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**Cluster Policy as a Development Strategy  
Case Studies from the Middle East and North Africa**

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# Cluster Policy as a Development Strategy

## Case Studies from the Middle East and North Africa

### Abstract

Cluster policy has become a method of choice for policymakers in many countries. Promoting strong localized industries is an appealing perspective for practitioners, as it can be seen as a way to anchor economic activity in regions in an era of globalization. If cluster policy is successful, it can contribute to the creation of employment and to the initiation of growth processes in urban regions and even in some rural ones. This makes cluster policy an interesting tool for economic policy in developing countries. This article offers some theoretical considerations on the use of cluster policy and presents case studies from Saudi Arabia, Morocco, Tunisia, and Algeria.

**Keywords:** economic development, economic growth, industrial policy, regional policy, development policy, cluster policy, cluster theory, Saudi Arabia, Morocco, Tunisia, Algeria

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# **1 Introduction<sup>1</sup>**

Clusters are a common phenomenon in many industries. Economic activity often tends to agglomerate not just in large cities with a diversified economy, but also in industry-specific clusters that are often, but not always located in urban areas. Silicon Valley and Hollywood are arguably the most prominent examples, but there are many more and most of them are less visible but still offer a high degree of dynamism. The industrial districts in the so-called “Third Italy” represent such smaller but very energetic clusters (e.g. Bathelt and Glückler 2012: 245-279).

This dynamism makes it attractive for development policy to search for ways to enhance the growth of clusters in developing countries. In the era of globalization, trends like trade liberalization, improvements in international transport, and new information and communication technologies open new chances but also a new fragility for regions. International spatial competition for the location of economic activity might intensify in some industries, with regard to some activities or stages of value chains, and due to some of the trends mentioned. The notion of clusters offers an apparent way to anchor economic activity in regions, as the advantages cluster offer are localized. After all, if they were not, clustering would neither exist nor persist.

This article treats ways for development policy to take use of clustering. It proceeds to elaborate the basic mechanisms of clustering, instruments to affect them, and agents who can do so. It then comes up with some case studies of cluster policies in countries in the Middle East and North Africa and draws conclusions.

## **2 Clusters and cluster policy**

The dynamism of clusters can be traced back to several mechanisms that can work within them. Not all of them will be observable in most clusters. Those that are have developed in the interactions between cluster agents. The social fabric of a cluster is the arena in which cluster mechanisms come into being. While policy can not directly cause these mechanisms, it can try

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<sup>1</sup> This article draws in part on Benner (2012a; 2012b; 2012c; 2012e).

to reinforce them with targeted interventions. These interventions take the form of instruments of economic policy that are targeted in a sectoral and spatial perspective towards the clusters to be promoted.

Table 1 lists twelve cluster mechanisms and assigns possible instruments to them, albeit the list of instruments can by no means be exhaustive.

**Table 1: Mechanisms and instruments of cluster policy**

Mechanism	Instruments
Recruitment of qualified new staff among alumni of higher education institutes	<ul style="list-style-type: none"> <li>▪ Job fairs</li> <li>▪ Direct matching between employers and qualified job-seekers</li> <li>▪ Direct dialogue between companies and R&amp;D/education institutions</li> <li>▪ Public relations initiatives for the cluster</li> <li>▪ Online job exchange</li> <li>▪ Lobbying for measures of education and science policy (e.g. for locating R&amp;D/education institutions within the cluster)</li> </ul>
Labor mobility among companies or between higher education or research institutes and companies	<ul style="list-style-type: none"> <li>▪ Job fairs</li> <li>▪ Direct matching between employers and qualified job-seekers</li> <li>▪ Public relations initiatives for the cluster</li> <li>▪ Online job exchange</li> <li>▪ Lobbying for measures of education and science policy (e.g. for locating R&amp;D/education institutions within the cluster)</li> </ul>
Student work in companies (e.g. as interns or student trainees or through writing theses)	<ul style="list-style-type: none"> <li>▪ Job fairs</li> <li>▪ Direct matching between employers and qualified job-seekers</li> <li>▪ Direct dialogue between companies and R&amp;D/education institutions</li> <li>▪ Public relations initiatives for the cluster</li> <li>▪ Online job and internship exchange</li> <li>▪ Scholarships for theses and internships</li> <li>▪ Lobbying for measures of education and science policy (e.g. for locating R&amp;D/education institutions within the cluster)</li> </ul>
Spinoff formation	<ul style="list-style-type: none"> <li>▪ Entrepreneurship or business plan competitions</li> <li>▪ Foundation of technology centers or science parks</li> <li>▪ Entrepreneurship seminars</li> <li>▪ Consulting for (possible) entrepreneurs before and after the new business formation and information about support options</li> <li>▪ Matching of entrepreneurs and experts</li> <li>▪ Industry and technology-specific subsidies for new business formation</li> <li>▪ Lobbying for measures of education and science policy (e.g. for locating R&amp;D/education institutions within the cluster)</li> </ul>
Availability of venture capital (including financing through angel investors)	<ul style="list-style-type: none"> <li>▪ Allocation of venture capital by venture capital funds</li> <li>▪ Direct coaching for spinoffs by venture capital donors</li> <li>▪ Development of technology centers or science parks into incubators through the offer of venture capital</li> </ul>
Cooperation between higher education or research institutes and companies	<ul style="list-style-type: none"> <li>▪ Technology transfer departments of subsidiaries of universities</li> <li>▪ Technology transfer specialists at university institutes or chairs</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Management of cooperation projects</li> <li>▪ Direct matching of potential partners</li> <li>▪ Congresses, seminars and other meetings as a means of initiating and maintaining contacts</li> <li>▪ University classes for industry workers</li> <li>▪ University training programs for industry workers</li> <li>▪ Use of universities' or R&amp;D institutions' infrastructure (e.g. laboratories or machines) by industry</li> <li>▪ Financial support for collaboration (also through cluster competitions)</li> <li>▪ Innovation vouchers</li> <li>▪ Formation of associations or working groups encompassing industry and universities or R&amp;D institutions</li> <li>▪ Use of contacts to other associations or networks for trans-regional matching in the external cluster dimension</li> <li>▪ Industry semesters of university teachers</li> <li>▪ Collaboration in designing a cluster strategy in order to participate in a cluster competition</li> <li>▪ Online cooperation database</li> <li>▪ Creation of a cooperative climate by building a common cluster identity (e.g. through public relations initiatives)</li> <li>▪ Lobbying for measures of education and science policy (e.g. for locating R&amp;D/education institutions within the cluster)</li> </ul>
<p>Horizontal cooperation among companies (including cooperation in trade associations)</p>	<ul style="list-style-type: none"> <li>▪ Management of cooperation projects</li> <li>▪ Direct matching of potential partners</li> <li>▪ Congresses, company visits, seminars and other meetings as a means of initiating and maintaining contacts</li> <li>▪ Use of leading companies' infrastructure (e.g. laboratories or machines) by other companies</li> <li>▪ Financial support for collaboration (also through cluster competitions)</li> <li>▪ Formation of industry associations or working groups</li> <li>▪ Use of contacts to other associations or networks for trans-regional matching in the external cluster dimension</li> <li>▪ Collaboration in designing a cluster strategy in order to participate in a cluster competition</li> <li>▪ Use of trade fair participation programs for trans-regional or international matching in the external cluster dimension</li> <li>▪ Use of delegation trips for trans-regional or international matching in the external cluster dimension</li> <li>▪ Online cooperation database</li> <li>▪ Creation of a cooperative climate by building a common cluster identity (e.g. through public relations initiatives)</li> <li>▪ Focused investment promotion towards external companies, including through focused allocation of subsidies</li> <li>▪ Use of public relations initiatives for trans-regional matching in the external cluster dimension</li> </ul>
<p>Vertical cooperation among companies</p>	<ul style="list-style-type: none"> <li>▪ Management of cooperation projects</li> <li>▪ Direct matching of potential partners</li> <li>▪ Congresses, company visits, seminars and other meetings as a means of initiating and maintaining contacts</li> <li>▪ Use of leading companies' infrastructure (e.g. laboratories or machines) by other companies</li> <li>▪ Financial support for collaboration (also through cluster competitions)</li> <li>▪ Formation of associations or working groups encompassing various industries</li> <li>▪ Use of contacts to other associations or networks for trans-regional matching in the external cluster dimension</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Collaboration in designing a cluster strategy in order to participate in a cluster competition</li> <li>▪ Use of trade fair participation programs for trans-regional or international matching in the external cluster dimension</li> <li>▪ Use of delegation trips for trans-regional or international matching in the external cluster dimension</li> <li>▪ Online cooperation database</li> <li>▪ Creation of a cooperative climate by building a common cluster identity (e.g. through public relations initiatives)</li> <li>▪ Focused investment promotion towards external companies, including through focused allocation of subsidies</li> <li>▪ Use of public relations initiatives for trans-regional matching in the external cluster dimension</li> </ul>
Intensive local competition	<ul style="list-style-type: none"> <li>▪ Sophisticated public procurement</li> <li>▪ Implementation of common parameters for competition through standard-setting and certification</li> <li>▪ Focused investment promotion towards external competitors, including through focused allocation of subsidies</li> </ul>
Competition in the local social hierarchy	<ul style="list-style-type: none"> <li>▪ Information about cluster personalities (e.g. in newsletters and publications)</li> <li>▪ Allocation of awards</li> </ul>
Cafeteria effects	<ul style="list-style-type: none"> <li>▪ Foundation of technology centers of science parks</li> <li>▪ Use of universities' or R&amp;D institutions' infrastructure (e.g. laboratories or machines) by industry</li> </ul>
Social networks	<ul style="list-style-type: none"> <li>▪ Congresses, company visits, seminars and other meetings as a means of initiating and maintaining contacts</li> <li>▪ Use of well-connected personalities as a means of initiating and maintaining contacts</li> <li>▪ Industry semesters of university teachers</li> <li>▪ Collaboration in designing a cluster strategy in order to participate in a cluster competition</li> </ul>

Source: Benner (2012c: 156-159; 2012e).

These instruments can be applied by agents of cluster policy defined in a broad sense (e.g. including not only government, but also other agents).<sup>2</sup> These agents can be summed up in the groups of a) businesses, which refers to those that actively contribute to the use of cluster policy instruments in order to qualify as cluster *policy* agents, b) associations, c) government agents on all spatial levels, d) universities, educational and training institutions, and research institutions, e) cluster initiatives or “institutions for collaboration” (Sölvell, Lindqvist and Ketels 2003) that are likely to be the central networking fora of clusters if they exist, and f) other agents. Often instruments will be used in a collaborative way which requires contributions by various agents. Table 2 lists possible agents of cluster policy.

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<sup>2</sup> For a detailed description of this model for cluster policy, cf. Benner (2012c; 2012e).

**Table 2: Agents of cluster policy**

<b>Mechanism</b>	<b>Supranational level</b>	<b>National level</b>	<b>Regional level</b>	<b>Local level</b>
<b>Businesses</b>	<ul style="list-style-type: none"> <li>▪ supranational leading companies</li> <li>▪ other supranational companies</li> </ul>	<ul style="list-style-type: none"> <li>▪ national leading companies</li> <li>▪ other national companies</li> </ul>	<ul style="list-style-type: none"> <li>▪ regional leading companies</li> <li>▪ other regional companies (including small and medium sized enterprises)</li> <li>▪ regional branches of businesses headquartered in other locations</li> </ul>	<ul style="list-style-type: none"> <li>▪ local leading companies</li> <li>▪ other local companies (including small and medium enterprises)</li> <li>▪ local branches of businesses headquartered in other locations</li> </ul>
<b>Associations</b>	<ul style="list-style-type: none"> <li>▪ supranational federations of associations</li> </ul>	<ul style="list-style-type: none"> <li>▪ national associations or federations of associations</li> <li>▪ national private-law chambers of commerce</li> </ul>	<ul style="list-style-type: none"> <li>▪ regional trade associations</li> <li>▪ regional business associations</li> <li>▪ regional branches of national associations</li> <li>▪ regional private-law chambers of commerce</li> </ul>	<ul style="list-style-type: none"> <li>▪ local trade associations</li> <li>▪ local business associations</li> <li>▪ local branches of national or regional associations</li> <li>▪ local branches of regional private-law chambers of commerce</li> </ul>
<b>Government agents</b>	<ul style="list-style-type: none"> <li>▪ supranational government agencies (e.g. EU commission) and affiliate agencies and institutions</li> <li>▪ supranational public banks (including supranational public venture capital companies)</li> </ul>	<ul style="list-style-type: none"> <li>▪ national ministry of science</li> <li>▪ national ministry of industry</li> <li>▪ national ministry of technology</li> <li>▪ national investment promotion agency</li> <li>▪ national export promotion agency</li> <li>▪ national public banks (including national public venture capital companies)</li> </ul>	<ul style="list-style-type: none"> <li>▪ office of the head of regional government</li> <li>▪ regional government department of science</li> <li>▪ regional government department of industry</li> <li>▪ regional government department of technology</li> <li>▪ other regional government departments, if applicable</li> <li>▪ regional technology transfer agency</li> <li>▪ regional investment promotion agency</li> <li>▪ regional export promotion agency</li> <li>▪ regional public science or economic development foundations</li> <li>▪ regional public banks (including regional public venture capital companies)</li> <li>▪ regional public-law</li> </ul>	<ul style="list-style-type: none"> <li>▪ municipal departments for business development in towns and villages</li> <li>▪ municipal departments for business development in counties or districts</li> <li>▪ joint departments for business development of several municipalities</li> <li>▪ local technology transfer agency</li> <li>▪ local public science or economic development foundations</li> <li>▪ local public banks (including local public venture capital companies)</li> <li>▪ local branches of public-law chambers of commerce</li> <li>▪ local job center branches</li> </ul>



			chambers of commerce	
<b>Universities, educational and training institutions, and research institutions</b>	<ul style="list-style-type: none"> <li>▪ supranational research institutions in the field of cluster policy</li> <li>▪ supranational research institutions with knowledge relevant to the cluster</li> <li>▪ supranational universities (including their schools, chairs and institutes)</li> <li>▪ other supranational educational and training institutions</li> </ul>	<ul style="list-style-type: none"> <li>▪ national research institutions in the field of cluster policy</li> <li>▪ national research institutions with knowledge relevant to the cluster</li> <li>▪ national universities (including their schools, chairs and institutes)</li> <li>▪ other national educational and training institutions</li> </ul>	<ul style="list-style-type: none"> <li>▪ regional research institutions in the field of cluster policy</li> <li>▪ regional research institutions with knowledge relevant to the cluster</li> <li>▪ regional universities (including their schools, chairs and institutes)</li> <li>▪ other regional educational and training institutions</li> </ul>	<ul style="list-style-type: none"> <li>▪ local research institutions in the field of cluster policy</li> <li>▪ local research institutions with knowledge relevant to the cluster</li> <li>▪ local universities (including their schools, chairs and institutes)</li> <li>▪ other local educational and training institutions</li> </ul>
<b>Cluster initiatives</b>			<ul style="list-style-type: none"> <li>▪ regional cluster management</li> </ul>	<ul style="list-style-type: none"> <li>▪ local cluster management</li> </ul>
<b>Other agents</b>	<ul style="list-style-type: none"> <li>▪ supranational consultants</li> <li>▪ supranational private banks</li> <li>▪ specialized supranational venture capital companies</li> </ul>	<ul style="list-style-type: none"> <li>▪ national consultants</li> <li>▪ national private banks</li> <li>▪ specialized national venture capital companies</li> </ul>	<ul style="list-style-type: none"> <li>▪ regional consultants</li> <li>▪ regional private banks (including regional public venture capital companies)</li> <li>▪ specialized regional venture capital companies (including angel investors)</li> <li>▪ regional branches of trade unions</li> </ul>	<ul style="list-style-type: none"> <li>▪ local consultants</li> <li>▪ local private banks (including local public venture capital companies)</li> <li>▪ local regional venture capital companies (including angel investors)</li> <li>▪ local branches of trade unions</li> </ul>

Source: Benner (2012c: 172-173; 2012e).

With these components, cluster policy can be defined as follows (Benner 2012c: 85; 2012e):

- “Cluster policy is the focused use of measures of different partial policies. It consciously aims at influencing the change of the sectoral or spatial structure of the economy in the long term, either explicitly or implicitly, directly or indirectly.
- Cluster policy targets spatial agglomerations of businesses in the same or in related industries, particularly on the local and regional, but also at the national or supranational scale.
- The same or related industries are understood to be located in the same value chain, in similar value chains or in their environment.
- Cluster policy pursues a participatory basic perspective. Government and private agents (including businesses in particular) are expected to collaborate as equal partners to achieve its goals.
- Cluster policy uses instruments that focus on affecting the mechanisms identified on the basis of cluster theory.
- Cluster policy pursues the goal of achieving results that cannot be expected exclusively under market influences at all, not in the same form, not to the same degree, or not at the same time” (Benner 2012e).

A cluster policy based on a sound theoretical foundation should take into account the nexus between cluster mechanisms and cluster policy instruments, the limitations of cluster policy (Benner 2012c; 2012e), the need for an open-minded analysis of the regional economic structure (e.g. Sautter 2004: 68; Küpper and Röllinghoff 2005; Sternberg 2005: 135; Beckord 2007; Zürker 2007: 268-272; Brandt 2008: 121; Fromhold-Eisebith and Eisebith 2008: 90; Kiese 2008a), and the requirement to design individual cluster strategies adapted to the results of the analysis (Enright 2000: 327; den Hertog, Bergman and Charles 2001; Hospers and Beugelsdijk 2002: 396-397; Hospers 2005: 455; Schätzl and Kiese 2008: 269-270; Meyer-Stamer 2009: 33; Wrobel 2009: 99 f.; Wrobel and Kiese 2009: 170-171, 176; Li 2011: 16-17).

In practice, cluster policy is not always designed and implemented according to theory (e.g. Kiese 2008a; 2008b). This calls into question its ability to reach its growth and employment goals (Benner 2012c). The following case studies provide some insights into the use of cluster

policy in developing countries, its relationship to theory, and ways to develop them further on the basis of sound theoretical reasoning.

### **3 Case studies from the Middle East and North Africa**

Middle Eastern and North African countries are an interesting context for cluster policy because of the economic situation they exhibit. Most of them are confronted with high youth unemployment that is likely to be exacerbated by high fertility rates. Rates of economic growth of about 5 percent do not seem sufficient to create enough employment for new generations entering the labor market. Thus, policy instruments that enhance economic growth are needed.

At the same time, most Middle Eastern and North African countries have an advanced state of human capital. Academic education is widespread and university graduates represent a sizeable proportion of unemployed youth.

Considering the economic dynamism of urban areas in most Middle Eastern and North African countries, creating employment opportunities for young people is an especially pressing task in rural regions. Compared to youth unemployment in urban areas, providing low-skilled work may be even much more important in these rural regions, as university graduates are supposedly more inclined to look for employment in urban areas (which is in most instances where universities are located).

In order to address these challenges, a cluster policy is needed that targets a) both human capital and labor-intensive industries and b) both urban and rural clusters. In general, such a cluster policy approach would address the needs of most Middle Eastern and North African countries.

Notwithstanding these common characteristics of most Middle Eastern and North African countries, the resources available for cluster policy vary greatly. Rents from oil and gas extraction render schemes that rely heavily on massive public investment in physical infrastructure possible, while countries without considerable natural resource wealth will need

to concentrate on less costly strategies centered around social processes like networking or competition.

### **3.1 Saudi Arabia's Economic Cities**

Saudi Arabia's “Economic Cities” program can be regarded as a kind of cluster policy centered on physical infrastructure. It entails the construction of four cities (King Abdullah Economic City, Prince Abdul Aziz bin Mousaed Economic City, Knowledge Economic City, and Jazan Economic City). They are expected to host between four and five million inhabitants and boast a vast array of infrastructure and amenities meant to provide a high standard of living. One million people are supposed to be employed there. Their economy is projected to contribute USD 150 billion to the country's GDP by 2020, accounting for a share of more than 20 percent. Two more cities, the Ras Al Zour Resource City and the Tabuk Economic City, are supposed to follow (Swiss Business Hub GCC and Green Destinations LLC 2010; Espey 2011; SAGIA 2012).

Each of the cities is focused on several economic sectors (Swiss Business Hub GCC and Green Destinations LLC 2010: 5):

- King Abdullah Economic City: logistics, services, light and processing industry;
- Prince Abdul Aziz bin Mousaed Economic City: logistics and transportation, agriculture, minerals, construction materials;
- Knowledge Economic City: knowledge-based industries, tourism and services;
- Jazan Economic City: heavy, secondary and labor-intensive industries, agriculture, energy.

The plan is part of Saudi Arabia's “10x10” program that aims to place the country among the world's ten most attractive economies for investment (Swiss Business Hub GCC and Green Destinations LLC 2010).

The Economic Cities are meant to accelerate the process of diversification that the Saudi Arabian economy needs to overcome its high dependence on fossil fuel extraction (Swiss Business Hub GCC and Green Destinations LLC 2010). In contrast to, for example, Abu Dhabi

or Dubai's (Benner 2011a) or Qatar's diversification efforts, Saudi Arabia's has a distinctively regional pattern that is demonstrated by the fact that the Economic Cities are located in different regions. This is logical when taking into account Saudi Arabia's vast surface area, compared to the mentioned emirates that are essentially city states.

The clustering aspect is obvious. The planned cities combine specific infrastructure with a targeting of economic sectors. For example, King Abdullah Economic City features a sea port (for logistics) and a “financial island” (for the financial services industry targeted there). Located next to it is the King Abdullah University of Science of Technology which is compatible to the new city in the sense that students of the city's college can continue their studies there. The Knowledge Economic City contains theme parks, a medical studies complex, and technological and administrative colleges. This infrastructure endowment appears adapted to the sectors targeted in this city, too (Swiss Business Hub GCC and Green Destinations LLC 2010; Emaar, The Economic City 2011; Espey 2011).

There are, however, some remarkable differences to “classical” regional cluster policies, especially to those in industrialized countries. Most of the sectors targeted are defined very broadly, e.g. as knowledge-based industries. While it may be wise to keep open the sectoral boundaries of clusters to allow for technological convergence (Benner 2012c), such a broad focus limits the potential for knowledge spillovers if a critical mass of businesses and other institutions in the relevant sub-sectors is not reached. At the same time, the focus might be too narrow to take use of complementarities. Conceptually, cluster promotion entails a value-chain perspective (Benner 2012c). Targeting single, similar and/or complementary value chains might be an alternative to targeting broad sectors.

In most instances, cluster policies concentrate on “soft” measures and to a high degree on networking. While this should generally not be the only focus of cluster policies, considering (at least informal) social structures into which economic agents and their actions are embedded (Granovetter 1985) and promoting them should indeed be a part of cluster policies. The Saudi plan, however, concentrates on “hard” measures like infrastructure investments and urban planning. This makes it a comparatively expensive but in view of the lacking social embeddedness component maybe still incomplete form of cluster policy.

Connected with this characteristic is the way of planning the cities. While cluster policies (including, notably, those in industrial countries) often exhibit to some degree a top-down approach, the Saudi plan is completely top-down. Bottom-up dynamics are lacking because of the greenfield nature of the Economic Cities. Thus, there is no chance the cities could build on pre-existing sectoral strengths. Such an approach of “creating” clusters from scratch is regarded with considerable skepticism in the literature (e.g. Rehfeld 2006; Kiese 2008c; Benner 2012c). The Saudi plan reminds of various “technopole” programs implemented in a host of nations with mixed success (Castells and Hall 1994). It remains to be seen if and when the Economic Cities will unfold self-supporting bottom-up business dynamics, e.g. in competitive upgrading of the companies located there or in new business formation.

When looking at the cluster mechanisms discussed above, it becomes clear that suitable (physical) infrastructure is a prerequisite for some of them. For example, the existence of a university is a necessary condition for mechanisms of university-industry collaboration to emerge. It is, however, not a sufficient condition. Other mechanisms do not necessarily require any physical infrastructure at all. The creation of such “hard” infrastructure is not considered as an instrument of cluster policy here because it is a pre-stage to cluster policy (Benner 2012a; 2012b; 2012c; 2012e).

Projects centered around infrastructure, such as the Saudi Arabian Economic Cities, may in some respects form an arena in which cluster mechanisms could come into being. But for a comprehensive cluster policy, much more remains to be done. While the impetus of infrastructure investment in the new cities is sure to engender growth effects on the country's economy, time will show whether the cities can live up to the high hopes attached to them.

### **3.2 Morocco's Cluster Policy**

Morocco strives to promote clusters as a part of its “Initiative Maroc Innovation”. The cluster promotion program focuses on collaborative R&D, on creating an environment that stimulates innovation, and on increasing the international visibility of the agents involved.

The industries and technologies targeted in the pilot phase are information and communication technologies, microelectronics, and electronics and mechatronics. Universities or R&D institutions, businesses, and public agencies are the agents supposed to constitute clusters. Three to four clusters with internationally competitive strengths were supposed to be promoted. To select them, possible clusters should be screened and the most promising ones chosen for promotion that consists of funding for the cluster's structures and infrastructure. Criteria for their selection are, among others, their global strategy, their networking strategy, their themes, and their marketing (Ministère de l'Enseignement Supérieur, de la Recherche Scientifique et de la Formation des Cadres n.d.; Ministère de l'Industrie, du Commerce et des Nouvelles Technologies n.d.).

In 2011, four clusters were selected: the “Maroc Numeric Cluster” for information and communication technologies, the “Morocco Microelectronics Cluster”, the “CE3M” cluster for electronics, mechatronics and mechanics, and the “Cluster Océanpôle Tan Tan” for marine industries. Until 2013, the designation of a total of 15 clusters is planned (Loudghiri 2011).

Another initiative that can be regarded as a type of cluster policy is the definition of industrial zones called “pôles de compétitivité” (Khalid 2010). This could be seen as a complement to the designation of clusters which are supposed to demonstrate a considerable degree of global outreach. The pôles de compétitivité might offer an offer an easier way especially for smaller cities and rural regions to take use of potential benefits from clustering.

The general orientation of Moroccan cluster policy is a combination of top-down and bottom-up approaches which is typical for such a type of competition procedure (Benner 2012d). It integrates local and regional agents, their energies and knowledge, and thus builds on existing or emerging strengths in the present economic structure. Yet the exclusive focus on clusters with international or even global outreach bars clusters with national significance from the same promotion, although they might also merit participation and benefit from it. While other industries are targeted by the innovation strategy, too, they do not yet appear to be covered by cluster policy (Ministère de l'Enseignement Supérieur, de la Recherche Scientifique et de la Formation des Cadres n.d.).

As the Moroccan cluster policy is understood as a part of innovation and technology policy, it focuses on dynamic effects of clusters and targets high-technology industries. Efficiency-enhancing aspects of cluster policy or learning in industries with lower knowledge intensity are not addressed, although cluster policy might have beneficial effects here, too.

Still, the country's effort in developing tourism centers (Benner 2011b) can also be seen as a kind of cluster policy which, contrary to the industries targeted by the cluster component of the “Initiative Maroc Innovation”, targets an industry with low knowledge but high labor intensity.

### **3.3 Tunisia's Cluster Policy**

Similar to Morocco, Tunisia pursues a cluster policy aimed at promoting innovation in certain flagship sectors. In contrast to the “Initiative Maroc Innovation” cluster policy, these sectors include not only knowledge-intensive ones. Targeted industries and technologies are mechatronics, textiles, leather and shoemaking, agriculture, and information and communication technologies. Clusters are supposed to be located near existing industrial centers, infrastructure, or R&D and educational institutions. Examples for promoted clusters are the Bizerte agriculture cluster, the Sidi Thabet biotechnology cluster, the Borj Cédria energy and water cluster, the Ghazela and Sfax information and communication technology clusters, the Sousse and Gafsa mechatronics clusters, and the Monastir textile cluster. The clusters engage in partnerships with French clusters. This twinning program is accompanied by the Institut Français (Ministère de l'Industrie, de l'Énergie et des PME, Agence de Promotion de l'Industrie n.d. Institut Français 2011).

For example, the textile cluster "Pôle de compétitivité Monastir-El Fejja" (mfcpole) consists of a “technopole”, a network and an industrial zone. The technopole located in Monastir offers, among other things, laboratories and development centers, start-up centers, congress facilities, and show rooms. The industrial zone is located in El-Fejja 20 kilometers west of Tunis. Thus, the mfcpole “cluster” actually consists of two localized regional clusters, one in Monastir and one in El-Fejja, both of which are managed by the same entity (Gongi n.d.).



Tunisian cluster policy consists of both networking elements and localized agglomeration schemes such as industrial zones. This is similar to Morocco's two clustering programs. However, in Tunisia these two pillars are integrated into a unified cluster policy. The components are closely interconnected, as the example of mfcpole shows. This double focus is remarkable, as it enables the use of various instruments of cluster policy and thus influencing several cluster mechanisms, including some of those not confined to formalized networking.

As with Morocco, the country's tourism policy should also be regarded as a kind of cluster policy, as tourism is also concentrated in some agglomerations (especially in Hammamet, Sousse/Monastir and Djerba/Zarzis).

While the cluster policy dates from the era of the Ben-Ali regime, it does seem as if it has not been strongly altered after the political transformation. Considering the high relevance to address the problem of youth unemployment especially in rural regions, one possible direction of future Tunisian cluster policy is to promote more clusters in remote areas, as most of the clusters promoted to date (apart from the Bizerte agricultural and Gafsa mecatronics clusters) are located at the coast.

### **3.4 Algeria's "Villes nouvelles"**

As its neighboring countries in the Maghreb, Morocco and Tunisia, Algeria has embarked on a cluster policy, too. Until 2025 six "pôles de compétitivité" are to be designated. The program is supported through technical assistance by the World Bank Group. It is meant to counter the enormous spatial concentration of economic activity in Algeria where 90 percent of the population live in 10 percent of its territory. Therefore, the clusters are planned to be distributed across the country. They are attached to agglomerations and to the new cities of Sidi Abdallah, Boughezoul, and Hassi Messaoud. These new cities are located in various parts of the country and involve investment by investors from Asian and Gulf countries. For example, the cluster at the new city of Sidi Abdallah located 30 kilometers west of Algiers which is planned to host 200,000 inhabitants targets biotechnology and information and communication technology. Therefore, it contains a "cyberparc" which is meant to become some kind of Algerian Silicon Valley. Obviously to encourage technology transfer, the clusters are

complemented by new universities, laboratories, and research institutions (Ghozali 2008; 2009; International Monetary Fund 2010: 6; Ouazani 2010).

The Algerian program resembles the Saudi Arabian "Economic Cities" program, albeit on a smaller scale. Considering that Algeria shares Saudi Arabia's concern to diversify its economy and to lessen its dependence on oil (and gas), this does not come as a surprise. Therefore, similar questions can be posed in both cases. It remains to be seen whether the emerging clusters in the new cities can unfold a sufficient degree of self-sustaining dynamism.

## **4 Conclusions**

A conclusion that can be drawn from the case studies is the importance to apply cluster policies both in an urban and in a rural context. Considering strong urban-rural economic disparities, this is important if cluster policy is meant to unfold beneficial effects across the country. This is not a simple task, as cluster policy presupposes some form of already existing localized potentials. It can still work if a cluster policy is not restricted to high-technology industries but also targets labor-intensive manufacturing and service industries that can locate in more rural areas, too. Tunisia's garment, leather, and shoemaking industry clusters as well as Morocco's and Tunisia's tourism policies can stand as models for such a kind of cluster policies. Agricultural industries and their value chains might be another case for cluster promotion in rural areas.

There may, however, be cases in which a peripheral region does not dispose of any localized structural strengths that could be promoted further with a cluster policy. In such a case, other political instruments are more likely to be the method of choice. Provided sufficient resources are available, reviving these areas' regional economies with the construction of new cities can be an option. As the case studies from Saudi Arabia and Algeria show, building new cities that are supposed to host clusters is an approach indeed pursued in some countries with regional disparities. While the literature is very sceptical about the ability of policy to create new clusters without building on existing strengths in the economic structure (Tichy 1998: 232; Taylor and Raines 2001: 32; Rehfeld 2006: 253; Zürker 2007: 268; Feser 2008: 197; Wrobel and Kiese 2009: 164), there have been numerous attempts to do so (Castells and Hall 1994). In a number of cases, these attempts did not live up to their high goals:

“Many regions in the industrialized and industrializing world have dreamed of becoming the next Silicon Valleys, and some of them went headlong into the business. A hasty, hurried study by an opportunistic consultant was at hand to provide the magic formula: a small dose of venture capital, a university (invariably termed a “Technology Institute”), fiscal and institutional incentives to attract high-technology firms, and a degree of support for small business. All this, wrapped within the covers of a glossy brochure, and illustrated by a sylvan landscape with a futuristic name, would create the right conditions to out-perform the neighbors, to become the locus of the new major global industrial center. The world is now littered with the ruins of all too many such dreams that have failed, or have yielded meager results at far too high a cost” (Castells und Hall 1994: 7-8).

This warning does not generally rule out the construction of new cities as a means of economic development. Yet, it calls for caution and a realistic assessment of the chances of such a policy. It may occur that newly created clusters in newly built cities are successful by chance, but they are unlikely to have high chances of success systematically. This is because the cluster mechanisms enumerated in table 2 can at most be reinforced by policy if they exist but can hardly be initiated by it. The dynamism they cause has to emanate from private agents and particularly from businesses and their entrepreneurs, executives, or employees. Thus, building new cities can be a measure to achieve other policy goals (e.g. general regional development) and will certainly cause some economic dynamism due to the agglomeration of population and thus of demand and of labor supply they constitute. However, planning the emergence of clusters in these new cities does not appear as a promising way to pursue cluster policy (and it is a rather expensive way, too, due to the enormous infrastructure investments needed). Thus, it seems far more worthwhile to promote existing or emerging clusters in established locations.

There is, however, a chance that some cluster potentials might arise anew even in newly built cities. As some spatial specialization is likely to happen over time, this is not unlikely. Therefore, instead of building new cities and designating clusters to be created in them, it might be a more efficient approach to let the economy of new cities develop for several years and then examine if and which cluster potentials have emerged in the meantime. These potentials might then be targeted by cluster policy by reinforcing some cluster mechanisms as far as intervention is needed. Thus, new cities might in the future become a case for cluster policy if and when some clustering potentials have emerged by themselves. In order to stimulate this emergence of

clustering potentials (which can show in many industries or technologies, thus calling into question efforts to target specific industries or technologies in these new cities on the outset), creating an enabling social infrastructure will often be an important complement to physical infrastructure in the construction of these cities. Another caveat concerns the cost of the construction of new cities: Before embarking on such a path, its potential costs and benefits have to be carefully assessed. This should include a comparison with costs and benefits of alternative approaches. It is conceivable that policies to strengthen the endogenous potentials of existing economic centers in peripheral regions might in some instances exhibit a better cost-benefit ratio.

Furthermore, policy can indeed improve conditions in which social processes in clusters, i.e. cluster mechanisms, can come into being. It can do so by setting an arena for these mechanisms by creating social infrastructure. Agents like business or trade associations, chambers of commerce, or cluster initiatives can be built or their efficiency improved with public help. The foundation or enlargement of universities, educational and training or research institutions, while containing also some physical infrastructure investment, is another way to construct (additional) social infrastructure. While it is not certain that in such an arena cluster mechanisms will indeed come into being, the probability for this might increase, especially if public interventions are harmonized with needs and contributions from private agents and especially with the cluster's constituent businesses. In so doing, policy can stimulate the creation of social capital within the cluster (Coleman 1988; Putnam 1993; 1995).

Cluster competitions like Moroccan cluster policy within the framework of the “Initiative Maroc Innovation” can be another way to promote the formation of social capital. In such a competition, to win grants cluster agents on the regional or local level have to collaborate, as they need to design a strategy adapted to their own needs together. Thus they learn to identify their shared interests and to cooperate. Another way to shape clusters' social infrastructure is the promotion of institutionalized networks, as is part of Tunisia's “pôles de compétitivité”.

Considering the high state of human capital as well as the low average age and high growth rates of the populations of most Middle Eastern and North African countries, policies that aim at creating jobs might not be sufficient to provide enough employment opportunities for present

and future young generations. Thus, fostering entrepreneurship should be a vital aspect of any economic development policy in these countries. This refers to cluster policy, too. Dynamic clusters can offer more favorable conditions for new business formation than other, more dispersed locations. This is the reasoning behind the fact that, for example, Tunisian clusters provide start-up centers. Table 1 presents a host of further instruments that can be used to increase the entrepreneurial activity in clusters. Yet, to lead to higher entrepreneurial dynamism, cluster policy can be complemented with more general policies that foster new business formation in the long term. For example, entrepreneurship education in schools can be one of these measures (Benner 2012f: 6).

When pursuing a cluster policy it is important to keep in mind that it is no substitute for other economic policies. Cluster policy can be a part of a comprehensive economic development strategy that will also aim at, among other things, a solid macroeconomic framework, a good business climate, and an appropriate balance of regulation and deregulation. Policymakers need to be warned against the

“danger that industry or cluster based strategies will be viewed as substitutes for developing the preconditions for development, rather than complements. Only when these preconditions, such as the existence of real markets, coherent macroeconomic policies, a certain level of proficiency among government agencies, etc. are in place will an industry based or cluster based strategy be helpful or appropriate. Otherwise, “cluster programs” result in hopelessly piecemeal solutions to systemic problems, or, even worse, become tools to subsidize politically connected companies or industries” (Enright 2003: 122).

This does not mean that cluster policies can only be applied in a “perfect” environment. Especially in developing countries some macro or microeconomic problems will be pervasive. Cluster policy, while probably not as effective as under more favorable systemic conditions, can still yield beneficial results. It should, however, not detract from the need to address these systemic problems. Cluster policy is not a comprehensive development strategy, but it can indeed be a central part of it.

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