

# 1. Sustainable development of cities: the role of leader firms

**Leo van den Berg, Wouter Jacobs,  
Michiel Nijdam and Erwin van Tuijl**

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The port is a living example of entrepreneurship, customer service, international approach, sustainability and innovation. These are the same qualities we want to see reflected in our city. (International Advisory Board, 2008, p. 25)

## INTRODUCTION

### **Background Research**

The issue of global climate change tops the international political agenda in the search for long-term international agreements on the global reduction of carbon dioxide (CO<sub>2</sub>) emissions and other greenhouse gases (GHGs). Cities have in this global (strategic) context an important responsibility in promoting sustainable development and reducing emissions. Cities take up only 2 per cent of the world's surface, but the functional-economic activities (industry, housing, transport) located within urban agglomerations are responsible for almost 80 per cent of the greenhouse gases released into the world's atmosphere. Port cities act as a specific case in this challenging context, specifically because of their location along the coast, their hub function in world trade and their industrial profile. The scale enlargement and increased intensity of port and industrial activity over recent decades have put the relationship with nearby metropolitan areas under pressure. At the same time, port expansion projects at a considerable distance from cities are faced with ecological sensitivities and tighter environmental legislations. Nonetheless, the port and its nearby urban environment remain closely linked, and within these times of climate change have more than ever become strategic partners in sustainable development and innovation.

New global and national regulatory frameworks on sustainability pose a fundamental challenge for both internationally operating businesses

and (local) governments alike. Global investors, corporate shareholders, consumer markets and local communities all increasingly demand verifiable and quantifiable sustainable development track records (whether on carbon footprints, the use of water, local community involvement or respect for human and labour rights) from internationally operating firms. As such, it is increasingly in the self-interest of internationally operating firms to act sustainably; both globally and locally.

Indeed, many internationally operating firms are 'locally dependent' (Cox, 1998) or have local 'sticky relationships' (Markusen, 1996), because of their investments and sunk costs in the built environment, because of existing local supplier base and customer contracts, or simply because of geographical features of the location where they are present (for example, maritime and hinterland accessibility). At the same time, local communities, labour markets and government agencies are dependent on the sustainable development of the local – but internationally operating – business community for job employment, tax revenues, added value, the transfer of knowledge and capital investment opportunities. Both international businesses and local stakeholders are confronted with new rules of the games on the global level with regards to sustainable development; they both need to secure their local dependencies. Thus, we are experiencing a convergence of public and private interests (van den Berg et al., 2003). The general public is dependent on a thriving private sector and the private sector needs well-organized and sustainable cities to survive. A win-win situation can be created by bringing together the interests of the city's business community, local governments and other urban stakeholders (van den Berg et al., 1999).

Firms can play an important role in promoting sustainable development of the cities in which they are active. Firms typically engage in philanthropic action through sponsorships of the local zoo, theatre or orchestra. However, most importantly, firms should take corporate urban responsibility through strategic engagement and partnerships with other urban stakeholders, both at the urban regional level and in their global business networks and global supply chain. In doing so, leader firms effectively link the sustainable development of cities across the world. The empirical questions remain: how, and why, do leader firms contribute to sustainable development in different settings? The settings in which we analyse the behaviour of leader firms are regions, clusters, networks and supply chains.

## **Rotterdam and Shanghai**

In this chapter the role of firms in sustainable development is researched. Theoretical building blocks are used in relation to governance, regional development and firm behaviour. The empirical part of the research is conducted on Rotterdam and Shanghai. The cities of Rotterdam and Shanghai are 'sister cities' and have developed relations on governmental and economic issues. The two cities also show a lot of similarities. They are both cities with a modern profile, a focus on manufacturing industries and are the locations of the largest port of their continent. Having been the largest port in the world since 1967, Rotterdam relinquished this title to Shanghai in 2004. On the other hand, Rotterdam and Shanghai are also very different. The booming economy in Shanghai compared to the mature phase of Rotterdam's economy gives the cities a different shape and means that the issue of sustainability is dealt with differently in the two cities. The environmental, social and economic context and the challenges demand a specific approach in each city and define the possibilities for firms to act.

## **Methodology**

The research is based on an international comparative pilot case study of Rotterdam and Shanghai and consists of two phases. The first phase is desktop literature research on sustainable development and leader firms. The second phase of the research is an explorative pilot study on the cases of leader firms in Rotterdam and Shanghai. We must realize that although all port cities in the world face the challenges of climate change and sustainable development, they often operate within different strategic, economic and institutional conditions that influence their capacity to act and their development trajectories. Through 26 in-depth interviews (14 in Rotterdam and 12 in Shanghai) with identified leader firms, policy-makers and industrial experts, detailed information has been obtained on the engagement with sustainable development within the Rotterdam and Shanghai regions and across their business networks and the factors that influence their engagement. All the investigated leader firms are global operating players with various activities in both Rotterdam and Shanghai (see Table 1.1).

## **Structure of the Chapter**

The structure of the chapter is as follows. In the next section we focus on the role of leader firms in building organizing capacity for the sustainable

*Table 1.1 Characteristics of the analysed leader firms, 2009*

Organization	Operating income (€ '000)	Employees	Rotterdam	Shanghai
Akzo-Nobel	13 941 000	61 300	Production plant	Chinese Headquarters Production sites R&D centre
China Shipping	2 900 000 <sup>1</sup>	49 <sup>2</sup>	Operations office	Global headquarters
DHV Group <sup>4</sup>	468 000	5 320	Major office	Engineers office
DSM	9 687 000	23 000	Production plant	Chinese Headquarters R&D centre Production sites
Haskoning Nederland B.V.	243 100	2 192 <sup>3</sup>	Main office	No
Rabobank	11 867 000	59 311	Major offices	Branch office
Royal Vopak N.V.	933 200	3 874	Global headquarters Research centre Tank terminals	Tank terminal
Smit Internationale N.V.	705 979	3 590	Global headquarters	Sales office
Unilever	39 823 000	163 000	Global headquarters Production plants Main R&D centre	Chinese Headquarters R&D centre

*Notes:*

1 34 756 million RMB.

2 Employees in Rotterdam.

3 Employees in the Netherlands only.

4 Data DHV for 2008

*Source:* Data from annual reports and company websites.

development of (port) cities and of their production chain. Based upon these theoretical insights we present our conceptual model. In the third section we present the two case studies of Rotterdam and Shanghai. The fourth and last section concludes.

## LEADER FIRMS AND SUSTAINABLE DEVELOPMENT

Sustainable urban development implies that we consider the interrelatedness of people, nature and economic systems. In order to achieve sustainable development of cities we need, besides technical solutions and innovations, new urban governance models. The private sector has a natural, but not always understood, self-interest in contributing to improved quality of life within cities. Companies are willing to invest in cities as long as they are convinced of their self-interest (van den Berg et al., 2003).

The competitiveness and innovative capacity of companies is to a large degree dependent on the quality and skills of their workforce. Moreover, cities offer potential for new markets which increase the social involvement of companies (van den Berg et al., 2003). In this strategic context, the role of firms goes beyond simple philanthropic contributions. Instead, by taking corporate responsibility for urban management through strategic urban and regional alignments with other stakeholders, 'leader firms' play a key role in realizing sustainable development. Leader firms promote sustainable development through their global production networks and supply chains, effectively linking cities and sustainable development across the globe.

In this section we deal with leader firms and their contribution to sustainable development on various spatial scales and along their supply chain. First, we describe the role of firms in society. Then, we introduce the concept of the leader firm and describe how they may contribute to sustainable development. Finally, we explain the different settings in which leader firms may contribute to sustainable development, which we use as our theoretical framework in the empirical part of this study.

### **Firms and Sustainable Development**

In recent decades the thinking about the role of companies in society has changed towards a more complete view of the responsibilities a company has when doing business. The broad term 'corporate social responsibility' nowadays includes virtually all behaviour and effects of a company on society and environment.

#### **The 'Licence to Operate'**

The activities of a firm provide this firm with income, but at the same time these activities have an effect on others. This can be an economic effect

related to the transactions involved, but also an effect on the broader society. For all these effects a company can be asked, or forced, to take responsibility. Firms not only have to explain their actions to their shareholders or capital suppliers, but also the primary and secondary stakeholders take an increasingly strong position (van den Berg et al., 2003). A firm should take all these shareholders and stakeholders into account when making strategic choices. Companies are expected to be complete and transparent in their communication about their actions.

The basic precondition for a company to be active in a city or region is that it earns the 'licence to operate' in that region. This means that the company and its activities are accepted by the government because they obey the law, and also by the business society and the general public. The licence to operate can be defined as follows: the licence to operate is the apparent approval of all stakeholders of the presence and the activities of a company, which a company earned by living up to the expectations these stakeholders have and by taking responsibility for the effects the company causes.

To fulfil the demands and take responsibility there are three themes of importance: responsibility vis-à-vis the stakeholders, interaction with the environment and strategy.

### **Stakeholders**

A company should be aware of all parties that are part of its environment. Parties that are of importance are of course shareholders, clients, suppliers and competitors. But also the local community, (local) government, media and non-governmental organizations. A company has different responsibilities towards different stakeholders; it has to provide its clients with good products and provide its shareholders with a good return on investments. Table 1.2 gives the responsibilities a company has towards different stakeholders.

### **Interaction**

Knowing the parties to which a company has responsibilities is the first step; the second is what kind of interaction a company has with its environment. There is interaction on different levels, of which economy, physical environment, social environment and image are the most important (Cannon, 1994).

### **Economy**

Economic interaction involves the products and services a company buys and sells locally, taxes it pays and the relations it maintains with other

Table 1.2 Stakeholders and primary responsibilities of a company

Stakeholder	Responsibility
Shareholder	Return on investment
Clients	Sound products and services
Suppliers	Being a reliable client
Branch members	Image of the branch
Employees	Safe work environment
Government	Obey the law
Other organizations	Specific issues
Community	Safety, prevent environmental damage

companies in its sector. Clustering is an example of local economic impact of a company as a result of local interaction.

### Physical environment

A company affects its physical environment in many ways. When production leads to pollution, this influences the local community, and in the case of air or water pollution often the whole world. Safety effects are primarily related to communities living close to the company's site. Further, there is use of land by a company that also could be used for other activities, restricting the possibilities for new businesses, recreation or housing. Also, business activities tend to generate transport, with congestion as a possible result. The mobility of one actor limits the mobility of another.

### Social environment

Employment and location of a firm are the main social effects. For employees a company provides income, which improves the social environment. In addition, a firm can contribute to social cohesion by creating a community feeling.

### Image

The image of a firm is of importance for its sales and also when recruiting new employees. Furthermore, the image of a company has a reputation effect beyond its own organization, for other companies in the sector or cluster.

### Strategy

To deal with all actors and responsibilities on different levels a firm needs to develop a strategy. This strategy has been the subject of many studies. A basic distinction that is made by Clarkson (1995), and many others, is

*Table 1.3 Four strategies in dealing with the environment*

Attitude	Strategy	Results
Reactive	Denying responsibility	Doing less than demanded
Defensive	Opposing responsibility	Fulfil minimum expectations
Accommodating	Accepting responsibility	Fulfilling expectations
Proactive	Anticipate on responsibilities	Exceeding expectations

*Source:* Based on Clarkson (1995).

given in Table 1.3: a firm can choose between four types of strategies based on its basic attitude towards the environment and legislation.

Related to leader firms and the licence to operate, both the ability and the incentive of a firm to invest in the licence to operate will determine the effort a firm puts in. The company that is the largest producer in a certain sector in a region is the one that benefits the most from a positive attitude of the general public, but is also the first to be addressed when something goes wrong in the industry. In this respect we can make a distinction between positive and negative incentives that a firm has to invest in its relations with stakeholders.

### **Leader Firms**

An important actor regarding sustainable development, and the actor we focus on in this chapter, is the individual firm. All firms in a city can contribute to sustainable development, but some take the lead in this. These firms, we call leader firms.

The leader firm is at the heart of global production networks as it provides strategic and organizational leadership beyond its direct management control. According to Ernst and Kim (2002, p. 1422), the leader firm derives its strength from ‘its control over critical resources and capabilities that facilitate innovation, and from its capacity to coordinate transactions and knowledge exchanges between different network nodes’. Control, competences, innovation and knowledge are the central elements in many definitions of firms that play a leading role in any particular setting. Albino et al. (1999) use the term ‘leader firm’ for the central company in an industrial district and particularly focus on the role the leader firm has in knowledge dispersion. They define a leader firm as a company that ‘considers local factors as strategic resources in the global competition and tends to reinforce the local inter-firm relationships, in particular along the supply chain’ (p. 57). This implies that the two most important functions

of a leader firm are management of inter-firm relationships and enhancing the knowledge transfers in the district to make better use of the local factors and actors.

Carbonara (2002) defines leader firms as firms that have a dominant position in the competitive scenario, adopt original strategic behaviour, and have developed a range of superior competences. Furthermore they have greater contractual power due to their economic condition, technology, expertise and trust relationships.

The role a leading firm has for its suppliers and customers is defined by Lazerson and Lorenzoni (1999, p. 362). They define leading firms as: 'Firms that occupy strategically central positions because of the greater number and intensity of relations that they have with both customers and suppliers'. The most prominent outcome of this position is the role these focal firms play in innovation. Key firms frequently organize production among groups of smaller firms, introduce technological innovations and expand existing markets.

A more international perspective is chosen by Van Tulder et al. (2001), who provide a definition of what they call core companies. Apart from their size, core companies are identified by their international position (market access), are focused on the supply chain, and are principal firms in their supply chain and network. They often owe their position to their core technologies and are both users and producers of these technologies. 'A core company can be characterized by its large production and technological activities and its ability to position itself in the core of networks of supply and distribution, thus playing a leading role in the creation of added value and in restructuring. Core companies are spiders in an industrial web' (Van Tulder et al., 2001, p. 16).

The specific situation of a large international company with a strong local network is researched by Rugman and D'Cruz (2002). They identify 'flagship firms': these are firms that are central in a local network and function as a flagship for other companies in their network. The main point is that multinational enterprises (MNEs) can only compete successfully when they use cooperative relationships with others in their network.

There are various fields of research where a central or leading firm is explicitly taken as the object of research. From the theory on networks, clusters and industrial districts the concepts shown in Table 1.4 can be identified.

Despite the work of many researchers there is still a lack of theoretical underpinning of the concept of leading firms. More often a company is called a leader based on an assumption, or on one specific feature. Only some exceptions, such as Albino et al. (1999) and Rugman and D'Cruz (2002) are found. Here attention is paid to the question: 'What makes

*Table 1.4 The leader firm concept and related concepts*

Concept	Academic field	Related themes	Authors
Leader firm	Industrial districts	Internationalization / innovation	Carbonara (2002), Albino et al. (1999), De Langen and Nijdam (2003)
Flagship firm	Clusters	Coordination / innovation	Rugman and D'Cruz (2002)
Core company	Networks / globalization	Internationalization	Van Tulder et al. (2001)
Nodal firm	Networks	Coordination	Haakanson and Dow (2012)
Hub firm	Networks	Coordination	Jarillo (1988)
Focal firm	Networks / supply chains	Coordination / technology	Boari (2001)

a firm a leading firm?'. Only the latter two start with this question and try to establish a view on leader firms separated from the context. The others start from a certain context (that is, an industrial district) and try to explain developments in the context by analysing the leader firm. From the body of literature some conclusions can be drawn to identify the characteristics of a leader firm.

Leader firms are important drivers of the development of clusters. The investments of leader firms can encourage innovation, enable internationalization of other firms in the cluster, and improve the internal coordination in the network, cluster or industrial district. In these ways, leader firms contribute to the competitiveness of other firms in the cluster and, as a consequence, the cluster as a whole. In this chapter we define leader firms as follows: 'Firms that have – because of their size, market position, knowledge and entrepreneurial skills – the ability and incentive to make investments with positive side-effects for other companies in the cluster or network.'

Positive side-effects, or externalities, are central in the definition of leader firms. Externalities are all those effects of (firm) behaviour that are not included in a price. In principle all investments that increase the competitive position of a network have positive externalities. Apart from these network externalities, cluster externalities (also termed agglomeration – or localization – economies; see Krugman, 1991) exist. Cluster externalities differ from network externalities because all firms in the cluster benefit from these externalities, not just firms included in a relatively closed interfirm network.

**BOX 1.1 FORMS OF LEADER FIRM BEHAVIOUR**

1. Coordination of production networks. A first form of leader firm behaviour is the coordination of production networks. Leader firms invest in the coordination of this network. As a consequence the whole network becomes more competitive.
2. Role as lead user. By expressing a 'critical demand,' a more sophisticated demand than that of other firms in the market, leader firms improve the innovativeness of their suppliers.
3. Creating standards. Leader firms set new standards, for instance, of safety and pollution prevention. Other firms, especially suppliers that are confronted with such standards at an early stage, benefit.
4. Creating 'new combinations.' Leader firms have a central role in creating new combinations of previously unrelated technologies. The combination of such technologies leads to new products. Other firms in the production network benefit from this product development.
5. Improving the transfer of knowledge. A fast diffusion and transfer of knowledge adds to the competitiveness of a cluster. Because of the knowledge they possess and their central role in knowledge networks, leader firms improve the transfer of knowledge in the cluster.
6. Stepping stone. Encourage and enable internationalization. Leader firms compete on international markets. They can start production in other countries and urge or encourage firms in the cluster to internationalize in order to supply them in these countries. Many leader firms lower the barriers to internationalize by letting suppliers use their international network or by guaranteeing a long-term contract for production facilities abroad.
7. Creating reputation. Leader firms engage in projects at the frontier of what is possible. Such projects are widely known in the industry and contribute to the reputation of the cluster as a whole.
8. Improving the labour market. The quality of the labour market is important for the competitiveness of the cluster. Leader firms invest to improve the quality of the labour market. Leader firms are often found among the larger firms in a cluster. Clearly these firms benefit the most from a well-trained professional labour force. This gives them the incentive to invest in education projects.
9. Organizational infrastructure. Leader firms play a role in creating and maintaining the organizational infrastructure in the cluster. Such infrastructure is an important condition for effective cluster governance.

De Langen and Nijdam (2003) identified nine forms of leader firm behaviour that lead to improvement of clusters and increase the competitiveness of other businesses in the cluster. There are three fields in which leader firm behaviour has effect: internationalization of other firms, innovation within the cluster and the organizational capacity in the cluster (see Box 1.1). Leader firm behaviour can also be important regarding the issue of sustainable development, and all forms of leader firm behaviour

directly and indirectly contribute to sustainable development of the economic, social and/or the physical environment. This happens in various settings, as we explain in the next section, which we use as the theoretical framework in our case study.

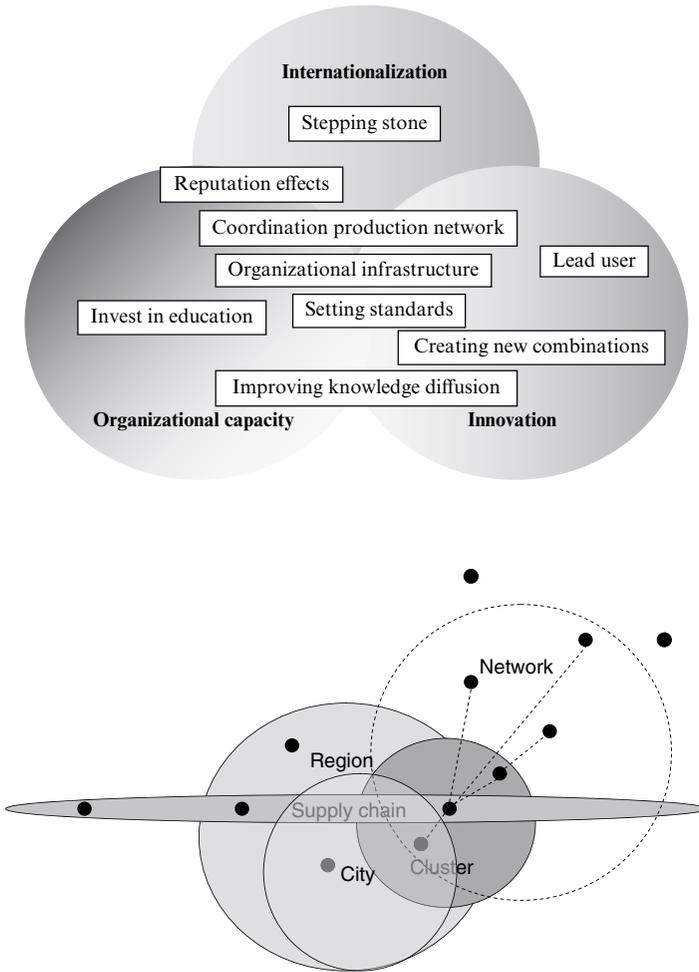
### **Settings of Sustainability: Networks, Regions, Clusters and Supply Chains**

Networks, regions, clusters and supply chains are all made up of several companies. These firms influence each other's behaviour, and the standard of behaviour in a specific setting is set by a group of firms that can be called the leader firms of a region, network or cluster. Since the role of a leader firm can differ in each of these settings, we discuss these settings briefly. Figure 1.1 shows how the four settings are related to each other and how company relations can be placed within these settings.

The borders of a region are defined by governmental jurisdiction, physical structure and broad economic relations, often coinciding with the metropolitan area related to a central city. Clusters are a set of companies, organisations and institutes that are centred on a specialization – such as the port cluster in a geographical area. A region can contain multiple clusters and a cluster can overlap more than one region, but will not encompass all companies in a region. Supply chains are formed by companies that are part of one production chain. The companies can be located all over the world and are linked in a linear way by contracts. Networks are looser forms of organization between companies, often driven by a common goal such as knowledge development. Relations can be formal and informal and can span the globe.

Table 1.5 summarizes the characteristics of the different settings in terms of the relations between companies, the physical distance, the organizational distance and typical issues that are important in each setting. The organizational distance refers to what extent organizations have the same goals, nature and preferences. Leader firms may contribute to sustainable development in all mentioned settings.

In this chapter we have shown the importance of governance and organizing capacity for sustainable development in economic, social and physical environments (built and natural). We argue that leader firms play a key role in this development, which they do in different settings: regions, clusters, supply chains and networks. In the empirical part of this chapter, we provide empirical support for our argument and analyse in detail how and to what extent leader firms contribute to sustainable development in each setting. Moreover, we investigate to what extent there are differences in the behaviour of leading firms in the port cities of Rotterdam (the home region of many analysed firms) and Shanghai



Source: Based on De Langen and Nijdam (2003).

Figure 1.1 Settings of sustainability

(one of the major growth markets of the analysed firms). We analyse how and to what extent social, cultural, political and economic factors in the two port cities affect the organizing capacity, and thus behaviour, of the leading firms in each case.

*Table 1.5 Characteristics of the different settings*

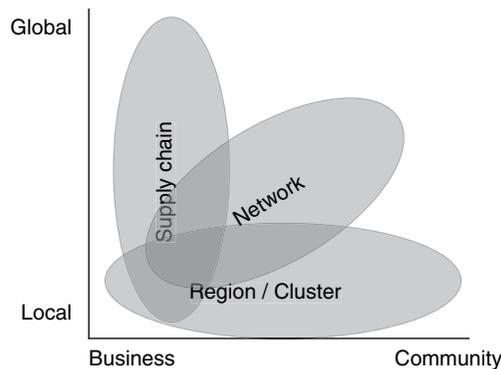
Setting	Geographical size (approx.)	Population size	Relations	Physical distance	Organizational distance	Typical issues
Region	<200 km	Large	Mostly informal or non-existent	Close	Diverse	Quality of the region
Cluster	<100 km	Medium	Formal and informal, latent relations	Close	Close	Collective action problems
Supply chain	Worldwide	Small	Chosen – formal	Diverse	Close	Efficient production
Network	Local to worldwide	Small	Chosen – formal and informal	Diverse	Close	Knowledge development and diffusion

## THE CONTRIBUTION OF LEADER FIRMS IN ROTTERDAM AND SHANGHAI

In this chapter, we have analysed in detail how and why leader firms contribute to sustainable development. The ‘how’ question deals with the strategic actions the leader firms take in order to reach sustainable standards and the partnerships formed to do this. The ‘why’ question deals with the drivers of the strategic actions, varying from a reactive approach as a consequence of pressure from society and policy-makers to a proactive approach including strategic and commercial interests of leader firms due to new markets and changing requirements of clients (see Table 1.3).

To analyse the strategic actions of leader firms, we have set up a theoretical frame that covers four settings in which leader firms may contribute to sustainability: region, supply chain, cluster and network (see Figure 1.1). We suppose that the leader firm initiatives in sustainable development are mostly done in a specific setting and with partners (see Figure 1.2). The initiatives with partners from the cluster or the region have both a business and a community effect. Initiatives along the supply chain mainly focus on doing business in a sustainable manner. Network setting initiatives mainly involve knowledge diffusion and have a diverse impact and geography, from local to global and from business to community.

Empirically, we analysed the role of leader firms in development of sustainability in the four settings in two port cities: Rotterdam and Shanghai. Both regions are the largest ports in their continent, with a large



*Figure 1.2 Differences in the four settings in which leader firms contribute to sustainable development*

manufacturing base. Industrial and port activities are in direct proximity to dense population. For both regions this means a large challenge to attain sustainability in the broadest sense, covering economic, social and the physical and natural environment.

Table 1.6 shows that the two cases have similarities as well as differences which can be explained by the large contextual differences between the two cities. In terms of the regional setting, in both cases leader firms invest in community and environmental projects. With the exception of some cases of strategic investments to improve the labour pool and attract possible clients, the sustainable investments in the regional setting have mainly been made as philanthropic investments. The drivers and incentives for investments differ in the two cases. In Shanghai, with a lower starting point, the investments in the region are needed to get political and societal support, whereas in Rotterdam basic conditions (such as clean water) have already been fulfilled and investments are mainly made to maintain societal support and, indirectly, to promote business.

In the supply chain setting, the strategic actions of leader firms are more or less similar. In both cases, chain leaders aim to realize sustainability from ‘cradle to grave’ and include all dimensions of sustainability. Leader firms both use pressure and offer support to their clients and suppliers in order to increase sustainable behaviour. Many initiatives related to sustainable production are started by the chain leaders with the aim of developing new products that will result in a larger market share and the creation of new growth markets.

In the cluster setting the two cases differ widely. In Rotterdam, leader firms mobilize other firms and policy makers to invest in carbon capture

*Table 1.6 Sustainable actions of leader firms in Rotterdam and Shanghai*

	Rotterdam		Shanghai	
	Sustainable actions	Drivers	Sustainable actions	Drivers
Region	Investments in community projects	To get societal support Some cases aimed to improve labour pool and create future business	Investments in community and environment projects	To get political and societal support Crucial to get licence to operate
Supply chain	Reduction of emissions in entire production and development process and use of final product Actions to improve labour conditions and human rights Chain leaders put pressure on suppliers and customers via contracts, but also offer support to meet sustainable standards	Actions from leader firms themselves as sustainability provides opportunities for potential growth in market share and creation of new markets and products	Reduction of emissions in entire production and development process and use of final product Actions to improve labour conditions and human rights Chain leaders put pressure on suppliers and customers via contracts, but also offer support to meet sustainable standards	Actions from leader firms themselves as sustainability provides opportunities for potential growth in market share and creation of new markets and products
Cluster	CCS by cooperating firms with support of local authorities	CO <sub>2</sub> reduction to reach standards set by Kyoto protocol Creation of future business	SCIP: Sustainable chemical park with high safety and environmental standards Leader firms train local firms	Driven by municipality that sets strict regulations; use of contracts to reach these standards

Table 1.6 (continued)

		Rotterdam		Shanghai	
		Sustainable actions	Drivers	Sustainable actions	Drivers
			Development of knowledge and technology	Municipality transfers information from leader firms to local firms	Geographical proximity of other firms helps to reach standards set and to gain competitive advantage
Network	Joint knowledge development of leader firms with clients and research institutes	Business opportunities	Strict regulations in port	Leader firms introduce global sustainability standards in foreign subsidiaries and offer training programmes in China and the home base Leader firms set sustainability standards for joint venture partners and clients and offer courses and assistance to meet the standards Leader firms spread information and knowledge among Chinese firms via presentations and reports at conferences, membership of business associations and other formal meetings	Multinationals need to obtain societal support on global level Market opportunities as Chinese clients increasingly demand sustainable quality that cannot yet be fulfilled by Chinese competitors Leader firms need Chinese political support in order to do business

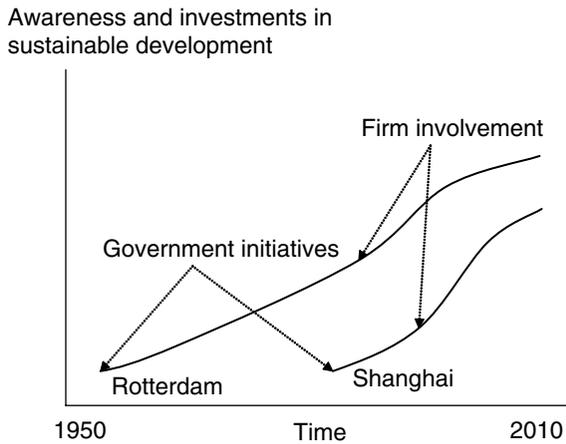
and storage (CCS) techniques in order to fulfil requirements from the Kyoto Protocol in the short run. In a longer time frame, they hope to develop new technologies and techniques and create new business. In Shanghai, Shanghai Chemical Industry Park (SCIP) is an illustrative case, a new chemical park with strict environmental and safety standards. The municipality of Shanghai is the initiating party and leader of the development. It uses leader firms to create best practice and links leader firms with each other and with local firms to find solutions and to share experiences.

Sharing experiences is also crucial in the case of Shanghai in the network setting. Western firms partner with local firms and share ideas via presentations at conferences and other meetings and via written reports. This has been done in order to obtain political support which is crucial to enter the Chinese market. Besides, as local actions in one region impact upon the global reputation of multinationals, leader firms introduce global sustainability standards in all foreign subsidiaries. Therefore, within company networks, employees are trained in how to reach these standards. Indirectly, via labour mobility to Chinese firms, foreign leader firms increase the knowledge base of Chinese firms. In the case of Rotterdam, leader firms deal with high sustainability standards. Via joint projects with governments and research institutes, this has led to new knowledge and working methods. These have been sold to other regions that are in the process of implementing stricter regulations and standards.

### **Phases of Development: The Role of Leader Firms to Bridge the Gap**

Shanghai and Rotterdam are both in a different phase of their development, which has consequences for the leader firm behaviour of the companies located in both cities. The sustainability policy of most companies has a worldwide scope, but the context in which this policy must be executed is different in every location. This leads to a global policy that is adapted to numerous local situations.

The development of Shanghai shows similarities with the history of Rotterdam; the current attention to and action on improving environmental quality are similar to those taken in Rotterdam from the 1960s. There is also a difference: a large proportion of the companies now present in Shanghai already have experience with this kind of transition. Especially, the firms from Western countries act as useful leverage for the policy of the local government, which actively uses this situation to improve all businesses. The role of individual firms in creating a sustainable Shanghai is becoming more important and is increasing the speed of transformation. Shanghai seems to be taking advantage of the experience and knowledge



*Figure 1.3* Leader firms and government initiatives on the road to sustainability in Rotterdam and Shanghai

of firms and cities that have been through the same process. The city of Shanghai involves firms at an earlier stage, and the firms are more willing to cooperate in doing business in a sustainable way and act as leader firms on this issue.

In Shanghai, the involvement of firms is increasing and is even more stimulated by the structure of doing business in China; foreign firms are required to operate in a joint venture with a Chinese company owned by the government. This structure also promotes the upgrading of Chinese businesses. The larger Western companies usually have a worldwide knowledge network regarding sustainability. In a joint venture this knowledge becomes available for the local partner in Shanghai. Awareness and knowledge about sustainable development is rapidly finding its way into the Shanghai business community.

The difference in the development stage between the two regions is depicted schematically in Figure 1.3. The figure illustrates how globally operating leader firms bridge the gap. It is important to notice the time lag in political awareness and investments in sustainability: in Rotterdam, government initiatives started in 1968 with the Club of Rome, while sustainability in Shanghai was put on the national political agenda only after the Rio conference in 1992.

## CONCLUSIONS

Sustainability is one of the main issues of our time. Preserving the earth and providing people with decent living conditions are more pressing challenges than ever for cities, regions, people and firms.

To develop a truly sustainable society and economy it is important to realize that sustainability is a broad theme, covering the environment, health, income and social structure. This combination makes sustainability an extremely complex issue, which cannot be dealt with by governments alone. Firms that take the lead in developing sustainable business models and who involve their partners in the process have an important role in the emergence of sustainable regions.

The urgency of the sustainability issue makes it in the self-interest of firms to act. By not doing so they lose their licence to operate. A proactive strategy could give firms a competitive advantage. Customers are increasingly monitoring the behaviour of the firms from which they buy their products, and regions include sustainability demands in their location policies. To recognize their need to act, firms have to look beyond their own walls and beyond the present time. The firms that do this best are the leader firms of sustainable development. We define leader firms as: firms in a cluster that have – because of their size, market position, knowledge and entrepreneurial skills – the ability and incentive to make investments with positive side-effects for other companies in the cluster.

In our research we have studied the behaviour of leader firms in Rotterdam and Shanghai and it appears that most companies are primarily focused on reducing their pollution and improving safety for their workers. In addition, currently many companies are working on improving their performance on CO<sub>2</sub> emissions. In both Rotterdam and Shanghai companies also recognize their role in improving the sustainability of the region, albeit as a secondary goal of their policies. Investing in sustainability of the region is understood as taking initiatives to improve living conditions, quality of life and education. There is little difference in the way the management in Shanghai and Rotterdam think about sustainability. It is chiefly the context that causes the variation in actions taken by the firms in these cities.

In relation to reactive versus proactive behaviour of firms, there is a great variation in the way the firms act. A real proactive strategy towards sustainability is not common. Most companies have an active approach towards the sustainability issue and act according to the demands from the community. A proactive strategy, where the company itself is setting the standard and develops new ways and new partnerships to improve the sustainability of a region, is still rare. Nevertheless there is a trend towards

more proactive behaviour: the lessons that companies learned in Europe and the USA about sustainability are put into practice in the Shanghai context, which leads to a situation where leader firms are co-shaping the sustainability policy and practices in the whole Shanghai region.

The challenge for most companies and for the regions they locate is to combine sustainable business with sustainable communities. This involves taking a step from undertaking stand-alone projects to incorporating sustainability into the business strategy. Creating such a strategy means that all departments, whether purchasing, human resources, sales or logistics, need to include sustainability goals in their objectives and make sustainability a factor in every decision. Practically, this means that a purchasing department has to look at the quality of the purchased goods and the way they are produced, but also take into account how the logistics of the supply chain will change when making a purchase and what the effects are for the sustainability of the whole business.