lending from which they would otherwise be precluded (owing primarily to insufficient collateral). They do so by members of the association providing a common guarantee for a loan to a single borrower. An advantage of such associations is that the evaluation of credit risk may be done more effectively by association members working in the same industry, while peer pressure can help effect repayment.

43. Relatively few cluster programmes explicitly identify market failures. Nor is the nature of the "public goods" being provided always fully scrutinised. The legitimacy of cluster promotion policies towards small and medium sized enterprises, for example, is rarely questioned, even though international experience indicates that only around ten per cent of the SMEs in a given jurisdiction will take part in government support programmes.²⁴ In such cases, unless this ten per cent will have a decisive impact on a regional economy, programmes involving even small levels of direct government support are providing private rather than public goods.

23. See 'Good Practice in Business Incubation: A Synopsis of the Presentations and Debates at the International Conference held in Albi, France, October 14th and 15th 1999. OECD LEED Programme/SOFIREM, forthcoming.

24. As found in the EU by Thomas (1995).

44. Failure to explicitly identify the market failures that cluster development programmes are designed to address leaves the programmes open to rent seeking and political lock-in. Cluster programmes are sometimes viewed as new potential sources of government handouts. A related danger is that the same co-operation that allows a cluster to have a voice in shaping local economic policy can also be used to lobby for protection or support that goes beyond the provision of public goods. Public entities can clearly play a vital role in providing information, education, training, facilitating access to real estate and infrastructure, and in helping to provide co-ordination mechanisms for local firms, but such failures should be identified and dealt with in an explicit fashion.

2.2. *Common elements of cluster strategies*

45. Cluster development strategies tend to have a number of elements in common. Many focus on small and medium sized enterprises. Though not linked specifically to clusters, efforts to *improve the generalised business environment*, by reviewing tax policy, reducing regulatory burdens on firms, streamlining administration, and maintaining a favourable business climate, often become a part of cluster development policies. So too do efforts to *provide information and data* on business and economic trends as well as information and data specific to individual clusters, such as market data, information on customers and competitors, and information on technological trends.

46. Most jurisdictions, at least in advanced economies, provide basic *infrastructure, education, and training*. In cluster-based programmes these investments tend to become more focused on the specific infrastructure, skills, and capabilities required by clusters. This can include effluent treatment facilities for specific industries (Catalan leather), dedicated water (Malaysian electronics) or electricity (Venezuelan metals) lines, and specialised port (Singapore shipping) or airfreight (Dutch flowers) facilities. It can mean specific education and training programmes in software (Bangalore), motion pictures (Los Angeles), materials science (Sassuolo), winemaking (Napa Valley), and electronics (Taiwan Province of China), among others. The purpose is to provide specific infrastructure, skills, and capabilities that can reinforce localised competitive advantage.

47. Cluster development programmes have used a variety of means to foster *business networking and inter-firm collaboration*. Some programmes have relied on informal networking through introductions, referral lists, industry associations, and other mechanisms. More formal programmes, such as those in Canada, Australia, New Zealand, the United Kingdom, and Finland, have added a cluster dimension to networking programmes pioneered in Denmark and Norway, in which small and medium sized enterprises can receive government support to create networks and develop collaborative activities (see Section 4).

48. In several regions, governments have made investments to *provide business services* ranging from basic research, to market research, materials testing, business process consulting, accounting and record keeping, and advice on business management. The idea is to provide scale and experience sensitive services that small and medium sized firms cannot perform or afford individually. The best known examples are Northern Italy's locally run "real service centres", Germany's Steinbeis Foundation centres, and the manufacturing and business extension services attached to several public universities in the United States. Such centres provide services such as contract research and development, applied technology research, materials testing, managerial training, and other services. While such institutes are often initiated with public investments, several have become partially or fully self-funding.

49. Various sub-national bodies have sought to develop *technopoles*, a generic term covering a spectrum of initiatives from technology incubators, to science parks and even larger agglomerations (see the forthcoming proceedings of the May 1998 Modena Conference on regional innovation policies). Such programmes have been driven both by the expectation that economic benefits will follow from bringing

together firms in “high-tech” fields, and by the desire to realise commercial returns from scientific and technological research. Technopoles need not be sector specific, catering instead to a gamut of industries considered as technology-intensive. In fact, there need be no links in a production chain between co-located high-tech firms operating in different sectors. When this is the case, inter-firm synergies may be weak.

50. Many groups interested in promoting cluster development engage in activities that can be best termed *community building*. Communities that can develop a shared sense of purpose, work toward the common good, and engender information sharing and inter-firm trust tend to perform better economically than other communities.²⁵ This knowledge has informed cluster development programmes in North America (in places like Arizona, Austin, Chihuahua, Florida, North Carolina, Silicon Valley, and Quebec) and Europe (in Germany, Italy, and Spain, for example), where attempts have been made to develop institutions to foster community development. Such efforts are subject to the caveat that successful institutions in a specific location can be very difficult to reproduce elsewhere.

51. Finally, cluster initiatives tend to have *assessment and improvement of government policies and programmes* as an important objective. The idea is that the cluster becomes a vehicle for assessing whether there are government policies that hinder private sector development as well as mechanisms to improve the delivery and direction of government services.

2.3. Differences in cluster development strategies

52. Although there are elements common to many cluster development programmes, there are important differences among programmes that are rarely highlighted. Cluster development programmes, for example, differ in the level of government involved, the origin of the industrial base, and the nature of government intervention. One interesting feature is that governments with widely different ideologies have instituted cluster promotion policies. In the United States, conservative states, liberal states, and states in between have adopted cluster-based. Cluster-based strategies are being employed in Europe by governments across the political spectrum. National and local governments in such diverse places as Australia, New Zealand, Malaysia, and Singapore have adopted cluster development strategies. With such different governments all adopting cluster-based approaches, it is not surprising that “cluster development” can mean very different things in different places.

2.3.1. Differences in the levels of government involved

53. Cluster initiatives differ in terms of the level of government involved.

- *Local and regional governments.* In large developed economies, most of the cluster initiatives that have operated in the last few years have been driven by local or regional governments. The advantage of operating at these levels is that they tend to be more knowledgeable about local conditions and responsive to local circumstances than national governments. The activities of sub-national instances of government also reflects the devolution of policies in some nations.
- *National governments.* In smaller developed nations and in many developing nations, national governments play a prominent role in cluster development initiatives, especially where local or regional governments lack the capacity to be a real counterpart with the private sector. In many

25. As Scott (1998), Putnam (1993), Rosenfeld (1995), and Cooke and Morgan (1994) have observed.

countries, a national initiative gets a cluster process going in the first place. Where centralised decision making is the norm, many cluster-related decisions are made at national level.

- *Supranational governmental institutions.* A relatively recent phenomenon has been the emergence of cross-border cluster initiatives supported by supranational governmental institutions, particularly the European Union. One example is an effort to optimise the structure of the motor scooter industry in the EU.

54. The appropriate level of government for involvement in cluster initiatives is ideally one that corresponds to the geographic scope of the relevant cluster. Governments with larger geographic remit often are unable to focus sufficiently on the needs of local clusters. Conversely, jurisdictions that are smaller than the geographic scope of the cluster are unlikely to be able to take the holistic view that cluster development requires. The optimal level of government (and associated institutions) also depends on existing capacities and governance structures. The “right” level of government should have authority or substantial influence over relevant programmes and expenditures. It is no accident, however, that in many industrialised and some developing nations, *regional or local governments* tend to take the lead in public-private partnerships for cluster development. Decisions on investments geared to the needs of the local economy often are best made by local officials who are on the spot rather than national officials who might be far away. In nations with weak or non-existent local or regional governments, locally based or locally responsive agents of the national government might be necessary to ensure success.

2.3.2. *Origin of the Industrial Base*

55. Cluster development programmes can focus on the expansion and deepening of the indigenous economic base, on attracting activities of foreign firms, or on a combination of the two.

- *Organic cluster strategies* seek to broaden and deepen a region’s existing economic base by identifying the region’s clusters and then trying to promote development by improving information flows, increasing the interaction among local firms, removing infrastructure bottlenecks, developing human resources, and fostering inter-firm collaboration. Most of the programmes in the United States, Spain, Italy, Austria, and New Zealand, among others, are in this category.
- *Transplant cluster strategies* attempt to build clusters by attracting outside companies and developing or attracting suppliers and related firms. Some such strategies resemble traditional enterprise recruitment strategies that have fallen into disrepute, while others use clustering to target activities well suited to the local economy. A refinement is the use of policies associated with cluster development to foster linkages among foreign investors and local firms. Ireland, Scotland, Wales, Northern England, Malaysia, parts of Mexico, and Singapore, among others, have used this type of strategy.²⁶
- *Hybrid strategies* result when organic cluster development programmes actively recruit outside investment, or when transplant strategies become successful enough to create a critical mass of locally embedded facilities and firms that can be engaged in more organic programmes. In the United States, Massachusetts, Arizona and others have added promotion of foreign investment to their organic programmes. Singapore and Ireland, on the other hand, have developed a sufficient mass of foreign owned firms in some clusters to treat them as a base for cluster development.

26. See Legendijk and Charles (1999), for example.

56. Each strategy has its pluses and minuses. Organic strategies, since they build on unique features of the local environment, can foster distinct advantages that are difficult to copy. Organic strategies, however, are predicated on the presence of a solid economic base to build upon, which in many regions is not the case. Transplant strategies can help develop a regional economy quickly, but are limited by the resources available for attraction, are subject to imitation and destructive competition, and face the risk that poorly embedded facilities will eventually close. Hybrid strategies, while perhaps intrinsically attractive, can result in confusion and competition between policies directed at indigenous and foreign firms. The optimal approach will depend on the present economic base and institutional capacity found in the locality or region in question.

2.3.3. *How Public Authorities Select Clusters*

57. Cluster development programmes can also differ in the process of cluster identification and selection. Some programmes use an involved process of identifying and selecting clusters for support.²⁷ The Greater Tucson Strategic Economic Development Plan, for example, identifies 24 specific target industries (at the 4 digit SIC level), all within the categories of optics, environmental technologies, aerospace, bioindustries, teleservices, software and information services. These clusters were identified using a detailed set of criteria, including industry growth rate, multiplier effect, job creation and income potential, match with local resources, environmental considerations, relationships with local suppliers, contribution to quality of life, and synergy with local institutions and businesses.²⁸

58. Other programmes are not so focused. According to one government, “Priority sectors are characterised by a reliance on significant R&D investment, value-added production, a skilled workforce, intellectual property assets, and global exports. They enjoy high margins and high growth, but only if they identify and service new markets, develop and apply new technology, attract and develop human resources, and operate at a world class level of quality.”²⁹ No mention is made here of suitability to the local environment or economy, which would have an important influence on the success of the programmes. Malaysia’s list of targeted industries is several pages long. At the end of a long list of industries designated for support, the Calgary Government adds that, “If your company is not in one of these sectors that does not mean that we are not interested in providing assistance to you.”³⁰ “Clusters” identified in some initiatives such as “tradable business services”, “engineering”, “technology”, “knowledge-based cluster”, and “government services cluster” are hardly clusters at all.³¹

59. Perhaps the most striking feature of the clusters identified for development programmes is their similarity. A random selection shows that “Business services” has been selected in Alberta, British Columbia, Chihuahua, Connecticut, Malaysia, Massachusetts, New York, New Jersey, Northern Ireland, Singapore, Tennessee, and Wales; “Electronics” in Alberta, Austin, Austria, California, Chihuahua, Ireland, Malaysia, Massachusetts, Northern England, Oregon, Scotland, Singapore, South Australia, Tennessee, and Wales; “Information technology” in Alberta, Arizona, British Columbia, Cairns, California, Connecticut, Hunter, Ireland, Malaysia, Massachusetts, North Tyneside, Northern Ireland, Scotland, South Australia, Quebec, and Wales. “Telecommunications” in Alberta, Arizona, Austria,

27. See Rosenfeld (1995), Massachusetts Technology Collaborative (1997), Gouvernement du Quebec (1997), Conejos *et al.* (1997), De Bresson and Hu (1999), Hauknes (1999), and Spielkamp and Vopel (1999) for examples.

28. Greater Tucson Economic Council (1996).

29. British Columbia Ministry of Employment and Investment (1997).

30. Calgary Economic Development Authority (1997).

31. Northern Ireland Growth Challenge (1997) and Cape Breton (1995).

California, Connecticut, Finland, Hunter, Massachusetts, Ottawa, Scotland, Singapore, Sweden, and Wales; “Medical and biomedical industries” in Alberta, Austin, British Columbia, Cairns, California, Connecticut, Massachusetts, New York, New Jersey, Northern Ireland, Scotland, Tennessee, and Wales; as distinct from “Pharmaceuticals and biotechnology”, selected in Arizona, British Columbia, California, Connecticut, Hunter, Ireland, Malaysia, Massachusetts, North Carolina, Oregon, Otago, Pennsylvania, Quebec, and Wales. “Environmental industries” and “multimedia” are similarly popular.

60. Despite the different processes employed to identify clusters for support, there is a surprising similarity in those selected. The repetition of particular “clusters”, and the overly diffuse “clusters” identified in some locations, raises questions as to how many programmes are based on a real knowledge of what clusters are and how they can facilitate economic development.

2.3.4. *The Type of Cluster and the Policy Mix*

61. Clusters vary greatly along various dimensions. These include: *geographic scope*, *breadth* (horizontal industry scope), *depth* (vertical industry scope), *activity scope* (are many or just a few value chain activities performed within the cluster), *capacity for innovation*, *competitive position*, *industrial organisation*, and *transaction governance*, among others. A complete elaboration of these dimensions goes beyond the scope of the present paper.³² Clusters also vary in terms of their state of development, i.e. the extent to which the cluster is self-reinforcing and self-realised. The optimal set of policies, as well as the possibility that policy will succeed, vary with the type of cluster. For example, optimal policies for clusters that are highly localised, broad, deep, activity-rich, with high innovative capacities and good competitive positions, dominated by small and medium sized enterprises, with transactions governed by long-term relationships, will be very different from those for clusters that are dispersed, narrow, shallow, contain few activities, have limited innovation capacity and poor competitive positions, dominated by large foreign firms, with transactions governed by hierarchical relationships. Similarly, the optimal policies for operational clusters will tend to differ from those for latent or potential clusters. The failure of many cluster initiatives to completely characterise the clusters they are addressing can lead to the misapplication of practices that might have been successful in different types of cluster.

62. A complication with cluster analysis is the inadequacy of conventional statistical classifications. A broader envelope than Standard Industrial Classifications (SIC) is needed to capture the breadth of a cluster. For example the Christchurch, New Zealand, rural telephony cluster includes engineering and plastics firms as well as electronics manufacturers, software houses and patent attorneys. Conventional SIC data understates a cluster’s size, with services being particularly difficult to capture. Indeed, some clusters (such as in organic foods) are unlikely to be identified through any SIC.

2.4. *Governance Considerations*

63. Governance considerations are critical to the success of cluster initiatives and cluster organisations. With respect to cluster initiatives, it is important that the focus be demand and market driven, rather than supply and politics driven. This requires close participation with the private sector at the very least and as close to a market test for initiatives as is possible.

64. Many types of cluster organisations exist. Some are public agencies, such as the development arms of local governments. Others are private organisations, such as industry or employers associations or chambers of commerce. Still others are public-private partnerships or standalone autonomous

32. A more complete discussion can be found in Enright (2000).

organisations. Whatever the form, such organisations, at least in successful clusters, tend to perform specific functions. They provide a forum for interaction and collaboration among firms, an interface between firms in the cluster and government, and mechanisms for interaction between firms and other supporting institutions, such as universities, research centres, and financial institutions. With respect to such cluster organisations, the appropriate governance system will depend on the nature of the organisation. Public sector organisations need to be accountable to government and the populace and at the same time need to provide services and support useful to the clusters in question. This suggests that a private sector board of directors or advisory board drawn from cluster participants is desirable. Public-private partnerships are best set up as autonomous organisations with joint public and private oversight.

65. The provision of support services for clusters creates particular governance challenges. Presumably, a public, private, or public-private organisation will only start providing such services if the market has not supplied them in the right amount or at the right price already. If the services provided are shown to be valuable, then the private sector should be willing to pay for them. This suggests a pattern in which an institution could provide some services on a public or public-private basis until they became self-financing. Then the question is whether to retain the service within the support institution, to privatise that particular service, or to privatise the whole cluster organisation. If the firms are willing to pay for the services, there are strong grounds that they should be provided on a competitive basis by the private sector. If the firms are not willing to pay for them after the existence of the services has been well established, then it is questionable whether they serve a valuable purpose. With respect to the supporting institution itself, as long as there are newer, more advanced services that would be beneficial to the cluster, but are not provided by the market, there will be justification to retain a public component.

2.4.1. *Interactions with Education and Training Institutions*

66. A number of internationally renowned clusters have developed around institutions of higher education and technical training. In addition to facilitating access to research, proximity to universities and training institutions can be important in creating prestige, recruiting highly qualified graduates, and accessing information. The presence of centres of technical learning can also mean that entrepreneurs engaging in high-tech ventures will feel less like outsiders and may more often encounter interlocutors (such as bank managers) familiar with the problems they face.

67. Many institutional permutations are possible as regards the interaction of local firms, universities and training institutions. For example, university/industry partnership mechanisms can range from grants and fellowships to targeted research contracts, collaborative research and consortia agreements, training, mobility and networking programmes. In terms of functional goals such partnerships often seek to enhance the commercialisation and diffusion of technology, create enterprise spin-offs and support strategic research and technology objectives.³³

68. Various universities have created their own venture capital operations to facilitate the commercial exploitation of research, often linked to a business incubation unit. In such cases there can be trade-offs for staff and university authorities between the investment of resources in either academic activity or enterprise development. For example, such trade-offs may relate to resource allocation as between general research or applied work linked to possible commercial opportunities.

69. A key consideration is that local flexibility should exist in the collaboration that educational and training bodies enter into with adjacent firms, whether in joint development of specialised courses and

33. See 'Public/Private Partnerships in Science and Technology: An Overview', Working Group on Innovation and Technology Policy, Directorate for Science, Technology and Industry, OECD, November 1998.

curricula – national curricula may be too slow to change and be unsuited to the technical specificities of particular enterprise agglomerations – the distribution of financial benefits from collaborative undertakings, or the precise forms of partnership in research and development.

2.5. *Examples of cluster initiatives*

70. While a complete elaboration of cluster development initiatives is beyond the scope of the present paper, a sense of some of the different approaches can be useful.

71. In the United States, state and local governments have had prominent roles. In several instances, state or local governments have created a process that has been taken up by the private sector. In Arizona, for example, a commission set up by the Governor initiated a process of identifying clusters in the state at local universities and bringing together relevant actors from the private sector. Cluster organisations were then formed to assess and address the constraints and opportunities facing individual clusters. These organisations have come to encompass members from a specific set of industries, suppliers, customers, consultants, and universities. Although seed funding came from the government, the subsequent growth and development of the cluster organisations has largely been led and funded by the private sector. In California, New York, Minnesota, Oklahoma, Oregon and several other places, similar initiatives have been taken up by local governments and industry groups.³⁴

72. In Italy, the typical practice has been for regional or local governments to work with industry associations and local organisations such as financial institutions, research centres, and universities.³⁵ Several regional governments, such as those in Emilia-Romagna, Lombardy, Tuscany, and others have departments or key individuals devoted to cluster development. Local universities, research institutes, service centres, and financial bodies contribute to the process. These actors have also been instrumental in the founding and development of specific organisations that work to identify and overcome the problems and constraints the clusters face. Lumetel, a cluster organisation for metalworking in Lumezzane, for example, was started by a local government in conjunction with a regional bank.

73. In Spain, cluster initiatives have tended to start at the regional level. In the most prominent example, Catalonia, the regional government has worked with a local consulting company to assess the opportunities and threats faced by local clusters and to develop strategies to improve the clusters' competitive positions. An extensive research process is used to assess the competitive position of the Catalonian cluster. Next, study trips are organised to introduce managers from the cluster to best practice elsewhere, and efforts are made to bring the participants together into a cluster-based organisation capable of collective action. Supporting services and institutions, such as research institutes, universities, and regional financial bodies are brought in when necessary.³⁶

74. In the United Kingdom, cluster development initiatives have generally been promoted by regional development agencies or organisations. In Scotland, Scottish Enterprise has developed a top-down approach in which the agency has selected a number of clusters for inward investment promotion, local linkage programmes, and training and research support. In Wales, the Welsh Development Agency has led similar efforts to attract plants of foreign firms and then develop a local supplier base to support these firms. In Northern Ireland, a private-led effort linked with local government agencies and government funding has identified a rather diffuse set of clusters for support. The lack of a regional governmental

34. Rosenfeld (1995).

35. See Pyke *et al.* (1992) and Goodman and Bamford (1989), for example.

36. Conejos *et al.* (1997).

structure in England has meant there have not been clear focal points for cluster development programmes in England, though some areas, such as Northern England, have developed local initiatives.³⁷

75. The Nordic countries have developed their own approaches toward clustering. In Denmark, several studies using a cluster methodology have informed economic policy. In Finland, such an approach has resulted in a shift from policies based on subsidising and protecting industries to a focus on the framework conditions necessary for cluster development. The approach has influenced not only economic policy, but also policy toward science, technology, and education. Government-led network programmes have been used in Denmark and Norway to foster linkages among small and medium sized firms.³⁸

76. The Netherlands has engaged in extensive cluster studies over the years. These have fed directly into government policy and programmes based mostly on efforts to upgrade the technological capabilities of Dutch firms. The Dutch Government has identified three rationales for cluster-based policies: market failures and externalities, rates of return on research and development that are higher for society than for private sector companies, and the potential to match private needs with publicly funded research. Specific approaches have included improving overall economic conditions, network broker policies, and using government procurement as a stimulus to cluster development. The emphasis has been on enhancing the capabilities of the local economy rather than picking winners *per se*.³⁹

77. Austria has developed an approach toward economic policy in which cluster analysis is an important component. Specific policies have included fostering links between research institutions and the private sector, efforts to reduce regulatory and governmental barriers to innovation, the promotion of specific clusters, and the creation of competence centres. Overall the effort is seen as providing a way of thinking about policy, rather than a specific set of policies for every context. The focus has been on sequences of relatively small co-ordinated schemes.⁴⁰

78. In New Zealand, a series of cluster initiatives have been undertaken by local governments, such as those in Wellington, Auckland, Christchurch, and others. Certain local governments in Australia, in particular in the Adelaide, Cairns, and Hunter Valley areas, have also taken up cluster initiatives. The tendency has been to work from bottom up, to identify groups of interested business people and begin a process of brainstorming on how the participants might achieve more collectively than they have been able to achieve on their own. A series of facilitated meetings is used to identify constraints, specific business opportunities, and key infrastructure or support services that might be needed. Over time, membership in the cluster groups self selects, with those that are most committed tending to shape the overall agenda. While many of the groups have received government funding for consulting studies, facilitation, and secretariat services, a number have started to become self-funding. In New Zealand, the relative weakness of local governments and institutions has hampered some initiatives.

2.5.1 *Work on clusters and networks at the OECD*

79. In recent years the OECD has undertaken a number of studies and practical initiatives on clusters and business networks. The first major OECD publication on these themes was the 1996 *Networks of Enterprises and Local Development*, based on the proceedings of a Conference organised by the Local Economic and Employment Development (LEED) Programme (a part of the OECD's Territorial

37. Lagendijk and Charles (1999).

38. Drejer *et al.* (1999) and Rouvinen and Ylä-Anttila (1999).

39. Roelandt *et al.* (1999).

40. Peneder (1999).

Development Service). The LEED Programme's principal interest in clusters relates to their contribution to local development. In October 1999 the LEED Programme jointly founded, and became the Secretariat for, the International Club of Local Clusters, an umbrella organisation bringing together national associations of industrial districts (such as the French and Italian clubs of industrial districts) as well as other major bodies working on cluster initiatives. Several of these organisations are now engaged in the national mapping of enterprise clusters. The LEED programme has likewise supported international collaboration among industrial districts, assisting, for example, representatives of the footwear cluster from Italy's Marche region to study, *in situ*, the footwear cluster of Leon, Mexico. The LEED Programme is currently undertaking related work on industrial clusters in central and eastern Europe for the EBRD and the Central European Initiative (CEI). This work will lead to a major conference on the same subject to take place in Trieste in spring 2001. Other activities on clusters at the OECD relate to agglomerations of high-tech firms [OECD (1999), *Boosting Innovation: The Cluster Approach*], and the role of clusters in regional development (see the forthcoming proceedings of the May 1998 Modena Conference on regional innovation policies).

3. Best practice in cluster development initiatives

80. Efforts to assess the importance of various cluster development policies indicate that, on average, government policy is not considered to have contributed a great deal to the success of existing clusters. Data provided by experts from 160 clusters around the world⁴¹ indicate that, on average, none of a wide range of policies assessed was considered to have had even a moderate impact on the competitive success of the clusters in the sample. A variety of reasons may explain this finding. One is that cluster policies have emerged only recently and take time to achieve impact. Another is that most clusters have developed without particular policies for cluster promotion. Another is that policies have been less important than other features of the clusters. More work is necessary to assess these results. The findings do indicate that one should be circumspect with respect to claims of dramatic impacts of policy on cluster development.

81. Despite such circumspection, a number of features of clusters and cluster initiatives provide insights into a general and idealised cluster development process. These include the overall approach to cluster development (Section 3.1), a set of guidelines for cluster development initiatives (3.2), and specific steps to promote cluster development (3.3).

3.1. Overall philosophy

82. A focus on clustering involves an emphasis on the linkages among companies, between industries, and between firms and supporting institutions. Cluster development views firms and industries as part of larger systems, rather than as isolated agents. This implies several things for governments. The first is that it is very difficult for governments to create such complex systems via policy. This suggests an indirect role for government, one in which the public sector acts to support the institutions that build skills and capabilities tailored to the needs of the cluster and tries to overcome specific constraints (whether they be caused by market failures or government failures), that prevent the exploitation of inter-firm and firm-institution linkages.

83. A focus on clustering also involves understanding and building from an existing economic base. Such an approach should lead regions to build upon their unique attributes to develop distinctive economies, rather than trying the same policies directed at the same industries as other governments. Many

41. Collected as part of a programme of current research by Enright.

cluster initiatives have targeted identical industries with relatively similar policies. It is unlikely that all such efforts can succeed.

3.2. *Guidelines for cluster development initiatives*

84. A clear view of the goals of the initiative is essential. Policy choices will depend on the ultimate goals of the exercise. These should be specified early on. This does not mean that objectives cannot evolve over time. For example, objectives might be redefined on the basis of information exchange between local actors and government bodies, or on the basis of information gleaned during the monitoring of initiatives.

85. Policy makers should generally refrain from seeking to build entirely new sector-specific clusters of firms. There should be some element of market-test before significant public resources are committed to a cluster. The focus should be on consolidating established or embryonic clusters. Adopting this practice may also help avoid situations in which sub-national bodies compete in implementing identical cluster development strategies. Cluster initiatives should not be used to introduce distortionary industrial policy aimed at targeting “national champions’ or ‘sunrise sectors”.

86. The private sector should lead in cluster-development initiatives, with the public sector playing a catalytic role (for example, through promoting inter-firm networking, ensuring access to infrastructure and communications, disseminating information, supporting educational and training services, etc.). Amongst other considerations, cluster initiatives can serve as a test of the quality of government policies and programmes in serving private sector development. Government should commit to clustering, not to individual clusters. In many instances governments commit to supporting particular clusters rather than the clustering process. This creates an unfortunate situation in which it is difficult to put aside clusters in which the private sector cannot or will not participate.

87. Sensible criteria should be employed for identifying and prioritising clusters within an economy. This is necessary, *inter alia*, on account of limited resources. Criteria might include: the opportunity for the sponsor to add-value, the existence of organised nuclei of actors in the cluster, and employment creation potential. Enright (2000) suggests ensuring that a portfolio of different types of clusters be addressed (as not all cluster initiatives will take off promptly) and that the selection process should not become politicised. The goal is to enable working clusters to extend their positions, to help latent clusters develop the linkages necessary for their development, to help generate additional members of potential clusters, and to avoid supporting otherwise spurious clusters. While relatively sophisticated mechanisms of identifying clusters have emerged,⁴² within a region relatively straightforward statistical and interview methods⁴³ are generally sufficient.

88. Recognise that *one size does not fit all*. Clusters differ along several dimensions, including geographic scope, industry scope, industrial organisation, and innovative capacity. Initiatives and policies well attuned to one type of cluster need not be optimal for others. Appropriate analysis should point out the types of clusters that are relevant as competitors or benchmarks. Policies and programmes tailored to particular goals and types of clusters are more likely to be effective. Similarly, regions vary enormously in their institutional structures, governance systems, and tendency for firms to co-operate. Policies optimal in one setting might be inappropriate in others.

42. Such as those used by De Breson and Hu (1999) and Hauknes (1999).

43. As in Rosenfeld (1995).

89. *Use analysis to build urgency in the minds of participants.* Participants in cluster initiatives are unlikely to overcome reluctance to co-operate in the absence of some clear benefit for doing so. It often is advisable to have a commissioned piece of analysis and research to present participants containing information on where they stand against competitors from other locations and ideas as to how their position might be improved. Analysis should also describe the nature of the cluster along several dimensions, the type of cluster that exists, and relevant benchmarks. Educating key participants is often best achieved through the use of experienced outside experts. Outsiders tend not to be limited by the conventional wisdom or internal politics that might exist within a cluster.

90. *Initially adopt a low risk/early return focus.* It is unlikely that a fledgling initiative will be able to successfully address the most complex issues that the cluster faces right away. Instead, it is useful to generate small, but clear gains through collaborative effort at the outset. This allows the participants to become familiar with each other and to see value in the process. Rosenfeld (1995) reports an example where one of the first things a cluster in the apparel industry in North Carolina did was to negotiate for reduced bulk long distance telephone service. Similarly, early pay-off came to a tourism clustering initiative in South Africa through negotiating insurance and credit card fee discounts, and even establishing its own road repair team. Although seemingly minor, such advances can be critical to building cluster organisations and the trust associated with them. As success develops, higher risk/longer term projects can be introduced.

91. Where possible, *match initiatives to the most suitable level of government.* The geographic areas covered by clusters varies enormously, not always coinciding with political boundaries. A cluster can be as narrow as a street of antique dealers, a row of fast food outlets, or, at the other extreme, can extend over political boundaries. For example, the Wellington, New Zealand, film cluster extends through five local government Regions, while southern Germany and German-speaking Switzerland have a number of clusters in common. The appropriate level of government for involvement in cluster initiatives is ideally one that corresponds to the geographic scope of the relevant cluster. Governments with larger geographic remit often are unable to focus sufficiently on the needs of local clusters. Conversely, jurisdictions that are smaller than the geographic scope of the cluster are unlikely to be able to take the integrated view that cluster development requires. The appropriate instance of government should have significant influence over relevant programmes and expenditures.

92. *Initiatives should facilitate the establishment of local partnerships involving private actors, NGOs and different levels and sectors of the public administration.* Getting the relevant actors on board is essential. Many cluster development initiatives stumble because important players choose not to become involved. In beginning a cluster initiative the net should be cast rather widely so that the relevant group that can identify and act on common interests can self-select. Both parts of this process, starting in an inclusive manner and then winnowing down (or in some cases up) to a group with similar interests, are important. Government can provide the necessary neutral corner in bringing together a wide range of participants.

93. *Target real market failures.* Initiatives that target specific market failures are most likely to bring benefits to the cluster. The process of identifying and understanding how, for example, under-provision of public goods and co-ordination failure constrain a particular cluster can point to valuable areas of public-private or private-private co-operation. An emphasis on targeting market failures also provides discipline that reduces the chance that initiatives will be captured by political interests or that public initiatives will stray into areas that are best served by the market.

94. *Build a cluster organisation.* The benefits that can be derived through collaborative action and partnership at the cluster level are unlikely to be sustained or built upon without an organisation that can institutionalise them. Employers Associations, Chambers of Commerce, Trade Associations and other soft

networks need to be included, but should not necessarily be in the driver's seat as they have specific constituencies to represent. Too often there is inertia in existing associations, with officials threatened by change to the status quo, and traditional lobbying the main agenda provided for members. Further, the geographic area covered by associations is usually too broad, often national, and the activity/industry breadth too narrow to relate to clustering initiatives.

95. Active clustering may require a new form of cluster-wide, dynamic self-help organisation. It is often easiest to start afresh with a new form of governance, a more concentrated spatial focus and a "cluster" rather than "industry" reach. Once operational, a new organisation can be folded into established structures. Such organisations require committed leadership, active participation from the relevant members of the public and private sectors, and a dedicated secretariat to take care of ongoing activities. Ideally, the leadership should be in the hands of people that are respected within both the public and private sectors, who are in positions that allow them to commit their own organisations to initiatives, and who are personally committed to the collaborative process. Amongst other things, attracting new players into the process is important in extending the pool from which new leaders can emerge. The optimal governance mechanisms for such organisations will depend on their nature, but is probably best carried out through a committee that represents both the public and the private sectors and whose activities are completely transparent to all parties. Sufficient flexibility should be maintained to alter the composition and leadership of the organisation if it proves necessary.

96. *Focus on building the institutional and support systems for the cluster.* Institutional and other support systems tend to have long lives and can create benefits beyond those initially envisioned. Cluster initiatives should seek to build up the institutions and support systems relevant to their activities. This includes building capacity in industry associations, labour groups, financial institutions, research centres, universities and schools, technical extension services, and the relevant agencies and ministries of government. In many instances, this does not mean additional funds, but rather a focusing of investments to provide greater benefits for the local economy.

97. *Initiatives should facilitate specialisation among collaborating firms.* An important source of competitive advantage deriving from membership of clusters and networks – which opens opportunities for economies of scale and scope – is increased inter-firm specialisation and division of labour. This can allow groups of small firms to simultaneously exploit certain benefits of both small and large scale. Initiatives should avoid hampering such specialisation.

98. *Promote the establishment of suppliers' associations and learning circles, and other forms of collaborative undertaking that are made possible by virtue of physical proximity (such as mutual credit guarantee associations).*

99. *Allow specialisation and local adaptation in university-industry linkages, including experimentation in incentive structures that can encourage local linkages to industry.*

100. *Consider land-use planning in a way that will strengthen emerging clusters by facilitating access to accommodation for new and small firms.* This "facilitation" can take different forms, but responds to the widely reported difficulties faced by small firms, and particularly start-ups, in gaining access to industrial real estate. Essentially, the public role should seek to leverage and reduce risk for corporate property investments in industrial real estate.

101. Outside investment may help stimulate a cluster. Aside from the stimulus to demand, an array of new supplier/purchaser linkages may be created. The outside investor may also possess superior product and/or process standards, which may feed through to the production practices of other firms in the cluster. *If seeking to attract outside investment to the cluster then one can encourage local, regional and national*

developmental authorities disseminate information about the cluster – and the locational advantages it offers – throughout the business community of a region or country. Investment promotion efforts can be focussed on linkages within a cluster which are considered weakest (such as gaps in the chain of local suppliers).

102. *Consider complementing the national collection and organisation of statistics by adopting a frame of reference that would illustrate the geographic concentration of related groups of firms.* Data organised according to the Standard Industrial Classification (SIC) omits the extent of inter-linkages among firms in a given locality belonging to different branches of manufacturing (or services). Clusters-oriented data could be of value in investment promotion.

103. *Evaluate the initiative throughout, not just at the end of the process.* Evaluation can help measure progress, identify midcourse corrections if necessary, and focus efforts on overcoming problems. Furthermore, benchmarking against related clusters provides a valuable means of galvanising activity towards a higher level agenda (a group visit to another cluster can provide a joint learning opportunity and helps build team culture).

104. *Create a mechanism for terminating an initiative if it fails to produce results.* Not all initiatives will be successful. In such cases, it is better to terminate the programme rather than to employ resources that might be used productively elsewhere. The number of initiatives terminated should not be viewed as a sign of failure so much as a sign that targets must be met to ensure continued support.

3.3. *Specific steps in an idealised cluster development process*

105. Building upon the above guidelines, an idealised cluster process could be described as follows.

- *Determination* of the overall goals and the geographic scope of the policy initiative.
- *Initiation* of the cluster development process by leaders from the public and private sectors.
- *Identification* of clusters and location-specific attributes in the economy.
- *Prioritisation* of efforts by cluster, since resources are finite.
- *Elaboration* of the roles of the relevant public, private, and support entities with respect to the individual clusters.
- Obtaining *information* on the state of the clusters, their markets, technologies, competitors, linkages, and the local economy in terms of its capabilities and governance structures.
- *Education* of key groups and individuals on the needs of the clusters, the state of the clusters, the potential of the clusters, and the potential gains from interaction and co-ordination.
- *Establishment* of the appropriate cluster organisation to oversee the process.
- *Emergence* of leaders that drive the process forward.
- *Investment/co-investment* in public goods, such as infrastructure, training, and further research.
- *Co-ordination* of public and private activities to enhance competitiveness.

- *Evaluation* of goals, roles of participants, initial progress, outputs, and outcomes.
- *Institutionalisation* of mechanisms that have proven successful.
- *Repetition* of process to achieve enhanced benefits, or *termination*.

4. Inter-firm networking

4.1. The objectives and benefits of networks

106. Entrepreneurs who develop and maintain ties with other entrepreneurs tend to outperform those who do not. A network is a group of firms using combined resources to co-operate on joint projects.⁴⁴ Business networks take different forms and serve different objectives. Some are structured and formal, even having their own legal personality (as is the case with Italy's "consortia"). Others are informal, where, for instance, groups of firms exchange ideas or develop broad forms of co-operation. Some aim at general information sharing, while others address more specific objectives (such as joint export ventures). Soft networks usually encompass a larger number of firms than hard networks, with membership often open to all that meet a minimum requirement (such as payment of an annual fee). Networks have come to encompass agreements with research bodies, education and training institutions and public authorities. Hard networks are more commercially focussed, involving a limited number of pre-selected firms, sometimes formally and tightly linked through a joint-venture/strategic alliance.

107. Networks can allow accelerated learning. Moreover, peer-based learning – which networks permit – is the learning medium of choice for many small firms. Furthermore, to innovate, entrepreneurs often need to reconfigure relationships with suppliers, which networks can facilitate. And networks can allow the sharing of overhead costs and the exploitation of specific scale economies present in collective action (such as bulk purchasing of inputs). Indeed, a driving goal behind some networks has been that, in achieving an inter-firm distribution of labour, they will allow companies to attain efficient scale in particular phases of a production/marketing process, permitting effective competition with larger enterprises.

108. Networks need not be geographically concentrated. Once trust among participants is established, and the strategic direction agreed, operational dialogue could be facilitated through electronic means. However, even "virtual" networks require a personal interface, especially in the early stages. Networks, particularly among firms in a production chain, are key components of any cluster (although clusters generally encompass a broader range of participants than a network).

4.2. Examples of business network programmes

109. The first major networking programme started in Denmark in 1989. Norway then drew on this experience in developing its "second generation" intervention. Subsequently Australia, Canada and New Zealand adopted practices from both experiences. These three countries and Norway formalised an open exchange of information, to the benefit of all four. Aside from in Norway, little by way of evaluation has been undertaken on these programmes. In Denmark, from 1989 to 1993, almost 1 000 networks were formed as a result of the programme sponsored by the Industry Ministry and delivered through the Danish Technological Institute. Networking was facilitated by a team of trained network brokers, with substantial

44. These definitions draw on Akoorie (1998), Ceglie, Clara and Dini, (1999), Enright (2000), Ffowcs-Williams (1996a) and Porter(2000).

financial support. As a result, inter-firm co-operation became a real option for many Danish firms. However, many of the networks ceased to operate when funding was withdrawn.

110. The most extensive and sustained business network programme has taken place in Norway. Over the eight years to 1998 support was given to 700 business network projects involving some 2 700 firms, mainly SMEs. A pool of consultants was available to act as brokers, and public support was substantial. However, a formal, but possibly narrow, review of programme results failed to demonstrate significant improvement in company performance.

111. The Australia Business Network Programme, sponsored by AusIndustry, ran from 1994 to 1998 and used both independent and salaried brokers. However, most of the 400 networks developed, involving 1 200 businesses, stemmed from the work of the more active independent brokers. While some networks brought together local firms, many, particularly those with an export focus, comprised firms from a larger geographic area. A purpose of this demonstration programme was to encourage firms to collaborate where appropriate. The behavioural change sought has been demonstrated in the formation of many networks outside the programme. Other firms that met for the first time as part of the Network Programme established commercial relations as sub-contractors or in partnerships.

112. The Canadian business networks initiative, operational for three years to 1998, created 30 business networks and closely followed the Norwegian framework. A coalition of business associations ran the programme, led by the Canadian Chamber of Commerce. A final report has not yet been prepared by the Coalition. In addition to the networks developed through this programme, a number of provincial and sectoral networking initiatives have been developed in Canada. Some were precursors to the national programme; others were stimulated by it. For example:

- The British Columbia Trade Development Corporation developed around 18 successful business networks with an export focus.
- The Alberta Government established Flexnets Alberta with business networks in the manufacturing, natural resources and environmental sectors.
- The Quebec Government worked through Laval University to develop a business networks programme.
- Agriculture Canada supported about 25 networks, particularly in speciality foods, with a marketing/exporting focus.

113. Various successful business networks have also formed without government assistance. These range from broad-membership schemes such as the Ottawa Carleton Manufacturing Managers Network – bringing together about 80 firms from Ottawa's high technology cluster – to hard business networks amongst manufacturers of rural housing exporting kits to Japan.

114. New Zealand's experiences of business networks started in the late 1980s with the development of export-focussed Joint Action Groups by the New Zealand Trade Development Board. Some 30 of these soft networks are currently active, and tend to draw together the larger exporters in each sector. In many instances the CEO's of participating firms had not previously met. The Hard Business Network programme was piloted in 1994 with an SME focus, and was scaled up the following year with 150 independent consultants trained as brokers. Contacts and trust established through the soft networks facilitated the subsequent development of hard networks. Over 100 networks were being created when, in 1998, an SME grant that partially funded the work of brokers was cancelled. As a result, network brokering ceased to be

profitable for most of the independent consultants. A more narrowly focused Export Networks programme continues, managed by the Trade Development Board.

Many other network initiatives exist around the globe, some with the assistance of multilateral agencies. For example, in Chile the PROFO programme, supported by UNIDO, has established approximately 450 SME networks.

4.3. *Common elements in business network programmes*

115. Most programmes have encouraged the specialisation of participants and the development of common facilities. Many of the programmes have gone hand in hand with widespread promotional activity to introduce the networking concept to the business community. The programmes typically have an SME – and often an export – focus. A three-stage process is also common. This frequently begins with the identification of firms having common interests, bringing them together and undertaking feasibility work on the proposed network. It proceeds to the development of a business plan, followed by implementation. Many networks employ trained or accredited brokers. In some cases pilot projects were used to test the network concept and fine tune delivery before moving to national implementation. Financial support was usually available from the sponsoring agency, mainly to subsidise broker's fees, but with a limit on funding per network. Whilst many of the networks encompassed similar firms operating in physical proximity, a significant proportion, particularly those with a strong export focus, connected larger firms from a broader area. All programmes sought to affect attitudes towards collaboration, and this is reflected in linkages being subsequently established among entrepreneurs and company representatives that were either less formal or beyond the scope of the programmes themselves.

116. There is little in terms of systematic evaluation of network initiatives. All programmes have claimed success in introducing the concept of co-operation and in starting to change business behaviour. Some evaluative data suggest that networks formed around specific and narrow objectives tend to have a greater impact on enterprise performance.

117. A key element in networking programmes is the broker. The most effective brokers are often independent, not salaried. Successful brokers tend to be well established in their communities prior to engaging in this role. However, network development activities are financially unprofitable for the majority of brokers. Whilst there are many examples of networks formed without the participation of brokers, and without government support, the initial impetus is invariably public. Generally, networks took far longer to form and involved greater broker effort than anticipated. Frequently, networks are easier to form with larger companies than SMEs, and form better around the exploitation of an opportunity than the rectification of a weakness.

118. The legal framework for a network needs the flexibility to evolve as the intensity of co-operation increases. Some networks have been prematurely forced into formal arrangements in order to attract funding. While it is the case that – as in Denmark – various networks have collapsed with the cessation of public financial support, some have simply maintained a lower level of co-operation. The termination of a number of networking programmes has also followed political change, rather than unsatisfactory programme results.

119. Many of the networks referred to above were formed within, or overlapped with, clusters, but none were specifically tied to cluster development initiatives. However, networking – formal or informal – is a key part of a cluster's competitive advantage.

4.4. *The policy implications of network programmes*

120. Policy implications based on the results of network programmes over the last decade are as follows:

- The main task for policy makers is to facilitate the networking process and to create an institutional setting that favours market-induced network formation;
- Broad campaigns are needed to introduce the concept to the business community. It is not enough to create a network structure, or template. It is at least as important to create an informed demand for network services;
- As behavioural change can be slow, a minimum commitment of 3-4 years is required for a significant network programme;
- The broker is key. Holding the commitment and motivation of this person is not easy, particularly if financial rewards are limited. Training can be an important incentive. Establishing broker teams and facilitating exchanges among them can help alleviate the isolation felt by some brokers;
- As regards networks, some degree of financial support, in seed finance, feasibility work, start-up activities, and the costs of network brokerage are to be expected. However, funding should be modest, and should decline as the participants start to engage more formally and obtain benefits;
- As with cluster initiatives, evaluation is essential for optimising resource use and managing implementation. Governments – local, regional and national – generally dedicate too few resources to systematic assessment of network programmes.

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