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Clusters and spatial planning: Towards a research program

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Abstract

Firms change location due to a combination of internal and external factors and for them it is important that their location preferences are accommodated by existing or planned business sites. Business use of land competes with other uses of land, such as housing, leisure or nature. In practice, spatial planning is not so successful in balancing these demands, witness the frequently found situation of inefficiently used business sites, while at the same time many plans are developed or carried out for new business sites. An interesting question is whether economic dynamics would be negatively influenced if spatial planners would be less supply- (or volume-)oriented and instead opt for selective development of business in their region. An idea would be to see whether the support of particular economic clusters could go along with a more efficient use of space. Such an approach would mean that welfare-economic criteria would become better integrated into spatial planning. This paper discusses the main ideas and first results of a research program into the use of space by firms belonging to particular economic clusters.

Key words: Clusters, regional economy, spatial planning

JEL: R14, R38, R39, R41, R52, R58, L14, L23

1. Introduction

Setting the scene

According to mainstream literature firm migration is a complex phenomenon, because many parameters determine location choice and location choice is also not a once for all decision, but a process (Lambooy et al., 2003) in which keep-, push- and pull factors are involved (Meester, 1999; Pellenbarg, 2005). Location preferences may change over time, depending on the stage in the lifecycle of a firm ¹. The quantity and quality of the locations offered may also change over time. This explains why the main motives to migrate ² may differ substantially over time ³. Second, this 'location mix' may show local or regional differences ⁴. Third, location choice may differ between branches of industry ⁵. Fourth, there are also differences between large and small firms (< 5 wp) with respect to the distance involved in such moves ⁶. The majority of moves is generated by small firms.

In recent years, factors internal to firms are regarded as much more important than they were in older literature. This leads to the main topic of this research program: the demands for and use of space by business firms ⁷. Space is needed to run and expand a firm. In a growing economy, the number of firms is also growing, which contributes to a higher demand for space. Governments acknowledge these factors by providing (dedicated) business areas. In doing so, governments compete with one another (at various spatial levels). This may in particular cases lead to an excess supply of land (and offices or plants) for business. In minor cases, existing sites are restructured, because it is in most cases with given technology less expensive to develop than it is to renovate ⁸. The political 'spin-off' of expansion (capturing 'non-used' areas) is also higher than that of re-using existing areas.

Land is not only used for (core) business activities, but also for transport and traffic related with these activities. More transport and traffic means that more infrastructure is needed for driving, parking, pickup and delivery, hence additional land is used (and/or owned) by business.

Strategic issues

Is an increase in the amount of land used by or reserved for future use by business *per definition* beneficial for society? Securing jobs for longer and shorter periods (the temporary economic impulse of development and building) of time is an important social benefit, but how about the alternatives in terms of

- building differently (use space more efficient)?

- building more at other places. Why is economic activity mainly concentrated in the Randstad, as are most planning and building initiatives, while the Randstad and especially its large cities, do(es) not have the most dynamic economic development (Lambooy et al., 2003) ⁹ and many (growing) problems, such as congestion and lack of space?
- using some of the land for other purposes? Housing, agriculture, leisure and environment may have similar or higher benefits for society.

There are interesting trade-offs in this area. Take for instance the choice between building more offices, which are used inefficiently (and sold or rented at a less than optimal price), while at the same time many people are forced to commute, because the housing market does not offer them a choice, or, alternatively, to use the same space to build more houses (for specific target groups) and reduce commuting.

This example is in line with the statement of the Dutch national government that spatial planning should balance sector interests in such a way that they reinforce instead of exclude one another (Ministry VROM, 2000). Reality shows a different story, with a major force field or even clash of interests. In such a clash, the highest 'bidder' is likely to win, but at what price? Likewise, do short-term benefits outweigh long-term losses?

This force-field should get less tense, because the demand for space for living etc. may not go down (significantly) in the near future. This raises important strategic questions, such as the following:

- Should all spatial claims by business be accommodated? Not necessarily, but the latest Note on Spatial Planning by Ministry VROM (2004) intends to change spatial planning significantly ¹⁰ and it contains a major ¹¹ reservation for new business areas.
- Is it possible to define a checklist of criteria, which could be used to prioritize specific spatial claims by business? Interesting economic criteria could for instance be the type of business ¹² or the way a business is organized ¹³. Other criteria could be spatial quality and especially preservation of the natural environment, because these (also) add to quality of life, which is among the location factors of business.
- What is the actual role of governments in (re)location of business? Do policy instruments reduce or induce changes of location and what are the spatial and other consequences for society? There are many examples of firms that are actually forced to leave their location, because a government decides that there is a better use for the location, which in populated areas is usually housing. A firm then has to invest in a

new location, which may not always be feasible, especially for smaller firms, with the risk that they will disappear. If they can invest, their present customers have to travel longer to a more remote location, which increases mobility and transport. Not everyone will follow his supplier, and it is unclear whether new 'local' customers will compensate for the loss of old customers, at least in the short term ¹⁴.

The inclusion of explicit welfare-economic criteria into decision-making with respect to spatial planning is like entering a grey area, because according to mainstream reasoning, spatial planning should not (explicitly) be used for economic purposes. This, together with the lack of a long-term vision on what would be the optimal regional-economic structure, explains why little spatial plans in the Netherlands contain a (solid) economic chapter (Stijnenbosch, 1994). In turn, this, together with the way land is developed for business ¹⁵, explains why use of space by business tends to be extensive (Olden, 2001).

Objectives of the paper

The objective of this paper is to present the main ideas and first results of a research subprogram that belongs to cluster 8 (Restructuring of cities and business areas) of the Dutch research program BSIK Innovative Land Use. The intention of BSIK is to strengthen the economic foundation of the Netherlands by investing in physical and non-physical, so-called 'knowledge infrastructure'. BSIK covers the period 2004-2009. Apart from a research program, there is also an important complementary application part (live cases). BSIK is led by the Habiforum organization based in Gouda, the Netherlands.

Focus

This subprogram cannot deal with a complete economy or its major activity zones, as described in the Spatial-Economic Main Structure (or REHS in Dutch) in the Netherlands. Micro studies analyze the importance of space as a location factor for individual firms. Such studies can be used as a foundation for a study into the impact of clustering on the use of space by firms located in (part of) the Netherlands. The aim will be to investigate whether and why firms within such clusters relocate differently than non-clustered firms, what the spatial implications are and the policy possibilities could be of such behaviour. Research into clusters of firms is not new, but these studies mostly concentrate on socio-economic issues, such as regional employment or -product, but not with the use of space.

The following hypothesis is used as a red line in this study: Clustering strengthens the local economy and because less relocation is needed, less new land has to be developed and less additional transport infrastructure be built. But, what does this ask from spatial planning? Planning has little impact if market parties act against it. Then the question is whether its aims or its tools could be changed, for instance by making it easier for a firm to expand locally, instead of the frequently found policy to ‘displace’ business even if it does not cause negative externalities to its environment? This could reduce the trend of (further) spatial separation of working and living, which is a major force behind the growth of mobility and transport. Can (or should) spatial policy have such a profound influence on the relocation behaviour of firms? These are the main topics of this scientific research program.

Set-up

The paper is divided into five main sections. First, the object of study (economic clusters) is elaborated in section 2. Section 3 introduces the research questions and research plan. Section 4 finishes the paper with a summary and some conclusions.

2. Clustering of firms

2.1 Introduction

In the past decades we have witnessed a major restructuring process in business. Services replaced agriculture and manufacturing. This process is still not finished and a new restructuring process has started in parallel, this time in what has for long time been regarded as a solid job machine, the services sector. Economic policy is looking for new beacons, new and particularly successful structures in a globalizing world. Clusters have attracted a lot of attention from policy makers and (institutional-economic) researchers in the past few decades. Cluster policy has become a new ‘playing’ field for policy makers. But what are actually clusters and why do they exist?

2.2 A definition

It is important to obtain sufficient information about the “*raison d’être*” of clusters before deciding which clusters could be interesting for further study, how to study them and what kind of results could be expected from such a study.

A logical start of this search process is the choice of a suitable definition. In the literature various definitions of clusters can be found. A widely used one is by Porter (2000): a cluster is “a geographical concentration of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete, but also cooperate”.

Porter's approach and therefore also his definition have met both support and criticism. We will now discuss the above definition in order to better focus this study.

2.3 The distance factor

What is exactly meant by geographical concentration and what is the purpose? By clustering in space firms reduce distance between them and other firms and customers, which can be an important barrier for the exchange of information and knowledge ¹⁶ (and products and services as their materialization), because interaction decreases with distance (Beckmann, 1999; Beugelsdijk et al., 1999; Feldman et al., 2004). Bridging physical distance takes time and money. In the past few hundred years, the introduction and spread of new transport systems has reduced transport costs dramatically, which means that at least for goods transport physical distance has become of limited importance ¹⁷. This explains the widening of the spatial scope of many economic clusters. For passenger transport distance is still important, however. In a service-oriented economy, frequent face-to-face contacts are frequently mentioned as being essential for doing business. The differences in transport costs between goods and passenger transports contribute to the different location choices of specific branches of industry and also departments of firms.

Geographical concentration can be at any spatial level. It follows that any spatial level could be chosen for this program dependent on the aims and constraints of the analysis. Keeping also in mind the limitations of (regional) spatial and economic policy, we will concentrate on the local ‘footprint’ of clusters, being aware that firms within such clusters may be linked with firms in other regions or countries. There is however again a caveat, because the fact that a firm is located next to another firm (co-location) does not necessarily imply economic co-operation ¹⁸. This is an example of a broader finding, namely that the economic scale (market) at which a cluster operates does not necessarily have to correspond with the spatial environment where it is located ¹⁹.

2.4 Agglomeration and clustering

Concentration of firms creates dynamic spatial externalities or spill-overs (generation and diffusion of information: learning, innovation and increased specialization, Fujita et al., 2004). Hoover (1937) already distinguished between urbanization and localization economies. Urbanization refers to the concentration of firms in various industries in an urban environment and localization to spatial concentration of firms in the same industry. Agglomeration creates input-cost externalities, because specialized inputs are used more efficiently and firms can also buy from a differentiated supply, which also reduces costs (Johansson et al., 2004). Proximity also creates delivery-cost externalities. Agglomerations are also important to build up reputation, provide convenience, safety and important nodes in transport networks (Beckmann, 1999). Agglomeration building is a cumulative process also known as endogenous growth; more firms create more demand and more services etc., hence the business climate improves steadily. The larger a city, the more diversified the supply of consumer goods becomes (product differentiation), which increases consumer satisfaction. Fujita et al. (2004) argue that in the longer term inflow of new blood is necessary to prevent convergence in thinking, otherwise the positive externalities will disappear. Agglomerations can be seen as public networks and economic networks (clusters) as private ones. The latter combine features of a firm and a pure market. (Johansson et al., 2004).

2.5 Innovation

Innovation is necessary to stay competitive, as a firm, industry, sector and nation. Knowledge exchange²⁰ is the key to innovation (Roelandt et al., 1997). Knowledge should not be seen as the homogeneous good frequently found in economic literature, but as a heterogeneous good. In this respect, a distinction can be made between codified knowledge (facts) and tacit knowledge (skills: 'know how' and 'know who'). Codified knowledge is a public good, tacit knowledge is a private good, but if shared with others (like in a cluster) it becomes a club good.

Analysis by Simmie (2004) and especially the difference between his findings and the (older) ones by Porter, is important to understand how clustering contributes to innovation and (regional-)economic growth. According to Porter innovation drives competition and competition drives economic growth. Local clusters are essential for innovation and growth, because they signal new customer demands and speed up the process of innovation. Simmie argues in the opposite way by saying that innovation is done for (inter)national and not for local or regional markets. Innovation is not a matter of co-operation and information

exchange, because most innovation is done in-house. Clustering also does not seem to support relationships with other institutions, and if this is the case, again (inter)national co-operation is more important than local co-operation ²¹. This can be explained by the desire to monopolize the first-mover benefits ²², instead of having to share them with others. Then, the most highly rated external sources are a-spatial, in particular standards and regulations, visiting exhibitions, etc. Simmie concludes by saying that “innovation is an internationally distributed system but that parts of this system are highly concentrated in a limited number of city-regions”. A limited number of trading clusters is then key to national economic growth. Porter has also become aware of that in his later work (Porter, 2003). Breschi et al. (2001), who studied exchange of technical knowledge, say that modern communication means (ICT) and a few contacts are sufficient for efficient information exchange. Like Simmie, these actors mitigate the importance of knowledge diffusion as an agglomeration force. Oerlemans et al. (2001), who studied spatial clustering in The Netherlands, point to a bi-directional relation between proximity (clustering) and communication and information flows ²³. Other factors (such as technology policy by a government) may co-determine clustering. Firms change (transform) and exchange (transaction) information. The nature of the innovation process determines whether external sourcing of information, hence exchange with other actors, is necessary. In case of relatively simple innovations, internal R&D investments are sufficient ²⁴. Only in case of radical innovations such exchange is necessary, because radical innovations are more complex than less radical innovations. A single firm cannot solve the many problems related with this kind of innovation, hence the need for exchange of information with other firms. But, not all information is exchanged between firms, firms (obviously) regulate information flows. An interesting distinction made by Oerlemans et al. (ibid) is between supplier-dominated and consumer-dominated ²⁵ firms, the latter turn out to be much more innovative, hence more outward looking. Supplier-dominated innovation tends to have much stronger local ties than consumer-dominated innovation. These authors conclude: “Given a stronger regional economic embeddedness, higher interaction intensity facilitates spatial concentration of innovative ties.” (p. 353).

The analysis by Simmie and others is a reflection of the growing internalisation of business, which (inevitably) leads to a broadening of the geographical scope of (some) clusters. Within these global networks, cost and/or quality benefits permit the existence of specialised local or regional clusters. The distinction between codified and tacit knowledge is also important to understand why R&D, production and sales do not have to be located at the same place. For instance, mass production can be located anywhere in space (Johansson et. al, 2004),

including remote countries, not only because of lower cost, but also because mass production mainly relies on codified knowledge, which does not need very frequent updating of information.

2.6 Competition and co-operation

Chinitz (1961) argued that industry structure influences learning, innovation and entrepreneurship. Competition stimulates learning, which leads to innovation, which in turn leads to higher and more diversified economic growth. Clusters of small firms perform much better in this area than large firms that dominate an area. A major advantage of clusters of small(er) firms is that the clustered firms produce more than one large company can do. This scale effect reduces production costs. Large companies are also less innovative and flexible in adapting to market needs. But, these findings should not be generalized. Firm size does not the prime key to success for clusters. There are successful clusters of small, medium and large firms. With respect to the latter, clusters may develop around one large firm. Large institutions, like universities, may have regular spin-offs, in which ideas are commercialized. This is outsourcing, nowadays an established strategy in business and one of the factors behind the birth of new firms (Markusen, 1996).

Porters' combination of co-operation and competition is a complex one. Kerste et al. (2001) argue that co-operation mainly refers to co-operation with firms in other industries, because co-operation with competitors is not logical. This may be an overstatement, because division of labour may mean that firms are competitors in global terms (in the industry), but not for every product, because they do not supply (exactly) the same product or service as their competitors. Yet, a consumer can spend his or her money only once, so even product differentiation does not stop competition, while new entrants may enter the market also. It is likely that firms co-operate during activities not directly related with production, such as lobbying, joint research etc. A firm can also sell to a competitor, as happens in the car industry with parts like engines.

Finally, the ultimate driving force of firms within a cluster is economic self-interest (Bergman et al., 1999). Jacobs (1997) argues that the distinction between clusters and cartels lies in innovativeness and competition. In the case of a cartel, the explicit aim is to reduce competition, a side-effect is a reduction in innovation.

2.7 Social-cultural factors

Studies show that only in specific circumstances firm interdependence becomes such that competition within regional clusters is prevented. In 'Third Italy' cultural factors are said to have led to the development of a learning region (Harrison, 1992; Camagni, 1995; Bergman et al., 1999). Cluster formation is a dynamic process in which a balance has to be found between continuity of relations and flexibility to adjust to market needs, so cluster partners can work on new projects and change the composition of the cluster if needed. Economic, social (trust, conventions; Scott, 1988; Storper, 1997), institutional and other factors together determine the success of clusters.

Breschi et al. (2001) argue differently by saying that social and cultural relationships are a result of and not a precondition for professional partnerships. They also mention the importance of external information exchange for a region, which reduces the importance of proximity.

2.8 Foundations

Supportive to cluster formation are so-called foundations, such as physical infrastructure (transport and communications), human and financial capital, research capacity, etc. Most of the foundations are owned or managed by public decision makers. This is why Zylstra (2000) says that the success of clusters depends on successful private-public co-operation.

2.9 Classification and examples of clusters

Clusters can be classified according to spatial scope (Markusen, 1996; McCann et al., 2004):

- local/urban: the classical Marshallian cluster or industrial district. This is a geographical concentration of small (very) specialized firms within a single industry or industry segment²⁶.

Examples can be found in the services sector (CBD);

- local/region: the industrial complex. It can be described in terms of long-term, stable and predictable relations. Market entry and exit costs are high. Proximity reduces inter-firm transport costs. A local, not necessarily urban location is chosen. Firms own the land. Typical examples are the steel and chemical industry;

- regional: the social network (see also section 2.6). Horizontal network relations, social capital (mutual trust, no opportunism), a shared history and experience of decision-making agents reduce inter-firm transaction costs. The network is a-spatial. Proximity is a necessary, but not a sufficient condition for access to the network. Transport and transaction costs matter. Examples are the leather or fashion industry;

- global networks. A distinction can be made between a. the hub-and-spoke network, in which one or several large companies co-operate with many smaller (very) specialized firms.. Long-term contracts safeguard intensive co-operation. Examples are airplane- and car manufacturers. b. the ‘satellite platform district’. It is typical for mature industries with standardized products and production processes (Kujath, 2004). Satellites from foreign multinationals (temporarily) employ other firms. Such trans- or branch plants have no local decision-making powers and can disappear if the foreign head office decides so. Main location factors are labour cost, environmental regulation and limited transport costs. They have no linkages with local suppliers, which means that such satellites hardly contribute to the economic performance of their donor region. An example is US (electronic) firms in Mexico; Clusters can be found in many industries, either mature or growing-up. Peeters et al. (2001) compared Flanders and Switzerland and concluded that each country has its own clusters and specializations, each cluster having different characteristics and playing a distinctive role in its respective economy. To some extent this is also due to different national and regional policy goals and priorities.

2.10 Conclusions

Clustering can be explained by a set of variables, most of which are distinctively economic and others may be labelled social or ‘milieu’-oriented. It is likely that specific local factors explain why some clusters are typical for specific environments. This implies, that the choice of clusters may be instrumental for the conclusions of specific studies in this area. It is then difficult to generalise these findings.

Clustering should be distinguished from co-location of firms, because there may but their should not by definition be an economic relation between neighbouring firms. Other factors, like spatial planning (dedicated business areas), acessibility, resource endowment or unspecified attributes determining the suitability of a location for particular activities (Beckmann, 1999), historic or other reasons including chance can determine where a firm is located in space. Co-location is important though, because the density and variety of firms at a certain site or in a certain local or regional environment may also lead to a concentration (agglomeration) of consumers, labour force and suppliers, which contributes to the business climate.

The use of space by specific economic clusters is related with the efficiency of the way firms use the land at their disposal, the frequency with which they relocate and their indirect use of land. Relocation is the result of a decision making process in which space is used to operate

and grow. How this works out for specific clusters and firms belonging to them is object of further study.

It is now due time to elaborate the next phase of the research program.

3. Outline of the research program

3.1 Purpose of the research program

The core issue of this research program is whether economic clusters can be used as a vehicle to bring regional-economic, spatial planning and infrastructure policy better in line. The program will not initiate a full study into clusters in a particular country, but instead build on what has already been done in this area, particularly in the Netherlands. Where possible, quantitative techniques will be used.

3.2 Research questions

We will now discuss the main questions of the research program and the accompanying hypotheses.

(1) Do clustered firms relocate less than non-clustered firms and what are the main causes of such a difference?

The hypothesis is that clustered firms relocate less, because the cluster ‘forces’ them to stay at a limited distance from other firms in the cluster. This tests whether the (mainly) internally determined demand for space is affected by the external demands of the cluster. So, does a clustered firm relocate less frequently or move over shorter distances within a specific geographical area than firms not belonging to a cluster? Such a test could be enhanced by using a dynamic perspective, by asking what are the implications of a change in the composition of the cluster (i.e. some firms leave and others join the cluster or the number of firms changes with time) on the use of space? A related question is what the impact is of the lifecycle, for instance, do more mature firms in the cluster relocate differently than younger firms?

A ‘positive’ outcome of this test can also be quite negative for a region. Suppose for instance that the cluster bond is so strong that it will relocate in total or even disappear if one or more crucial firms disappear. If so, this is one of the reasons why the industrial base of a region should not be too much dependent on a certain industry (read: cluster).

(2) Are there pronounced differences in spatial behaviour between firms within a cluster and what are the causes of this?

The hypothesis is that *all* firms within a selected cluster relocate less mainly because being part of a cluster reduces the need to relocate. If this global picture is not valid, then the question is, how to explain these differences? Is it possible that the role of the firm in the cluster (e.g., supplier, consumer, service provider) or its size or some other factor(s) determine(s) differences in its relocation behaviour?

This is again a test of the strength of cluster bonds, yet in this case the approach is into the functionality (read: costs and benefits) of these differences for the cluster.

When studying different clusters, differences between clusters will also become apparent. This leads to the following research questions.

(3) Are there differences between (selected) clusters with respect to the use of space, transport and traffic generated and contribution to the regional economy? What are the determining factors and what could be the implications for government policy?

The hypothesis is that there are differences between clusters with respect to these issues. The answer on this question would provide governments with clues about which clusters could be worthwhile to accommodate (more) if the aim is to combine economic, spatial and transport policy aims.

(4) What contributes more to the inefficient use of space by firms, supply or demand factors?

The hypothesis is that inefficient use of space is primarily due to the way governments supply land (compare Olden, 2001), and only partially due to the demands by an individual firm or the cluster to which it belongs. But, these factors are connected, because if efficiency of land-use at a location, because (for instance) firms can be induced or are allowed to stay where they are, less space is needed for business. Likewise, if less land would be provided, firms would have less options to relocate. This assumes that they have no alternative outside the region (or country). Such an 'opting out' strategy is frequently mentioned as a reason against such restrictions on supply.

(5) Is a reduction of relocation beneficial for society?

The hypothesis is that less relocation is beneficial for society, because it saves valuable space, provided it does not reduce economic dynamics. This tests the argument (or even paradigm)

that there is a strong relation between availability of space and economic dynamics, which is the driving force behind the excess supply of land for business. But even if the argument is right in global terms, the question is whether there are exceptions and what lessons can be learned from them?

(6) Can relocation effectively be influenced by public policy without negative consequences for economic dynamics?

The hypothesis is that a smart combination of economic, spatial and infrastructure policy can reduce relocation without such consequences. To find one or more optimal solutions, it is important to describe the various trade-offs between policy aims and the global costs and benefits of the alternatives.

(7) Can regional-economic policy, spatial policy and transport policy aims be matched with the help of policies dealing with clusters?

The hypothesis is that this is true. The answer will be a generalization of previous findings. It is also a test of the claims made by proponents of cluster policy that stimulation of (specific) clusters benefits the economy.

3.3 Research steps

The following steps are foreseen in this program:

- (1) Make a list of selection criteria for clusters and firms that fits with the main aim of this research program.
- (2) Make a selection of existing Dutch cluster research and perform a methodological study into this material dealing with cluster definitions, scope of the analysis, methodology, economic, spatial and infrastructure policy objectives.
- (3) Choose particular firms within selected clusters.
- (4) Define a 'reference' case of firms not belonging to a particular cluster.
- (5) Analyze how firms within the selected clusters use space and find out what their transport demand is/was part of their life-cycle and find out why, focusing on their role in a cluster.
- (6) Do the same as in (5) for the non-clustered firms.
- (7) Aggregate information about the behaviour of individual firms towards statements about the use of space in relation to the regional-economic functioning of the cluster and policy aims in the areas of spatial planning, transport and environment.
- (8) Develop scenarios about how policy may affect cluster development.

- (9) Draw conclusions about whether firms within clusters use space more efficiently than firms not belonging to a cluster.
- (10) Derive recommendations for spatial and regional-economic policy makers.
- (11) Make a list of issues for further study.

4. Summary and conclusions

Policy makers face many structural problems. Three of them were mentioned in this paper. The first one is in the area of spatial planning Business and other activities compete for space in a densely populated country and business demands (and gets) even more land, while its use of space is in various cases rather wasteful. Efforts to reduce the supply of additional land for business are usually downplayed by saying that this will reduce economic dynamics. It is worthwhile to investigate whether that argument is true and whether a smarter use of land would help to improve the business environment (even) more.

Next to this spatial planning debate, there is also the issue facing many regional-economic policy makers: what business to attract and keep in our area given various (structural) changes in the economy and especially how to do that?

Yet another problem is that of growing congestion and reduction of environmental quality partially due to business transport and traffic.

In practice these issues are usually treated as if they are (completely) unrelated. In our opinion this is not justified, given the various linkages between the causes of problems and potential to cure these issues with a smart combination of policies.

In this paper a research program was presented that tries to combine these three major social issues. In it, the treatment of economic clusters by governments is a central element. Clusters have attracted a lot of attention from policy makers in recent years, yet the spatial and infrastructural dimension are not (very well) taken care of. Such an integral approach is also in line with efforts to make society more sustainable.

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End notes

¹ See for instance Holl's (2004) study for Portugal: Prime location factors of a non-starting firm are the regional industrial base (specialized areas, available producer services) and accessibility of national markets (access to regional road network). For a start-up the size and diversification (nursery function) of the local market and factor costs (wage level) are prime location factors. A start-up will usually be located in a central place.

² If a barrier, like congestion or lack of space, is reduced by moving to another location, other factors will take its place.

³ Pellenburg (2005) mentions important differences between relocations in the 1950's, 1970's, 1990's and present time.

⁴ According to Pellenburg (2005) many European studies show similar developments in location choice. This is probably a global statement.

⁵ E.g., theoretically services can migrate over larger distances, because their investments in 'infrastructure' are very limited (offices are usually rented) and manufacturing firms to move over very short distances (if at all). In the 1950's (spatial deconcentration of manufacturing in the Netherlands), the opposite was the case, with large

migration flows of manufacturing firms from the western part of the country to other parts. This process has now come to a halt and flows between regions have more or less balanced. International migration is likely to become a new source of firm migration (Pellenbarg, 2005).

⁶ Large firms tend to move over (much) shorter distances than small ones, because large firms do not want their work force to move (an important keep factor). Small firms follow the moves of their owners' household, which is usually over a large distance.

⁷ Recent literature says that the visual attraction of a location are of growing importance (Pellenbarg, 2005). This topic is outside the scope of this program.

⁸ Important reasons are environmental clean-up costs and (lack of) accessibility.

⁹ After a certain period, (expanding) firms not only leave major cities, but move to other, less congested areas of the Netherlands.

¹⁰ Planning should change from restrictive towards development-oriented. If and how fast this change would occur is uncertain. Local actors want more freedom in spatial planning, but there is also a counterforce (environmental protection for instance) and decision-makers have to change their mind and tools. Spatial planning has always been a slow process. This inertia makes it likely that structural changes go much slower than expected. On the other hand, some argue that governments actually have limited influence on spatial development (Pickvance, 1982).

¹¹ The Note mentions about 21.000 ha in a period of about 20 years. In 1999 dedicated business areas accounted for more than 64.000 ha. In the years 1991-1999 about 11.000 ha was developed and about 11.600 ha was (directly) available for development in 1999 (Ministry VROM, 2000; most recent data).

¹² E.g., by attracting ICT or finance.

¹³ E.g., a few large firms or many small ones.

¹⁴ Some financial compensation may come from the probably lower price of land.

¹⁵ Firms may also manipulate land-use as a strategy to influence policy-makers.

¹⁶ Information is perishable and costless, knowledge is durable and it takes labour to get it (Beckmann, 1999).

¹⁷ In general, because for particular product categories like perishables or certain kinds of fashion distance still matters.

¹⁸ Simmie, 2004, points out that policy-makers tend to make this mistake often when attracting and supporting (new) business or assessing the impact of such policies. Firms may for instance share the use of some (communication, cleaning, etc.) services, as happens at logistic parks. This is not economic co-operation.

¹⁹ The same firm may supply several different geographical markets, however.

²⁰ Exchange can also be in physical terms, such as selling a semi-finished product to a professional customer.

²¹ This would imply that proximity, hence distance, is less important for the exchange of knowledge as assumed by others.

²² By means of patents etc.

²³ These authors are especially critical towards what they call the 'black box of geographic space'; not the space/region itself is important, but what happens inside.

²⁴ Peeters et al. (2001, p. 12) go even further when saying that "there is no strict relation between R&D efforts and innovation output." For instance, Flanders' agriculture, forestry and fishery firms have high R&D investments and low innovation output, while in some other sectors moderate R&D investments yield a high innovation output. Information exchange and R&D investments are probably complementary elements.

²⁵ Peeters et al. (ibid), make a distinction between user- or market oriented-, supplier oriented- and science-based knowledge. The importance of each type of information differs between economic sectors.

²⁶ In comparison, regional clusters usually include several industries.