

BEYOND MAINPORTS

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PART 1 | ADVICE



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1

A NEW PERSPECTIVE ON MAINPORTS



PRINT



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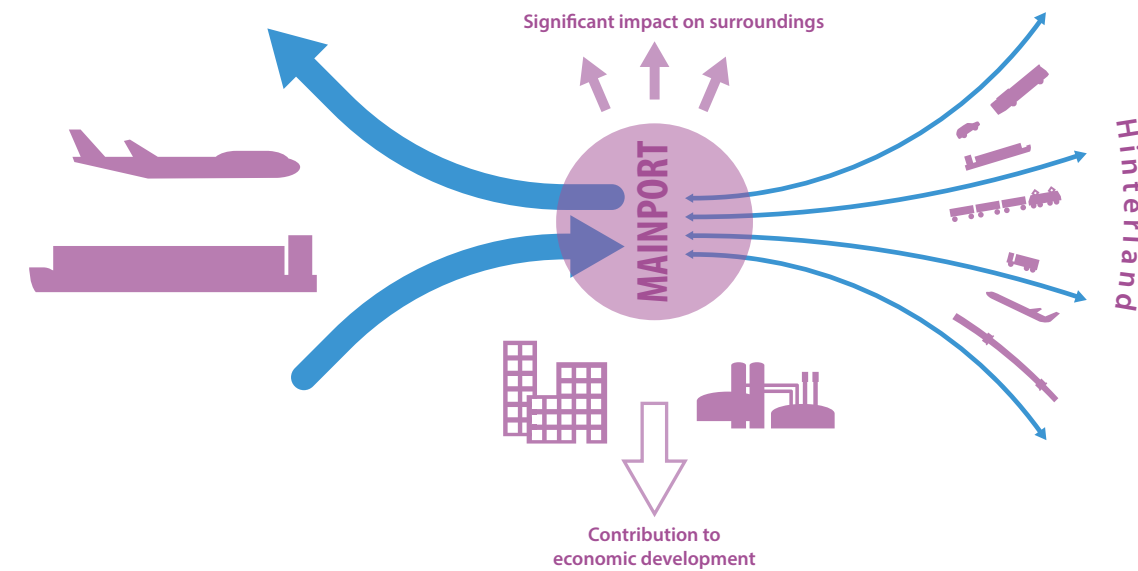


Schiphol Airport and the Port of Rotterdam, the two Dutch 'mainports', have a considerable impact on the economic and spatial structure of the Netherlands. The concentrated flows of goods and people at both mainports shapes investments well beyond their immediate surroundings. In addition to the direct land-use impacts, both mainports affect the Dutch economy indirectly by improving the business climate. For many firms, accessibility, particularly good international connections, is a clear factor in their location decisions. Schiphol Airport and the Port of Rotterdam therefore affect most of the policy areas on which the Council for the Environment and Infrastructure (Rli) advises the government: spatial planning, environment, transport and regional economic development. In this advisory report the Rli-council approaches the issue of mainports from primarily a regional economic perspective.

Three decades of mainport policy

The mainport concept was introduced about thirty years ago as an umbrella term for the Port of Rotterdam and Schiphol Airport (Poeth & Van Dongen, 1983). The term served to highlight the striking similarities between both ports: both handle immense flows of goods and passengers, both make a considerable direct and indirect contribution to the Dutch economy, and both have major impacts on their surrounding areas (see Figure 1). Although the word 'mainport' does not exist in the English language, it soon became common parlance in Dutch.

Figure 1: Converging flows in mainports



The Port of Rotterdam and Schiphol Airport had already secured a good market position before a mainport policy was introduced. The government introduced the policy at the end of the 1980s in response to a protracted economic malaise. The policy marked a shift away from protecting weak industries and areas to supporting strong ones (Van Duinen, 2006). The mainport policy serves the interests of the two ports and channelled investments their way, with high priority given to improving international connections by air, sea and over land. Over the past few decades, the national government has invested in projects such as the land reclamation of the Second Maasvlakte, the Betuweroute rail freight connection and Schiphol's railway station. The mainport policy was also used to justify other investments, such as the HSL-Zuid high-speed railway line (Tweede Kamer, 1996).



The Rli-council found that the mainport concept has been very influential and that the mainport policy has contributed to the development of both Schiphol Airport and the Port of Rotterdam. The policy objective of the 1980s and 1990s, to develop the Netherlands into a logistical hub, was accomplished (Kuipers & Manshanden, 2010). The success of the policy can be seen in the size of Schiphol Airport and the Port of Rotterdam (see Part 2, Section 1.1 [Dutch only]) and their importance for the Dutch business climate. Before the economic rise of Asia, the Port of Rotterdam was the world's largest cargo port and it is still the largest in Europe (Eurostat, 2016). Schiphol ranks among the top five airports in Europe and the top fifteen in the world in terms of passengers (ACI, 2016).

Request for advice

The national and international context has changed and will continue to change in the coming decades, marked by a rapidly increasing international competition, an eastward shift in economic growth within Europe, an eastward global shift in consumption towards Asia, more emphasis on reducing CO₂ emissions and increasing complex technological and societal developments. It cannot be assumed that the current mainport strategy will be able to directly meet these new challenges and so the Government asked the Council for the Environment and Infrastructure (Rli) for advice on the following question: *In light of current global developments, will a different policy be needed to secure the future position of the Dutch mainports?*

The mainport policy continues to be justified largely in terms of economics. Various parties, including the national government, view mainports as the engines of the Dutch economy (Ministerie van Infrastructuur en Milieu, 2016). In Chapter 2 of this advisory report the Council argues that the Port of Rotterdam and Schiphol Airport are not the key engines of growth, which puts the request for advice in a new light: if the Port of Rotterdam and Schiphol Airport are no longer the key engines of the economy, is a separate mainport policy still necessary, and if not, what is? The Council's recommendations on this topic are formulated from Chapter 3 onwards and explained in more detail in Part 2 [Dutch only].



2



MAINPORTS ARE NOT
THE KEY ENGINES OF
THE DUTCH ECONOMY

If Schiphol Airport and the Port of Rotterdam were the key engines of the economy, the Council would expect them to generate above-average levels of added value and above-average shares in gross domestic product (GDP). As demonstrated below, the facts do not support this. The first section of this chapter focuses on the current situation. The second deals with developments that could further undermine the contributions made by the Port of Rotterdam and Schiphol Airport to the economy.

2.1 Mainports losing dominance

GDP share of transport and storage is barely above the EU average

The Dutch economy is not dominated by a single region. The provinces of North Brabant, Utrecht and Gelderland contribute about as much to economic growth as do North Holland and South Holland (including the Port of Rotterdam and Schiphol Airport). Taken together, these five provinces generate 75% of Dutch GDP (OECD, 2014). The mainport regions are not particularly remarkable in this regard.

It is interesting to note that countries with similar standards of living, such as the United States, Sweden and Finland, showed higher growth in added value per capita than the Netherlands over the 1995-2011 period. The share of transport and storage in total GDP is barely above the OECD average (Manshanden, 2016).

Whereas the two mainports do not particularly stand out in terms of high growth rates, other areas do. For example, the Netherlands is home to the

Amsterdam Internet Exchange (AMS-IX), the second largest internet hub in the world (Euro-IX, 2015). The use of information and communication technology (ICT) in the Netherlands is above the EU average (CBS & Ministerie van Economische Zaken, 2015) (see Part 2, Section 3.2 [Dutch only]). Deloitte (2014) found that the internet economy had relatively high average growth (7-9%) between 2007 and 2013. The Brainport Eindhoven region – not a ‘port’ but a hub for science, technology and innovation exchange – displayed strong economic growth: 50% above the national average in the 2003-2013 period (Brainport, 2014). In short, there are other economic core areas that provide an above-average contribution to national economic growth.

The Council has found that the mainports have lost their dominance and that this is partly due to high growth rates at Brainport Eindhoven and within the internet economy. The Council concludes that Schiphol Airport and the Port of Rotterdam can no longer be viewed as the key engines of the economy. However, both ports still have a distinctive part to play due to their logistical capacity for trade and commerce.

Volume is insufficient

The Port of Rotterdam and Schiphol Airport have traditionally focused on generating large volumes of goods and passengers. The question is whether this emphasis on volume growth is justified. Do greater volumes really produce greater economic benefits? A few comments can be made in this regard. Storage and transshipment of goods do not generate the highest added value at the Port of Rotterdam. The added value (in terms of labour and



capital) for each tonne of goods shipped is relatively low. The Netherlands generates an added value of 7-8 cents on the euro when goods are re-exported. For export products made in the Netherlands the added value is much higher: 59-66 cents per euro (Kuipers & Manshanden, 2015). About half of total Dutch exports comprise the re-exportation of goods (Kuipers & Vanellander, 2015). Added value levels at the Port of Rotterdam are also relatively low in comparison with other ports; the total added value of port-related industry at the much smaller Port of Antwerp, estimated at 10-25%, is structurally higher than Rotterdam (Vanellander et al., 2011).

Earnings on re-export are low from a regional economic point of view as well. In 2003, TNO calculated that if re-export were to vanish from the Port of Rotterdam entirely, no lingering negative effects on regional welfare would exist after fifteen years. In fact, land and labour are used so inefficiently in the re-export of goods that if these resources were to be reallocated to other economic activities, they would produce a surplus of wealth relatively quickly. In view of scarce public resources the question arose if facilitating the transport of even greater volumes of goods through the Netherlands would be the best way to bolster the Dutch economy and generate wealth.

At Schiphol, the largest profits are not made from landing fees, but from passenger services such as retail and car parking (Schiphol Group, 2016). Earnings from these activities have even surpassed that of air travel. In 2015, 21% of Schiphol's turnover came from air travel fees and 47% from consumer products and services (Schiphol Group, 2016). It should be noted

that the latter are only made possible by the large flows of people at the airport. Still, the earnings are not fundamentally different from other places with heavy footfall, such as the main railway stations in Amsterdam and Utrecht.

Other arguments can also be made for relying less on volume. Economies of scale has long been the philosophy behind efficient mass production, but now emphasis is shifting towards flexible, customised production in small volumes, or economies of scope. The aim is to react to changes in the market faster than the competition and offer distinctive designs and user-friendliness in products and services (Machielse, 2013). The Rli-council feels that Schiphol and the Port of Rotterdam must achieve a better balance between economies of scale and economies of scope.

Spatial planning of mainports only partly successful

Mainports are not only important for the economy, but for spatial planning as well. The Ministry of Transport, Public Works and Water Management (2005) defined Schiphol as 'an urban area offering a high-quality residential and business environment in which many companies operate competitively in international networks of production and consumption and where many people live, work and relax.' Therefore, it is important that the mainports are well integrated into the surrounding area so that they become part of a healthy urban fabric.

This has been successful only in part. Zoning of noise levels, risk and hazards exacerbates spatial segregation and discussions on noise



disturbance and housing development near the airport have been going on for decades. In Rotterdam, it is mainly safety and environmental zones that impact land uses well into and far beyond the city. On the other hand, Schiphol Airport and the Port of Rotterdam do stimulate economic activity in Amsterdam, Rotterdam and the rest of the country. This is regularly demonstrated by the forward effect or business climate effect. Decisio (2015) concluded that airports offering a wide range of international connections are important location factors, particularly for European headquarters and logistical centres, tourism, conferences and trade in goods and services. The effect is hard to quantify, though. Studies produce results that vary by an order of magnitude, partly due to differing methodologies (see Part 2, Section 1.4 [Dutch only]).

2.2 Future contribution of mainports cannot be taken for granted

This section presents a survey of future international developments, some of which are already pertinent, that can put pressure on Schiphol Airport and the Port of Rotterdam.

Globalisation demands greater emphasis on added value

Globalisation has two important consequences: it heightens international competition and greatly enlarges the market for goods and services.

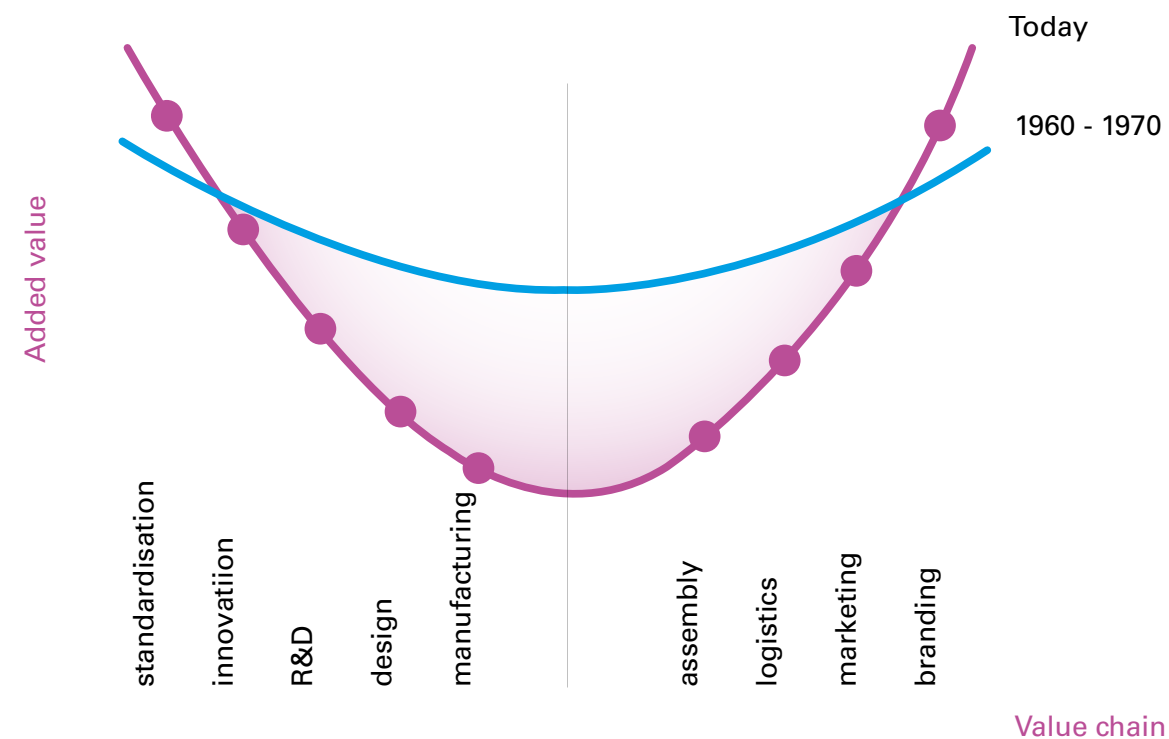
In addition to the known European competitors, Istanbul and Dubai could also directly compete for Schiphol's hub function (SEO, 2016). The Port of

Rotterdam's competition, however, remains limited to other European ports such as the Greek port of Pireaus, supported by the Chinese, and newcomer Gdansk, which is seeking to acquire a strong foothold in the growing Eastern European market (and is already capable of handling megaships). Schiphol and Rotterdam may experience heightened competition from other parts of the world (especially Asia) in attracting businesses, company headquarters and industry. Middle-class consumer expenditure – a key economic factor – is expected to grow strongly, particularly in Asia. By 2030, middle-class consumer expenditures in Asia could be three times that of Europe and twice that of North America (Kharas, 2010).

Globalisation will continue to squeeze market segments with high competition and low distinctiveness (e.g. transport and the kind of mass production that occurs in developing countries). The trend towards high-end activities producing more added value is expected to continue (see Part 2, Section 2.1 [Dutch only]). This is sometimes called deepening the value chain 'smiling curve' (see Figure 2). Continued specialisation can divide the production chain into ever smaller pieces, creating increasingly complex value networks.



Figure 2: Deepening of the smiling curve



Source: Scientific Council for Government Policy (WRR), 2013

For example, the Dutch logistics sector can profit from global economic developments, but can also be hit hard and fast by events that cannot be influenced from the Netherlands. Oil is also very susceptible to international fluctuations. In general, this enhances the importance of an economic policy oriented towards diversity and adaptability of the economy. The Rli-council therefore feels that it is much more important to focus on earning potential and resilience than on being the biggest gateway to Europe. The huge volumes of through traffic may make Rotterdam the biggest port, but if this has limited profitability in terms

of added value, then the Rli-council feels this fact should be factored into the prioritisation of public investments.

Technological developments make production locations and trade flows more footloose

The Rli-report 'Survey of technological innovations in the living environment' (Rli, 2015d), found that technological advances are accelerating and becoming increasingly intertwined. A newer, faster dynamic has emerged, with a more intensive interplay between technology and society. This dynamic is augmented by its international character, as foreign companies bring their innovations to the Netherlands and can impose technical standards. This faster dynamic also poses a challenge to the adaptive capacity of governments and businesses, including Schiphol Airport and the Port of Rotterdam.

McKinsey (2016) predicts that the international exchange of data will usher in a new phase of globalisation. Ongoing digitalisation and mechanisation of commerce allows for the optimisation of the flow of goods throughout the entire chain and across national borders. This may lead to production sites and flows of goods becoming even more footloose and moving to the best locations at any given time. More and more products and services can be sent electronically as data files and 3D printing can take place on site, obviating the need for physical transport. This could potentially slow or even reduce the trade in intermediate goods. Such a development would be significant because these goods comprise 60% of total freight transport (excluding fuel-related products) (WRR, 2013).



The footloose character of business activities may be intensified by the rise of decentralised, sustainable energy technologies and solutions. The big question is what this implies for global manufacturing processes. Who will produce, and where? Will manufacturing occur everywhere or will mass production still be concentrated in developing countries? Which channels will be used for trade or barter and which business models will be adopted? The course of these developments will determine what, potentially major, changes will have to be made in logistical and supply chain management. Further into the future, logistical patterns may be altered by the use of crewless, self-navigating ships.

In short, connectivity may well become more important than location: economies of scope could give way to economies of connection. The keys to success lie in taking advantage of self-organising and complex networks and co-creation as well as being able to handle continuous and increasingly complex product development (Machielse, 2013). Economies of connection may become even more important if groups of people who are disaffected by globalisation and long, convoluted production chains become more intent on pursuing their own values and personal preferences. Different models of production (e.g. local versus global, small-scale versus mass-produced, long versus short chains of production, cluster-related or footloose) will be able to exist side by side.

The exact timeframe of these developments is unclear, as is the impact they will have on Schiphol Airport and the Port of Rotterdam. Nevertheless, it is obvious that these technological developments will affect both

mainports and that the impacts on the flows of goods and passengers may be considerable. Because of this, the futures of Schiphol Airport and the Port of Rotterdam are anything but certain.

Decarbonisation will requires major changes at Schiphol Airport and the Port of Rotterdam

In order to keep global warming below 2 degrees Celsius above preindustrial levels, the EU aims to reduce emissions of greenhouse gases by 80-95% in 2050 compared with 1990 levels. The Paris Agreement on climate change adopted in late 2015 is even more ambitious. It seeks to keep worldwide temperatures 'well below' 2°C and preferably below 1.5°C. The Rli-council views the Paris Agreement as a breakthrough in international support for climate change mitigation. The Paris Agreement was signed by many more countries (including China and the United States) than the Kyoto Protocol and these countries represent over 90% of worldwide emissions (Rli, 2016). The larger number of partners provides more scope to achieve CO₂ emission reductions, even for internationally operating economic sectors.

The implementation of the Paris Agreement may have major consequences for the Port of Rotterdam, because it is highly dependent on fossil fuels and non-renewables. Almost half of the tonnage through Rotterdam is non-renewable, which is at least twice the proportion at Antwerp and Hamburg.

Moreover, the emissions from the aviation and the maritime industries in the Netherlands have increased sharply over the past 25 years (CBS, 2015b).



These emissions are not included in the Paris Agreement, but this exemption is expected to be lifted eventually. In 2016, the International Civil Aviation Organization (ICAO) proposed setting up an emissions trading system for CO₂ to allow growth in the industry without increasing emissions. This proposal will be discussed by the ICAO member states in October 2016. The International Maritime Organization (IMO) will also make proposals to reduce CO₂. There is also a noticeable trend of increasing demands being placed on the sustainability of production and product origin by other parties, such as large multinationals and international investors imposing sustainability requirements on other firms for shipping and transport. The transition to clean energy, a circular economy and biobased production poses a major challenge to both airports and seaports.

The Rli-council believes that this changed outlook for Schiphol Airport and the Port of Rotterdam calls for a new policy outlook as well. In Chapter 3, the Rli-council outlines the conclusions which should be drawn for the mainport policy.





3

BUSINESS CLIMATE REQUIRES MORE THAN MAINPORT POLICY



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The mainport concept has had a great deal of influence on policy decisions and investments in and around Schiphol Airport and the Port of Rotterdam, but continuing to pursue the mainport policy entails a risk of neglecting the urgent challenges that may confront both ports and what they can contribute in future to Dutch competitiveness and the country's ability to attract businesses. The mainport policy has evolved over the past eight years and more attention is now being paid to national networks of airports and seaports, added value and the business climate. Also more attention is paid to the contribution of mainports to economic developments in the Randstad. The Rli-council feels however, that these policy shifts still provide insufficient prospects for the future business climate (see Part 2, Section 1.5 [Dutch only]).

The Dutch business climate is determined by much more than just Schiphol Airport and the Port of Rotterdam. Other key factors include excellent digital infrastructure, technological innovation, quality of life and high-quality services. The differences in business climate between Western nations, especially within north-west Europe, are becoming more subtle. The business climate is increasingly determined by the total package of locational factors, which means that a comprehensive policy package is needed to enhance and balance the contribution of all the relevant factors. To this end the Rli-council makes the following recommendations, which are treated in more detail below:

- a) Create interlinkages between core economic areas in a 2040 Business Climate Development Strategy (see Section 3.1)
 - Determine how much volume flow is needed to achieve critical mass at Schiphol Airport and the port of Rotterdam (see Section 3.2)
- b) Consider digital infrastructure as an important precondition for the business climate (see Chapter 4)
 - Invest in security and open access to digital infrastructure
 - Stimulate data-driven innovation and knowledge
- c) Integrate sectoral policy challenges within a single Business Climate Development Strategy (see Chapter 5)
 - Strengthen the REOS approach
 - Give greater weight to soft business-climate factors
 - Use the Netherlands as a living lab
- d) Initiate a wider debate on urgent policy issues (see Chapter 6).

3.1 Create interlinkages between core economic areas in a 2040 Business Climate Development Strategy

The Rli-council advises the Government to draw up a 2040 Business Climate Development Strategy which should identify the regional-economic significance of core economic areas for national economic growth. The interaction and complementarity between these areas is at least as important as their individual contributions. An integrated vision of the significance of core economic areas for the business climate will broaden the scope for decision-making and public investment and thereby enable



more effective policymaking. The Rli-council is of the opinion that a separate mainport policy should be abandoned.

In this advisory report, the Rli-council uses the term 'core economic areas' to signify areas that make an above-average contribution to the Dutch economy. These areas are characterised by multisectoral linkages, high-end products and services and good connections between government, industry and universities (i.e. the triple helix). Examples of such core economic areas include the Randstad's northern wing (e.g. Schiphol and the internet hub), southern wing (e.g. the Port of Rotterdam) and the Eindhoven region (Brainport). It is not inconceivable that other areas will follow.

The Netherlands has limited agglomeration advantages with respect to other urban regions. It is more of a network economy whose key strength lies in the connections, in the broadest sense of the word, between areas of national importance. The Port of Rotterdam, Schiphol Airport, the internet hub and Brainport Eindhoven all play a clear part in their own region, but also beyond it. The Rli-council advises not looking at these areas in isolation as they are important for each other and for other regions. Brainport Eindhoven, for example, is distinctive for its high-end products with high added value, an emphasis on research and development and successful triple-helix cooperation. Other regions could learn from its example. High-tech innovations being developed in Eindhoven (e.g. energy systems and robots) could be useful for the horticulture-oriented 'greenports' or the internet hub (e.g. ICT patents). The connections

between the core economic areas and the crossovers that result from these create new business opportunities and new growth sectors.

In its advisory report 'The future of the city' (2014), the Rli-council argued that urban regions should stop competing with each other and work closely together and take advantage of each other's qualities. Strengthening the complementarity of core economic areas will allow greater economic and social objectives to be attained.

Box 1: 'Mainport' concept less valuable

The meaning of the word 'mainport' was raised many times in the discussions held during the preparation of this advisory report. In the literature (see Part 2, Section 1.2 [Dutch only]) the concept is described as being important for policymaking and implementation. The mainport concept was used to channel various efforts to strengthen the economy towards particular areas.

However, using the same word to denote both Schiphol Airport and the Port of Rotterdam does not do justice to their differences in terms of business operations and their importance to the Dutch economy (see Part 2, Section 1.2 [Dutch only]). Schiphol, for example, is a more important locational factor for a larger group of international firms than the Port of Rotterdam (Van Dongen et al., 2014).

Furthermore, the meaning of the word has become muddled. The term's success has inspired other localised economic sectors to include 'port'



in their names. The National Spatial Strategy (VROM, 2004), for example, also mentions the national significance of the Brainport Eindhoven Region and the greenports, suggesting a mainport status, but these areas were never explicitly identified as such in other national policy documents, but always listed separately as ‘the mainports, brainport and greenports’. This has led to confusion about what a mainport actually is.

The term mainport is also associated with a delimited area, namely the ports themselves, which does little to invite holistic strategic development. This narrow focus is exacerbated by the term ‘hinterland connections’, suggesting that the rest of the Netherlands is nothing more than the mainports’ backyard.

The challenges of the future demand new concepts. The word ‘mainport’ has served its purpose. The Rli-council feels that continued use of this term will hamper the development of a broader perspective on the business climate and the part the core economic regions play in this.

3.2 Determine how much volume flow is needed to achieve critical mass

In global rankings the position of seaports and airports is determined by transport volumes in tonnes, containers, flights or passengers. Volume is obviously an important indicator as sufficient flows of goods or passengers is essential for the profitability of any port. Both Schiphol Airport and the Port of Rotterdam require a certain critical mass to remain attractive to shippers, passengers, industries, service providers and any investor. Schiphol’s hub function in particular requires a critical mass of international destinations to retain its importance for the business climate, but setting volume targets to maintain a critical mass is markedly different from thinking in terms of maximum volumes and maximum growth. It is not a matter of ‘more is better’, but rather what is ‘optimal’ or ‘big enough’.

Both Schiphol Airport and the Port of Rotterdam are dropping down the international rankings due to the rapid growth of ports elsewhere in the world, especially in the Middle East and Asia. But does this mean that their significance for the business climate has declined? Up to now, this does not seem to be the case. In view of their impacts on land use and the environment, the question can be raised whether a critical mass exists that would allow both ports to achieve national objectives without pursuing maximum growth. This question is becoming increasingly pertinent given the growing international pressure to reduce CO₂ emissions. When considering the question of volume growth a distinction must be made between national and business objectives. Volume growth may be advantageous from a business point of view, but not for the economy



or society as a whole, because both ports have considerable direct and indirect land-use and environmental impacts in the surrounding area. Other locations may be more deserving of public investments to improve the business climate.

The Rli-council feels that it is important to investigate whether a critical mass exists in terms of volume, in full realisation that this will differ considerably for Schiphol Airport and the Port of Rotterdam. The rationale is that as long as critical mass is achieved at the ports, more scope can be created for other public interests without harming their economic function. The Rli-council argues that research in this area will contribute to a reorientation of policy on seaports and airports.



4

CONSIDER DIGITAL
INFRASTRUCTURE
AS AN IMPORTANT
PRECONDITION
FOR THE BUSINESS
CLIMATE



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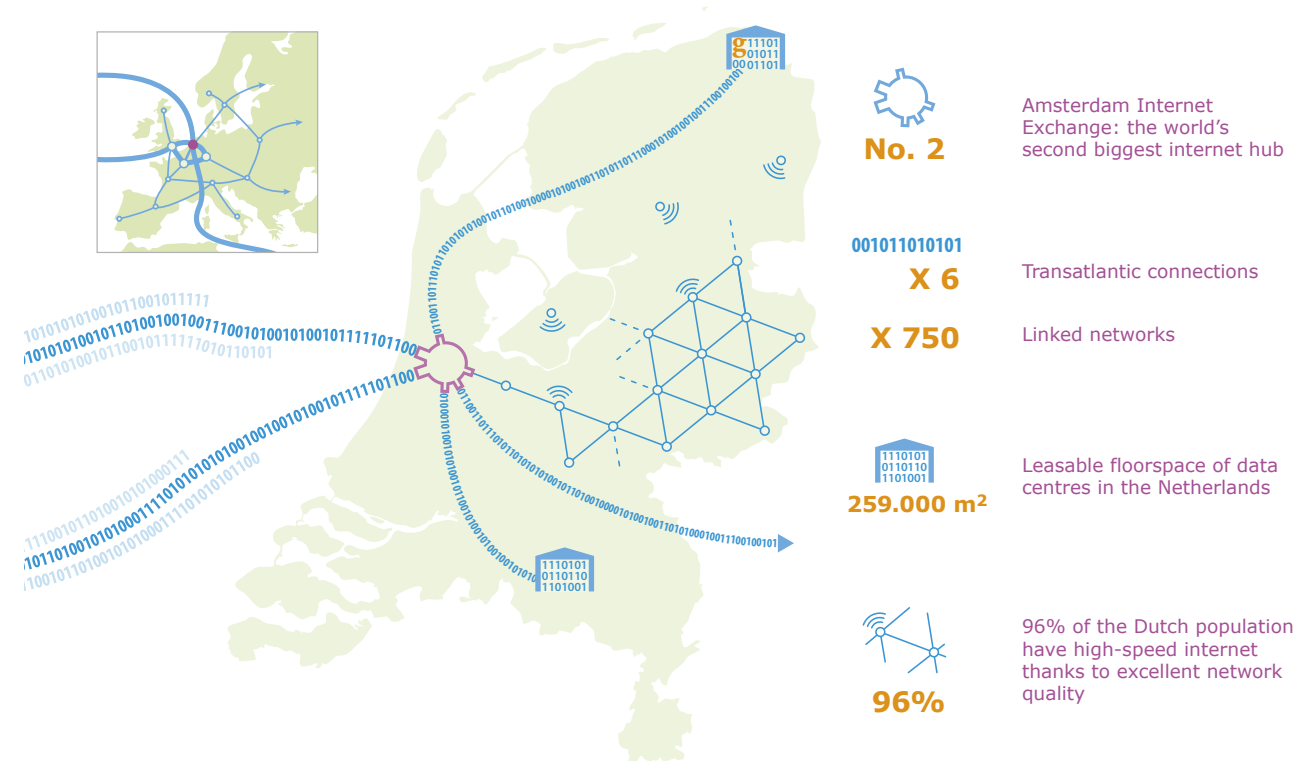


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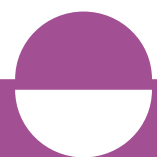
At the end of 2015, the House of Representatives adopted a motion to request the Government to recognise digital infrastructure (Amsterdam Internet Exchange, hosting and housing) as the third mainport in the Netherlands. The motion calls on the Government to work with stakeholders to develop an economic strategy to strengthen the position of the ‘digital mainport’. The motion seems to advocate more government intervention.

Figure 3: The Dutch internet hub



There are significant parallels between digital infrastructure and the two mainports (see Figure 3). Whereas Rotterdam specialises in the flow of goods and Schiphol the flow of passengers, internet hubs are all about data flows. The largest of these in the Netherlands, the Amsterdam Internet Exchange, is also the second largest internet hub in the world (EUR-IX, 2015). It has a clear physical infrastructure, consisting of massive cables across the bed of the Atlantic as well as mainland connections and large data centres (housing) (Deloitte, 2013). Like Schiphol Airport and the Port of Rotterdam, this internet hub is an important component of the Dutch business climate. The wide availability of broadband land lines and mobile networks in the Netherlands is a boon to businesses and knowledge workers (Nederland ICT, 2015). Section 4.2 of Part 2 of this advisory report contains an extensive description of the internet hub and the parallels the Rli-council has observed with Schiphol Airport and the Port of Rotterdam.

These similarities with the mainports were the reason why the Rli-council included digital infrastructure in this advisory report. The Rli-council supports the underlying intent of the parliamentary motion mentioned above, but given the drawbacks already mentioned, advises against calling the internet hub a mainport. The Rli-council does recommend recognising the internet hub and its digital infrastructure as an essential component of the Dutch economy and business climate, and as such it should receive a prominent place in the 2040 Business Climate Development Strategy.



4.1 Invest in security and open access to digital infrastructure

The Rli-council feels that digital infrastructure is crucial for enabling services that are vital to continued economic growth and social development (see Part 2, Section 3.3 [Dutch only]). As data flows and mobile access are becoming increasingly important to society, the availability of stable and reliable data infrastructure is becoming increasingly imperative. The Rli-council feels that this is only the beginning. The volume of data being produced every day is growing at an ever-increasing rate (90% of the existing data in the world was created in the past two years). This not only stimulates all kinds of research and development, but also leads to new products, processes, leisure activities and types of market organisation. As more and more physical, social and data networks are becoming interconnected, the data infrastructure opens up new possibilities, such as the 'internet of things' and the 'internet of living things'¹ in buildings and production chains, dynamic transport systems, healthcare applications and educational tools. In short, the digital infrastructure is becoming an increasingly vital part of society, the environment and the economy.

The Rli-council views the digital infrastructure and the socioeconomic opportunities it creates as an important new element in the regional economic structure. The Rli-council recommends giving digital infrastructure and ICT a more prominent place in deliberations on the future of society and the economy. This means, for example, that the national government should continue to champion net neutrality and cybersecurity to ensure that the digital infrastructure is safe and accessible

to all users and service providers (see also WRR, 2015). Although the majority of the existing digital infrastructure is in the hands of private parties, public investment can still be used to provide essential basic conditions, like the provision of deep-sea access at the Port of Rotterdam and the railway station at Schiphol Airport. Staying ahead in the field of digital infrastructure can entail rolling out state-of-the-art (and possibly experimental) technology that does not yet have a wide uptake. The network of the future can be given a powerful boost through quasi-public organisations like SURF² and the not-for-profit organisation AMS-IX.

The internet of things will also become increasingly important in matters falling under national government responsibility. In the area of transport by road, water and rail, more and more physical objects, such as bridges and sluices, are being incorporated into the data infrastructure. This requires know-how within the government on data management, security of information and industrial IT applications for the development of structures such as tunnels, bridges and sluices. Experience has shown that the availability and application of this knowledge cannot be taken for granted (Tweede Kamer, 2014).

¹ The Internet of Things is the idea that more and more objects, data and processes are being linked to the internet, and therefore to each other (the Internet of Living Things includes people as well). This allows all kinds of objects to communicate with people or other objects and take autonomous decisions.

² SURF is the ICT partnership within education and research in the Netherlands and aims to offer high-quality ICT facilities to students, instructors and researchers.



4.2 Stimulate data-driven innovation and knowledge

Companies that use data-driven innovation (DDI) show a 5–10% rise in productivity relative to their competitors who do not. Application of DDI throughout the entire economy could considerably increase productivity. The Netherlands is still lagging behind in terms of DDI in small and medium-sized enterprises (SMEs) (OECD, 2015). SMEs generate 60% of employment and gross added value in the Netherlands, but their labour productivity is lower than that of big business. This represents untapped potential for the Dutch economy.

The Rli-council advises the national government to take every advantage of the new opportunities presented by digital infrastructure. The Rli-council feels that the national government should commit itself to enlarging the pool of well-educated people. To do this, it should identify missing educational and training courses and knowledge-sharing platforms, remove obstacles for third parties to offer these, embed 'lifelong learning' more extensively in society and grant open access to basic knowledge.



5



INTEGRATE SECTORAL POLICY CHALLENGES WITHIN A SINGLE BUSINESS CLIMATE DEVELOPMENT STRATEGY



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The Rli-council recommends drawing up a 2040 Business Climate Development Strategy (see Section 3.1) that identifies the regional economic significance of core economic regions and the interactions between them. The Rli-council feels that the recent administrative agreement on the regional economic development strategy (REOS) provides a good basis for this.

5.1 Strengthen the REOS approach

The Rli-council applauds the REOS agreement between municipalities, provinces and various government ministries (i.e. Economic Affairs, Internal Affairs and Kingdom Relations, and Infrastructure and the Environment). Cooperation between ministries is important for concerted policymaking towards achieving a competitive business climate. Moreover, the Randstad's northern wing (with Schiphol and the internet hub) and southern wing (with the Port of Rotterdam) are linked to the Brainport Eindhoven Region, and the greenports also fall partly within this area. This approach appeals to the Rli-council because it has a broader basis than the mainport policy.

The Rli-council views REOS as a good basis for improving the business climate in the coming years, but also feels that more is needed for the long term to consolidate the Netherlands' position. The Rli-council contends that REOS should be expanded to include the following points:

- the significance of core economic areas for each other and other regions;
- the role of connections besides roads and public transport (see Box 2);

- the role of digital connections in particular;
- the role of soft factors in the international competition for businesses;
- the international opportunities we wish to create for the distinctiveness of the Netherlands as a business location.

The challenge is to regularly examine which core economic areas are actually of national importance for the business climate and which new growth sectors or regions are emerging.

Box 2: Connections

The Rli-council feels that a 2040 Business Climate Development Strategy is needed and that it should be based on an analysis of business needs and activities and the kinds of connections required to combine them. Connections are more than just public transport lines and roads. Although accessibility is an important factor for the business climate, and a factor which Schiphol Airport and the Port of Rotterdam enhance, a revision of this concept is overdue. Instead of thinking of accessibility in terms of 'the effort, expressed in time and cost per kilometre, it takes people to travel from door to door' (IenM, 2012), the following description is more appropriate in the future business climate: 'people's ability to combine needed or desired activities in time and space' (see Rli work programme). This definition includes activities that can be carried out through digital networks and intersectoral connections between business networks.



5.2 Give greater weight to soft business-climate factors

A good business climate is not only important for attracting international firms. The Rli-council believes it is also a good indicator for a range of qualities that makes the Netherlands a pleasant place to be, not just for companies and their employees, but everyone. Quality of life matters, and 'soft' factors like this are becoming increasingly important in business location decisions (EY, 2016).

The Deltametropolis Association (Vereniging Deltametropool, 2016) argues that the most important economic determinants of the business climate in Western nations are fairly stable. Infrastructure, education and safety are so well established that these factors hardly make a difference anymore. Of course, these factors remain important and will come into play if inadequate, but they are no longer positive distinguishing characteristics. The Rli-council agrees with the Deltametropolis Association that more attention ought be paid to the soft factors in the business climate in the future. Therefore, the Rli-council considers it vital to improve coherence between policies. The future business climate requires strong links between regional economic policy and, for example, education, research, housing and welfare.

The Rli-council asked many experts which factors they felt were important for the future business climate (see also Part 2, Chapter 4 [Dutch only]).

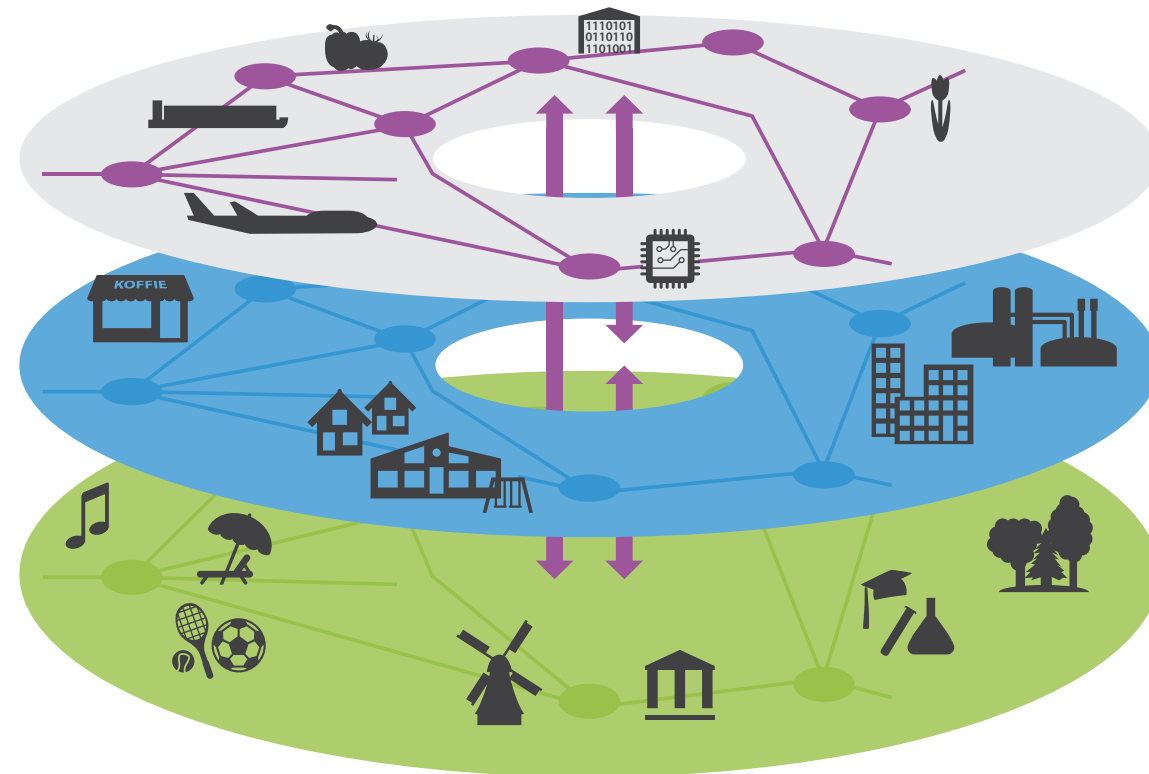
The factors most frequently mentioned were:

- a safe, healthy, diverse and enjoyable environment;
- the availability of talent and a highly educated workforce;
- a robust energy network;
- connectivity at all levels (local, regional, national, European, global);
- adaptive capacity (e.g. via biodiversity);
- flourishing cities;
- art and culture;
- social inclusion;
- favourable legislation and a stable tax regime.

More or less the same points were raised by the Digital Infrastructure Association (Stichting Digitale Infrastructuur Nederland, 2016) when asked what was important for the further roll-out of digital infrastructure. The Rli-council feels that it makes sense to reorient the development of Schiphol Airport and the Port of Rotterdam to these factors (see Figure 4). Public investments in infrastructure will remain necessary to enable Schiphol Airport and the Port of Rotterdam to play their part in improving the business climate, but these investments must be considered within a broader perspective.



Figure 4: Interdependence between business climate factors



In order to understand how soft factors interact, the national government, among others, must think about providing ways to scale up experiments.

However, if the Netherlands is to become a living lab, the national government should not only scale up experimentation, but also invest more in research and innovation and in the Dutch innovation climate as a business location factor. The Rli-council is concerned about cutbacks in large research programmes and facilities that take an interdisciplinary approach to research and innovation. Risky out-of-the box, or high risk, high value, research should not be continuously disadvantaged by setting conditions on viability and valorisation (Rli, 2015b). It is especially difficult to find financing for risky, interdisciplinary research from other parties, so government funding is key. This is also exactly the kind of research which could nurture the growth sectors of the future. The national government is still failing to pull its weight in meeting the reduced target of investing 2.5% of GDP in R&D in 2020 (the EU target is 3%) (Rathenau, 2016; OECD, 2016a).

5.3 Use the Netherlands as a living lab

The Rli-council wishes to draw special attention to ‘the Netherlands as a living lab’ as an important soft factor in the development of new growth sectors and the structural challenges facing Schiphol Airport and the Port of Rotterdam. Dutch public authorities are already providing scope for experimentation, for example, by using the Environment and Planning Act’s regulatory framework before it enters into force, designating ‘rule-free zones’ and performing driverless vehicle tests on the motorway. Public authorities could expand the prospects to learn from small-scale pilots.





6

INITIATE A WIDER DEBATE ON URGENT POLICY ISSUES



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A 2040 Business Climate Development Strategy requires a number of actions to be carried out in the short term. The Rli-council advises the national government to initiate a debate between the business community, public authorities, NGOs and other stakeholders to create a shared vision that commands broad support. The topics below should be included in the discussions:

- How do hard and soft location factors interrelate? How can soft factors such as attractive landscapes, cultural heritage and personal development, which are crucial for an attractive business climate in 2040, be given a prominent place in government policy? Which partners and partnership models are needed for this?
 - How could the government invest in the infrastructure needed to improve the business climate? At present, a dichotomy exists between conventional infrastructure (waterways, railways and motorways), which is mostly funded by public authorities, and the data infrastructure, in which public investment often comes up against state aid barriers. Is this a helpful distinction? Should we rethink what public and private goods are?
 - How can assessment and decision-making processes be adapted so that the impacts of potential public investment and activities on soft location factors can be assessed within the wider context of the business climate? What changes need to be made to the Multi-Year Programme for Infrastructure, Spatial Planning and Transport (MIRT) to do this?
- Can public investments in soft factors be given sufficient weight in cost-benefit analyses, for example by using a broader definition of welfare? What statistical information is needed to provide better monitoring of soft business climate factors?
- To what extent is the national government's position as shareholder of both Schiphol Airport and the Port of Rotterdam compatible with the Rli-council's view that these ports are a means to develop a variety of economic activities? Should the national government, as a shareholder, embrace a wider range of objectives than its narrow economic interests? What does this imply for the role of the Ministry of Finance with respect to the ministries working towards these broader national objectives?
 - How can existing business models and activities in and around Schiphol Airport and the Port of Rotterdam adapt themselves to the transition towards a biobased and circular economy (see also Box 3)? How can you prevent governments and businesses from clinging too long to an outdated, but still profitable, business model? What measures are needed to support new initiatives?



Box 3: New opportunities

The Rli-council sees possibilities for airports and seaports to develop themselves in ways that are less damaging to the environment, contribute more to the Dutch economy and are better adapted to long-term international trends and developments. Several opportunities for each port are listed below.

The Port of Rotterdam

- The port can attract more high-end maritime and logistical activities and services if it works together with the city and the Drechtsteden municipal partnership. This will enhance the lead role of the maritime and logistical clusters.
- Digitising physical objects and processes and incorporating them into the internet of things will allow big data to be used to improve the efficiency, security and reliability of logistical chains. The digital platforms and knowledge developed for this can be used as an export product.
- The port can play a bigger role in developing markets for offshore wind farms and dismantling oil and gas platforms. The Maasvlakte II reclamation can provide room for these activities. Offshore cultivation of seaweed and algae can supply resources for both the food and energy sectors. The maritime industry can assist in these relatively new offshore activities for the Netherlands.
- 3D printers and new materials can generate new flows, but more importantly generate new manufacturing and maintenance industries for high-end individualised products (economies of scope) produced

on site. These activities can evolve into a digital production infrastructure using technologies such as metal and plastic printers.

- These flows of materials will increasingly become integrated into biobased production processes and circular processes. High-quality biorefining of semi-finished products for the chemical industry requires investments in a biomass terminal and associated infrastructure. This will be necessary to achieve integration with other activities, such as energy generation and waste processing, and to maximise 'circularity' in the cluster.
- The port can secure a strong position in circular processes, which seek to keep resources at the highest level possible within the cycle. The Rli-advisory report 'Circular Economy: From wish to practice' (Rli, 2015a) identifies different levels of circularity. The highest level is preventing natural resources from being depleted at all, followed by reusing products, maintenance and repair, remanufacturing old products, repurposing products and, at the bottom, recycling and recovering energy from materials. This can change the type and volume of goods flowing into (including new return flows) and out of Europe through the Port of Rotterdam (Rli, 2013).

Schiphol

- Given the growth in tourism (especially from Asia, but also other emerging economies), the Netherlands can profile itself more as a destination. Locating new cultural facilities near Schiphol (e.g. a must-see European history museum) will stimulate tourism even further.
- The aviation industry has developed aircraft that are smaller and more

economical than the existing stock. Because airlines can operate these aircraft relatively cheaply and because it takes fewer passengers to fill them, they will be able to offer more direct long-distance flights. This may reduce the need to use Schiphol as a hub to fly from the United States to smaller airports like Barcelona. On the other hand, it means that Schiphol can offer more direct flights to smaller airports in the United States, Africa and Asia. Even though Schiphol's hub function may decline, the total number of flights may still increase. Research is needed on how these contrasting trends will influence Schiphol's network of connections as a locational factor.

- As a living lab, Schiphol can establish many more linkages between knowledge and innovation in the areas of sustainability of airports and airlines, biokerosene, big data analyses and information platforms like the Neutral Logistics Information Platform (NLIP) and Cargonaut. The 'Schiphol innovate gate' project stimulates experimentation and innovation to advance current knowledge on passenger experiences (including transfer passengers), in the process embedding Schiphol within the wider 'learning economy' (WRR, 2013).

- How can the safety of installations that run on fossil fuels be guaranteed if no further investments are made? How can the deterioration of industrial areas be prevented when companies regularly decide against dismantling their sites, and just leave them fenced off?

- Should the Dutch ports only compete with foreign ports and not with each other? What message does it send to foreign parties when Dutch ports independently vie for international contracts? Given the current business climate, can the Netherlands still afford to do this?
- Can the Netherlands provide more international leadership by being transparent about the domains it wishes to compete in independently and those in which it seeks to cooperate within larger international partnerships? How can the strategy proposed by Minister Ploumen in her letter to the Tweede Kamer 2014b be followed up and linked to policy areas beyond the remit of Foreign Affairs? In which areas can the Netherlands do more than just seizing opportunities and avoiding threats and act to create opportunities?



In conclusion

With its recommendation to ‘relinquish mainport policy’, the Rli-council sounds a critical note in the current discussion on mainports, while at the same time acknowledging the continued importance of Schiphol Airport and the Port of Rotterdam for the Netherlands. As part of the core economic areas, they remain a crucial part of the Dutch business climate.

The Rli-council also understands that the government may be under considerable pressure to maintain the current mainport policy from various interests and organisations that stress the importance of Schiphol Airport and the Port of Rotterdam. These groups lobby the government to pursue a consistent policy, create a level playing field, stimulate and support the energy transition and promote lifelong learning. The Rli-council agrees with some of these points in its recommendations in this advisory report, but feels these activities should take place within the context of a Business Climate Development Strategy rather than a mainport policy.

The Rli-council’s recommendations to conduct research into the critical mass of volume flows for Schiphol Airport and the Port of Rotterdam and to initiate a debate on a number of urgent policy issues are made with the aim of allowing the next government to take a broader view of Schiphol Airport and the Port of Rotterdam as components of the core economic areas.



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