Country report: Luxembourg

Introduction

This report has been written as a part of the Europe INNOVA Cluster Mapping Project. One part of the project is a mapping of cluster policies, cluster institutions and cluster programmes in European Countries.

For each country, a separate report has been written. Oxford Research AS in Norway has been responsible for the mapping of cluster policies. Oxford Research has developed the structure of the mapping and prepared the final reports. Most of the work has however been done by research institutes or consultancies in the different countries. These organisations are members of “The European Network for Social and Economic Research – ENSR” or partners in the Europe INNOVA Cluster Mapping Project.

Based on the national reports, the main findings have been summarised by Oxford Research in a separate report.

The Europe INNOVA Cluster Mapping Project has been financed by the European Commission. The views expressed in this report, as well as the information included in it, do however not necessarily reflect the opinion or position of the European Commission and in no way commits the institution.


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Managing director
Oxford Research AS

Please find more information about the Cluster Mapping Project and the Authors of this report on:
www.clusterobservatory.eu
www.oxfordresearch.eu
www.ensr-net.com
<table>
<thead>
<tr>
<th>Main ministries responsible for implementing cluster policy</th>
<th>Finance/Economy</th>
<th>Science/Research</th>
<th>Trade/Industry</th>
<th>Interior</th>
<th>Other</th>
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<tr>
<th>Key agencies responsible for implementing cluster policy</th>
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<tbody>
<tr>
<td>Luxinnovation GIE</td>
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| Is cluster policy their only task?                      | Yes                       | No              |                |         | x     |

| Are there any national cluster programmes?              | Yes                       | x               | No             |         |       |
|                                                          |                           |                 | Number of programmes | 1     |
| Are there any regional cluster programmes?              | Yes                       | No              | x              |         |       |

<table>
<thead>
<tr>
<th>Source of financing</th>
<th>National programmes</th>
<th>Regional programmes</th>
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<tbody>
<tr>
<td>National ministries</td>
<td>x</td>
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<tr>
<td>EU structural fund</td>
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<td>Regional budget</td>
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<td>Business</td>
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<td>Other</td>
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<thead>
<tr>
<th>Importance of cluster policy</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
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<tr>
<td>National level</td>
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<td>Regional level</td>
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<tr>
<th>Policy papers on national level</th>
<th>Yes</th>
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<tbody>
<tr>
<td>Cluster policy over time</td>
<td></td>
<td>Increased importance</td>
<td>Reduced importance</td>
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<tr>
<th>Since when has cluster policy been used?</th>
<th>1990-95</th>
<th>1995-2000</th>
<th>2000-05</th>
<th>2005-</th>
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<tr>
<th>Cluster development related to a particular person/organization?</th>
<th>Yes</th>
<th>x</th>
<th>No</th>
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<tbody>
<tr>
<td>Individual</td>
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<td>Business org.</td>
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<tr>
<td>Political party</td>
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<td>Agency</td>
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<td>Research inst.</td>
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<tr>
<th>Successful cluster programmes</th>
<th>Yes</th>
<th>No</th>
<th>A general council exists</th>
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<tr>
<th>Role of clusters as framework in policy areas</th>
<th>Low</th>
<th>Medium</th>
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<tbody>
<tr>
<td>Business network policy</td>
<td></td>
<td></td>
<td>x</td>
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<td>FDI attraction policy</td>
<td></td>
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<td>x</td>
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<td>Export promotion policy</td>
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<td>x</td>
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<tr>
<td>Sectoral industry policy</td>
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<td>x</td>
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<tr>
<td>Science and education policy</td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td>Competition and marked integration</td>
<td></td>
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Source: Oxford Research
1.1 Terminology

In each country there will be one or possibly several terms or phrases used to describe clusters. In some cases, different terms represent “competing” perspectives on clusters and, as perspectives change over time, one term may gradually replace another.

In Luxembourg a cluster is called “grappe”.

1.2 Cluster development programmes and cluster organisations

In many countries, there are programmes set up specifically to promote cluster development. Such programmes can be carried out by existing actors (for example a government agency), or new actors can be set up to run them. Often, one of the purposes of such programmes is to help initiate cluster organisations, that is, the programme provides financing or otherwise promotes the formation of cluster-specific organisations, typically in some form of public-private partnership. A country can have many (even hundreds) of such cluster-level organisations in operation.

1.2.1 Agencies for cluster policy implementation

The main ministry department for the implementation of cluster policy in Luxembourg is the Ministry of Economy and of Foreign Trade. The national innovation agency “Luxinnovation GIE” has been charged with the support of the cluster policy and with the leading of the technological cluster groups (Source: Rapport d’activité 2005, Ministère de l’Economie et du Commerce Extérieur).

These organisations have cluster development as one of many tasks they carry out. There are no regional organisation/agency working with cluster development in Luxembourg due to the size of the country.

1.2.2 National cluster programmes

There is one national programme for cluster development in Luxembourg. Please see below for a general outline of this programme:

Programme name: “Cluster programme”

Financing:

- Source of programme financing (Ministry of Economy and of Foreign Trade, ministries, EU structural funds, regional budgets, etc):
- Budget: 350,000 EUR (for 2007)
- Time horizon: 2001 – 2007

Actor:

- The programme was initiated by the Ministry of Economy and of Foreign Trade
- The programme is carried out by Luxinnovation, the national agency for the promotion of innovation and research
• The actors haven’t been specially formed for this purpose, as this topic is only one among other topics covered by the actors.
• Luxinnovation also has other tasks apart from this programme. The main tasks consists in the promotion of the national economy, in the foreign trade, in the regional development, energy, IPR, consumer protection, research and innovation, reduction of administrative burdens.
• When it comes to the organisational set up at programme and project level, the programme is supervised by the Ministry of Economy and of Foreign Trade. The national innovation agency “Luxinnovation GIE” has been charged with the support of the cluster policy and with the leading of the technological cluster groups.

Scope and target:
• The geographic coverage is the whole of Luxembourg
• The policy focus of the clusters of this programme is science and technology. The goal consists in stimulate the technological cooperation among companies and to promote collaborative R&D instruments of the national research funds and to detect market niches for the economic governmental policy.
• The clusters do not target a special stage of the lifecycle (embryonic, emerging, mature, declining).

Programme contents:
• The clusters of this programme are science and technology clusters. The goal consists in sensitizing companies to innovation and research, in stimulating the technological cooperation among companies, to promote collaborative R&D instruments of the national research funds and to detect market niches for the economic governmental policy.
• Within this programme, three technological clusters have been created:

1. Surfmat in the area of “Surface treatment and new materials”

   The different work of the SurfMat technology cluster can be divided into 2 stages:

   - the realisation of a database of technological capabilities that includes both the needs as well as the technological capabilities of the participating companies;
   - the treatment of the information assembled, in a strictly confidential manner, to facilitate the creation of synergies and collaboration projects.

   In order to achieve these objectives, the personnel of Luxinnovation regularly visits the companies involved in surface treatment and new materials and distribute technology transfer information in order to reinforce technological collaborations across the various R&D projects.

   To better facilitate this work, the company members of the SurfMat technology cluster are divided into different working groups, for the efficient exchange of information and the research of technological improvements via company collaborations.
2. Aerospace cluster (Aeronautics and aerospace technologies)

3. InfoCom (Information and communication technologies)

Ambitions/goals:

- The main objective of the cluster programme is to reinforce the competitive advantage of Luxembourg-based companies, active nationally and internationally. The SurfMat technology cluster assists the Ministry of Economic Affairs proactively thanks to its various technological and scientific capabilities, in order to facilitate the:
  - self-development of the Luxembourg economy;
  - diversification of the economic structure of the country by the creation of technology-based companies;
  - acceleration of research and development projects and innovative technologies;
  - creation of technology poles;
  - promotion of Luxembourg for high-technology activities and investment;
  - priority development of key technologies defined by the technology clusters.

Target group:

- The targeted groups are various sized companies united by shared, complementary or interdependent interests, which voluntarily develop between themselves cooperation relationships in one or several technology domains.
- The focus is set on the shared, complementary or interdependent interests on not on the size of the companies. The cluster program groups companies of various size. However, it is intended to increase the participation of SME’s within the programme.
- The technology cluster programme offers assistance with the set-up of collaborative research and development projects eligible for national or European financing and it orientates companies, depending upon their requirements, towards the University of Luxembourg, the Public Research Centres (CRP’s) or private research establishments.
- One of the main advantages for the participating companies is access to information about the latest developments in technology. In addition, the collaborations created between participating companies enable the sharing of gained experiences for the benefit of all. Participation in the cluster can also provide other advantages for strengthening the competitive advantage of individual companies nationally and internationally, by:
  - realising collaboration projects and synergies with other participating companies;
  - resolving technical problems;
  - developing innovative products;
  - accessing new markets;
  - openly discussing technological problems with peers;
  - being kept informed about innovative and emerging technologies.
The success of the cluster is dependent upon the continuous input of the participating companies and their commitment to the projects, the exchange of ideas and the regular communication of their needs and capabilities.

The programme does not have any specific cross-country or interregional activity.

Process:

- The initiative for the clusters comes from the Government. Luxinnovation, the national agency for the promotion of Innovation and Research, in close collaboration with the FEDIL (Federation of Luxembourg Industry), has been given the responsibility by the Ministry of Economic Affairs of mobilising Luxembourg companies around the technology themes of the various clusters initiated. Its role is to coordinate and to organise the work within each cluster and to animate the meetings.

- Luxinnovation spoke to certain groupings of interest and lead the discussions with the industrial sector to see which clusters shall be supported. Thus the industry makes the application for which clusters shall be supported.

- The subjects that have been worked out and the cluster organisations that have been developed came from the industry. Thus, the selection of clusters to support is based on a bottom-up approach, where different cluster initiatives may present themselves for the Government.

- The possible cluster organisations to support have been given a questionnaire which had been analysed by Luxinnovation and discussed with the Ministry of Economy and of Foreign Trade. The focus was put on technological based cooperation among companies. Technological competences shall be shared which shall lead to cooperation projects in the area of research and development and which shall lead to new economic activities.

Evaluation (results so far/conclusions from evaluations):

- The technology cluster has been very active since its creation, and the development of a high level of confidence and synergy between participating companies has enabled some very positive results to be achieved:
  - animation of 6 working groups which have already obtained their expected results;
  - development of 8 collaborative research projects;
  - contact with national and international research centres, an approach that has already generated several research projects;
  - promotion of the innovation capabilities of Luxembourg industry, before an international audience, through participation of the Hannover Messe.

- In addition to this orientation towards R&D, Luxembourg has also:
  - provided technical support to many Luxembourg companies to help them to overcome various technical obstacles;
  - disseminated a large number of technology offers and requests with the objective of facilitating technology transfers;
- published a "Directory of Surface Engineering Capabilities" in order to promote the activities of Luxembourg-based companies in the field of surface treatment and new materials;
- realised a study "Atmospheric plasma technologies for surface treatment of polymer films and metal foils - Estimation of timeframe for industrial scale implementation".

Planned future:
- A possible future might be to extend the clusters to technological and economic areas such as finance, law, security, satellite applications, e-commerce. Other new areas might be biotechnology, aerospace technologies or eco-innovations.

1.2.3 Regional cluster programmes
There are no regional cluster programmes in Luxembourg

1.2.4 Cluster organisations
There are four cluster organisations in Luxembourg. Please see below for a brief outline of the different programmes.

a) AeroSpace Cluster
- Industry focus: Aeronautics and aerospace technologies
- Regional focus: No
- Contact person: Mr Jean Trimbour
- Web site: http://www.luxinnovation.lu/site/content/EN/143/303/index.jsp
- If applicable, formed through which cluster programme: Technology cluster programme of the Ministry of Economic Affairs

b) InfoCom
- Industry focus: Information and communication technologies
- Regional focus: No
- Contact person: Mr Jean Trimbour
- Website: http://www.luxinnovation.lu/site/content/EN/143/303/index.jsp
- If applicable, formed through which cluster programme: Technology cluster programme of the Ministry of Economic Affairs

c) SurfMat
- Industry focus: Surface treatment and new materials
- Regional focus: No
- Contact person: Mr Ian Cresswell
- Web site: http://www.surfmat.lu
- If applicable, formed through which cluster programme: Technology cluster programme of the Ministry of Economic Affairs
d) CRTI-B (Centre de Ressources des Technologies de l'Information pour le Bâtiment) (in english: Resource Centre for Information Technologies in construction)

- Industry focus: Construction sector
- Regional focus: No
- Contact person: Mr Michel Brachmond
- Web site: http://www.crtib.lu
- If applicable, formed through which cluster programme: N/A

1.2.5 Successful cluster programmes

The “cluster” programme of the Ministry of Economy and Foreign Trade created 3 clusters run by Luxinnovation (National Agency for Innovation and Research) in cooperation with FEDIL (Federation of Luxembourg Industrialists):

- AeroSpace: Aeronautics and aerospace technologies
- InfoCom: Information and communication technologies
- SurfMat: Surface treatment and new materials

The aims and benefits are to share know-how and competencies, create synergies, foster cooperation among companies from different sectors, to share risks and costs associated with new or developing technologies.

Examples of successful cluster collaborations are:

- “Hybrid Insulating Blocks”: increased thermal insulation of concrete blocks (Chaux de Contern, DuPont Teijin Films Luxembourg and DuPont de Nemours Luxembourg)
- Multi-scale modelling and development of smart composite materials (Goodyear and e-Xstream Engineering)
- Games.pt.lu is a federation gate for interactive content and applications offered or marketed by external suppliers and transported and billed by P&T Luxembourg to the final customers (P&T and Telindus)

- The CRTI-B (Resource Centre for Information Technologies in construction) groups constructors, architects and building contractors to develop standards in the construction sector. The aim is to increase the productivity of the construction sector by involving all the actors to carry out the normalization work. In the last 17 years, technical standards have been developed for 35 different building trades. In the future, the focus is put on standards of electronic exchanges in the construction sector and on interoperability of information systems. The CRTI-B also aims new modes of coordination and collaboration in the construction sector.

1.3 Cluster policies

Above the level of agencies and programmes is the policy level. On the policy level, plans and strategies are developed in the form of policy documents, directives and legislation, rather than concrete programmes and organisations.

There may be one overarching policy for clusters, a “cluster policy”, outlining specifically how cluster development should be pursued. In addition, clusters may form a framework in a long range of policy fields. Primarily, this is often the case in three
key areas: innovation and technology policies, regional economic development policy, and entrepreneurship/SME policy. However, it can also occur in many other policy areas.

1.3.1 Overarching cluster policy

The technological clusters launched by the Ministry of Economy and Foreign Trade, allow the development and the diversification of the national economy, to stimulate technological competences and to use the competences of the public sector. With a personal steering which is offered within these clusters, the attractiveness of the country as a research and development country is raised.

There have been some published papers on national levels where the cluster policy is part of innovation policy:

a) The national plan for innovation and full employment of the Ministry of Economy and Foreign Trade, has published measures to simplify innovation: The national agency for innovation and research Luxinnovation, will be charged to animate the technological clusters in the context of public private partnerships. Furthermore, the technological clusters will be surveyed by a cluster council, formed by representatives from public and private research and the business community. Furthermore the technological clusters shall be extended to public research centres in Luxembourg and abroad. Last but not least, the creation of new technological clusters in the area of biotechnology, eco-technology and logistics shall be studied.

b) The report on innovation and research activities of Luxinnovation contains the promotion of clusters as part of the public measures to support innovation and research. It also forwards the idea to enlarge technological clusters to public private partnerships in order to foster scientific and technological collaborations between companies and public laboratories. Furthermore it outlines that SMEs shall be encouraged to advance in network programmes like cluster programmes in order to take benefit from efficient tools in innovation management and to integrate new technologies within their companies.

The main aim of the state in the design of a cluster policy is to support focused objectives associated with particular industry or technology area (such as biotechnology, eco-technology or logistic). Through this, the state also expects to increase the offer of employments.

The cluster policy has been used since November 2001.

The development of cluster policy is closely associated with Luxinnovation, the national agency for innovation and research and FEDIL (the Federation of Luxembourg Industry).

1.3.2 Clusters as framework in three key policy areas

Clusters play a different role as framework in the three policy areas listed below:

a) Innovation and technology policy

In the innovation and technology policy, the main policy of the Government consists in supporting research and innovation by financial subsidies, cluster programmes, creating economic centres with a high infrastructure, to support start ups and to pub-
lish relevant information on specific websites. Furthermore, the transfer of technology between public and private sector is supported and the key implementing agency, Luxinnovation, shall help to promote innovation and research.

The main objective of the cluster programme is to reinforce the competitive advantage of Luxembourg-based companies, active nationally and internationally. The clusters facilitate the:

- self-development of the Luxembourg economy;
- diversification of the economic structure of the country by the creation of technology-based companies;
- acceleration of research and development projects and innovative technologies;
- creation of technology poles;
- promotion of Luxembourg for high-technology activities and investment;
- priority development of key technologies defined by the technology clusters.

The clusters shall support innovation and research by sharing technological know-how. Thus they contribute to stimulate the technological cooperation among companies, to develop new economic activities.

b) Regional economic development

The regional economic development policy consists mainly in creating regional enterprise zones in order to facilitate the implantation or re-implantation of SMEs. Also the creation of start up parks is part of the policy. Clusters play no role in this policy area.

c) Entrepreneurship and SME policy

The main policy in entrepreneurship consists in promotion of entrepreneurship by different activities: A sensitizing publicity campaign has been launched with TV, radio and cinema spots in order to promote entrepreneurship. Furthermore special efforts are done in order to promote entrepreneurship among young people.

The report on innovation and research activities of Luxinnovation outlines that SMEs shall be encouraged to advance in network programmes like cluster programmes in order to take benefit from efficient tools in innovation management and to integrate new technologies within their companies.

1.3.3 Clusters as framework in various policy areas

Clusters also play a different role as a framework in the different policy areas listed below:

a) Business network policy

Clusters shall contribute to stimulate the cooperation among companies and thus to develop new economic activities. Clusters are set up to encourage business networks which are sharing technological know-how.

b) FDI attraction policy

Clusters contribute to promote Luxembourg as an attractive country for high tech investments and activities. Thus clusters may also contribute to promote FDI of local companies abroad.

c) Export promotion policy
One of the main advantages for the participating companies in clusters is access to information about the latest developments in technology. In addition, the collaborations created between participating companies enable the sharing of gained experiences for the benefit of all. Participation in the cluster can also provide other advantages for strengthening the competitive advantage of individual companies nationally and internationally, by accessing new markets.

d) Sectoral industry policy

In the industrial policy, clusters shall sensitize companies to innovation and research, stimulate the technological cooperation among companies, promote collaborative R&D instruments of the national research funds and detect market niches for the economic governmental policy.

e) Science and education policy (labour training, management development, commercialisation, etc.)

Clusters shall enhance the collaboration between companies, the University of Luxembourg, the Public Research Centres (CRP's) or private research establishments. Through the clusters, high technological activities are supported in order to increase the competitiveness of national companies.

1.4 Cluster or competitiveness councils

In some countries, councils have been set up to promote a dialogue about clusters and competitiveness. Often, these councils have representatives from the government sector as well as from the academic world and the business community.

1.4.1 Cluster or competitiveness councils

There is no cluster council in Luxembourg. However the Observatory of Competitiveness, formed in 2003 and operated by the Ministry of Economy and of Foreign Trade, helps the Government and the social partners to define a favourable policy for a long-term competitiveness of the country. Thus the Observatory is an instrument of documentation, surveillance and analysis of the evolution of the competitive positions of the Grand-Duchy of Luxembourg.

1.5 Other policy issues

There might be other issues that have impact on cluster-related issues in a country. Such issues could be, for example, any macro economic policies that may be relevant for clusters (tax regimes, etc), or if any general evaluation has been made about the country’s competitiveness and barriers to competitiveness.

1.5.1 Other policy issues

Luxinnovation, the national agency for the promotion of innovation and research, forwards the idea to enlarge technological clusters to public private partnerships in order to foster scientific and technological collaborations between companies and public laboratories.
The cluster policy has not shifted significantly since 2001. However, there are considerations to extend the cluster policy in the future to technological and economic areas such as finance, law, security, satellite applications, e-commerce. Other new areas might be biotechnology, aerospace technologies or eco-innovations.

No major obstacles to the process of building cluster policy have been identified.

In the political/academic debate cluster policy is seen as an instrument to improve competitive advantage and to achieve synergies between public and private research.

In Luxembourg, as in many other countries, there are regular assessments of competitiveness carried out by different actors (public institutes or private companies, national or international actors like the European Commission or OECD, Organisation for Economic Co-operation and Development)

Sources:
Les activités d’innovation et de recherche au Grand-Duché de Luxembourg, Etat des lieux et pistes de réflexion, Luxinnovation GIE, 2005
National plan for innovation and full employment (Ministry of Economy and Foreign Trade), 2005
www.innovation.public.lu
www.crtib.lu
www.surmat.lu
www.odc.public.lu

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<tr>
<th>Policy Stream</th>
<th>Old Approach</th>
<th>New Approach</th>
<th>Cluster Programme Focus</th>
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| Regional policy        | Redistribution from leading to lagging regions    | Building competitive regions by bringing local actors and assets together | Target or often include lagging regions
Focus on smaller firms as opposed to larger firms, if not explicitly than de facto
Broad approach to sector and innovation targets
Emphasis on engagement of actors |
| Science and technology policy | Financing of individual, single sector projects in basic research | Financing of collaborative research involving networks with industry and links with commercialisation | Usually high technology focus
Both take advantage of and reinforce the spatial impacts of R&D investment
Promote collaborative R&D instruments to support commercialisation
Include both large and small firms; can emphasise support for spin-off start ups |
| Industrial and enterprise policy | Subsidies to firms; national champions | Supporting common needs of firm groups and technology absorption (especially SMEs) | Programmes often adopt one of the following approaches:
Target the "drivers" of national growth
Support industries undergoing transition and thus shedding jobs
Help small firms overcome obstacles to technology absorption and growth
Create competitive advantages to attract inward investment and brand for exports |

Source: OECDA review of national cluster policies: why are they popular, again?, June 2006