Chapter 6
The Hague Region: Negotiating the Common Ground in Peri-Urban Landscapes

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6.1 Introduction

This chapter deals with the case study region with the highest average urban density, the biggest area below sea level and the largest area of greenhouse horticulture of all PLUREL case studies, The Hague Region, in the Netherlands. The chapter introduces the area and then the planning system in The Netherlands and the position of the city region in peri-urban governance. Three regional strategies are examined in more depth following the analysis of the area carried out using the joint analytical framework presented in the introduction to this section of the book. These are: giving incentives to farmers for landscape management (known here due to the large amount of water in the Dutch landscape as 'green and blue services') to strengthen agriculture in the urban fringe, examples of discourse development for making green space politically more important, and the use of inner city densification to prevent urban sprawl. Two scenarios (based on the SRES scenarios presented and discussed in Chap. 1) were developed for The Hague Region in addition to a Business as Usual scenario: 'Peak Oil' and 'Fragmentation'. The scenarios were modelled using MOLAND (see Chap. 3), with and without strategies, in order to test their robustness in different situations. To conclude, recommendations are given for planning and governance in the peri-urban zone of The Hague Region and for improvement of the strategies which were assessed.

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6.2 Squeezed, Wet and Diverse

The Hague Region (with one million inhabitants) is classified as an urban polycentric region (see Chap. 2 and Loibl et al. 2008) of 451 km^2; it is part of the large continuous urban region known as Randstad Holland located in the west of The Netherlands, situated on the North Sea coast. Its main constituent cities are The Hague (474,000 inhabitants), Delft (95,000) and Zoetermeer (118,000), although the region also comprises a number of other towns and villages, some of which have expanded to become part of a continuous urban fabric with The Hague (such as Voorburg, Leidschendam and Rijswijk). Moreover, it is not an isolated city region: to the South it borders the Rotterdam region and to the north Holland-Rijnland which includes the city of Leiden.

The cities and towns in the region all have a distinct character, due to their location, history and economic activities. The Hague is the largest city of the region. It is the residence of the Dutch government, although Amsterdam is the capital city of The Netherlands. Many embassies and international institutions are located in The Hague, among which is the International Court of Justice. The city likes to present itself as the 'International City of Peace and Justice'. Delft has a technical university, which has attracted a cluster of knowledge institutes and innovative companies. Zoetermeer is a satellite city of The Hague, a new town which grew from a village of 10,000 inhabitants in 1960 to a city of 100,000 by 1990 as a result of national planning policies. Many of the inhabitants of Zoetermeer work in The Hague, although the city also has a developing sports and leisure sector. An important economic sector in the region, with a high impact on the landscape, is greenhouse horticulture. The main greenhouse areas in The Netherlands are found in The Hague Region and they rival the city itself in terms of the area under glass.

Because of the unstable, shrinkable and wet peat soils (Fig. 6.1), towns and cities in this part of The Netherlands developed on sites on higher and more stable ground, such as sand dunes (The Hague, Wassenaar, Rijswijk, Voorburg) and river banks. This led to a clear distinction between 'urban' and 'rural' until relatively recent times. However, most of the suburban expansions and the whole of the city of Zoetermeer were necessarily built on lower ground, owing to the lack of suitable land, and only possible because improved building techniques and water pumping technology allowed this. The dune reserve of Meijendel was spared from construction because of its importance in coastal defence and for drinking water extraction. Bordering Meijendel, the municipality of Wassenaar also managed to maintain a green character. It is known for its estates and expensive villas. It is one of the three 'richest' municipalities in The Netherlands.

The Hague Region has very little space for urban expansion, because it is constrained to the south by Rotterdam and the river mouth of the Rhine, to the west by the North Sea, to the east by the Green Heart peat meadow area in the midst of the ring of Randstad cities, which has a national protection status and to the north by the urban area of Leiden. The peri-urban areas in the region have become

Fig. 6.1 Peatland as it covered most of The Hague Region in the early Middle Ages

important 'green enclaves' between cities (Aalbers et al. 2009). Traditional meadow landscapes are now considered scarce and policy makers are considering planning instruments for their protection, similar to those used for nature reserves. The city of The Hague is especially 'cornered', being squeezed between the sea (west), greenhouses (south), a nature reserve (north) and urban fabric of other towns (south). For that reason, The Hague has had to expand beyond its borders. Firstly, Zoetermeer was built as noted above (but it remained a separate municipality). More recently, large urban expansion zones were developed near Nootdorp (Fig. 6.2a, b) and Leidschendam. These areas were added to the administrative territory of the municipality of The Hague. Currently, the town of Pijnacker is also growing quickly because of the housing expansions at its southern edge.

Population growth in the region is slow (1 % on average in 2006), mainly through in-migration of various types, but there are differences between municipalities. The city of The Hague has been shrinking in population since 1960 but has shown some growth again since 2000 as a result of the recent expansions to its area as noted above. It is expected that the rate of population growth in the region will continue to slow and will stabilize at a modest annual rate of increase of 0.3 % by 2030 (CBS 2009). Currently, Pijnacker-Nootdorp is the fastest growing municipality. A stagnating population will not mean a halt to building, however. Declining neighbourhoods will need to be renewed, but more importantly, average household size is diminishing, leading to a need for more houses per capita. For the Netherlands as a whole, twice as many houses are needed per capita now as 90 years ago (CBS 2009). In The Hague Region it is expected that the average household size will fall from 2.1 persons in 2010 to 2.05 by 2025 (Haaglanden 2010).

The Hague and Delft are building high-rise office and apartment buildings around their railway stations. In the case of The Hague, this development means

Fig. 6.2 (**a**, **b**) This recent urban expansion of The Hague has a range of living environments, from highly urban to single houses

the displacement of some of the existing (industrial) activities. Some of these activities are now planned to be relocated to the peri-urban Vlietzone (Fig. 6.3a, b). Vlietzone, currently a rather structureless, messy urban-fringe area, will thus experience major changes in the near future. An integrated development of housing, business, water, nature and recreation is planned here. In the Regional Structure Plan (Haaglanden 2008) it is indicated as a 'multifunctional linking zone'.

Urban fabric in the region has been gradually expanding but in a controlled way. The map of the region looks quite 'organized' as a result (see Fig. 6.4). The government has tried to provide space for recreation and nature in the urban fringe, for instance around Delft, by the means of land purchase, at the expense of continued agricultural land use (e.g. Van Rij et al. 2008). During the twentieth century, recreation areas and peri-urban parks were mainly designed and planted as

Fig. 6.3 (**a**, **b**) Vlietzone, between Rijswijk and Delft, has a mosaic of peri-urban land uses such as small fields with horses, allotment gardens and golf courses

forests. More recently, however, the recreational value of the traditional meadow landscape has been recognised and ways are being looked at to improve the recreational accessibility of privately-owned farmland. With a subsidy from the central government, scattered greenhouses are gradually being removed from the meadow landscapes. Thus, the physical and visual separation between 'grass' (meadow) and 'glass' (greenhouse) landscapes can be enhanced.

The case study in The Hague Region described in this chapter explores strategies proposed by various actors in the region to strengthen 'green' (or green-blue) land use types in the urban fringe, especially agriculture and recreation. In both forms of land use the cultural landscape is an important issue. The strategies were selected in consultation with stakeholders from the city region and the ministry of Agriculture, Nature and Food Quality. First, an analysis was made of the region, planning and

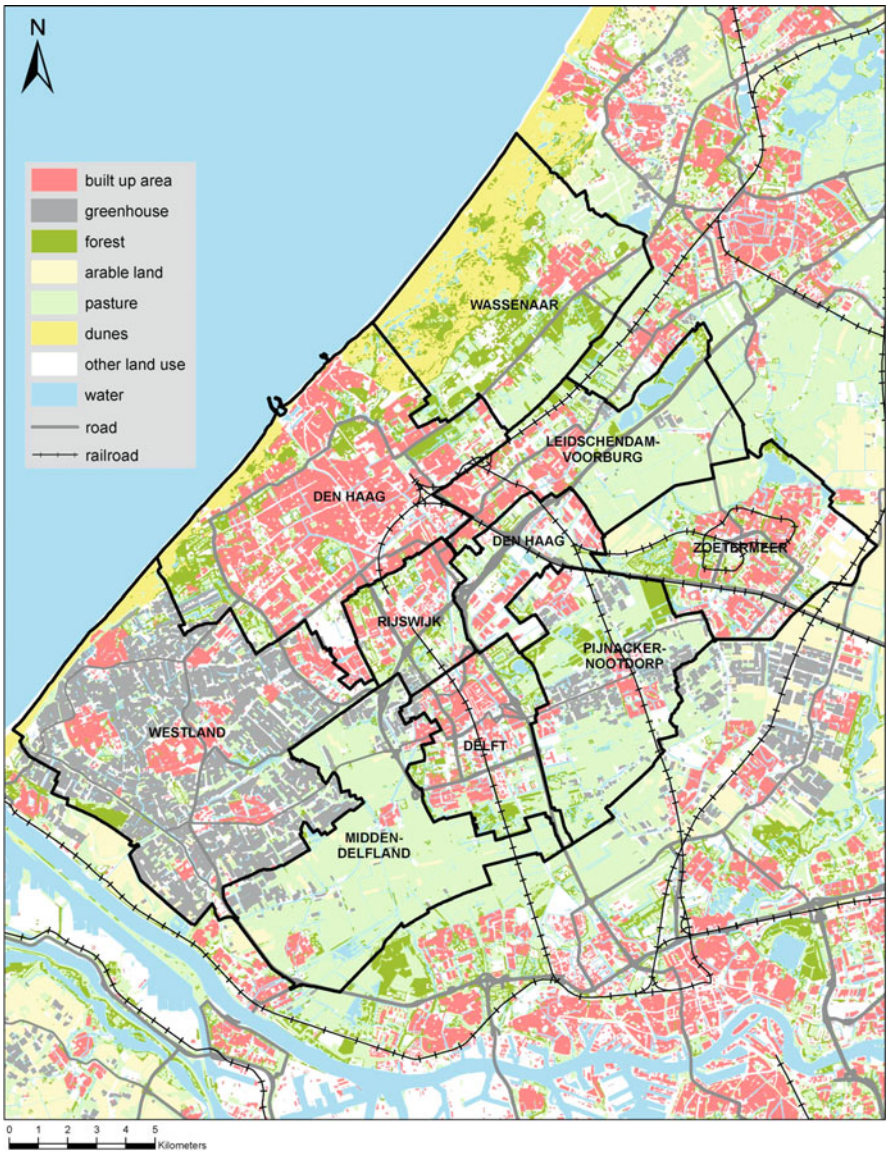

Fig. 6.4 The nine municipalities of The Hague Region (land use 2004)

governance of its peri-urban areas and the three strategies selected through action research, interviews and literature study as noted in the introduction to this section of the book and as reported in Aalbers et al. (2009). Then, the strategies were assessed using a variety of methods, including scenario development (as reported in Westerink et al. 2010a). In the following section, a short introduction will be given of the Dutch planning system and the role of the city regional authority. Then the

three selected strategies will be described as they are currently applied. After this the scenarios will be the focus: the storylines as they were developed together with stakeholders and the modelling results and land use maps based on these storylines (as reported in Mubareka and Lavalle 2010 and Westerink et al. 2010a). The lessons learnt from the scenarios and assessing the strategies lead to policy recommendations in the final section.

6.3 Spatial Planning in The Netherlands and the Role of the City Region

Responsibility for land use planning in The Netherlands is shared between municipalities, provinces and the state. Municipalities are the lowest and most important government level with respect to zoning and are responsible for issuing building permits. Zoning plans need to be updated at least every 10 years. The provinces and the state can only influence municipal zoning plans through targeted planning outlines communicated in advance of the zoning process. However, for issues that concern their level, the provinces and the state can also prepare zoning plans. In this case, the provincial or national zoning plan overrules the municipal plan. Under the current Planning Act (in effect since July 2008), city regions no longer have a formal role in planning (Aalbers et al. 2009). Their formal role as described in the Joint Arrangements Act (WGR+) still stands: organizing cooperation between municipalities with respect to a number of tasks, among which is planning. However, the current government, elected in 2010, aims to repeal this act, weakening the position of the city regions even further.

The highest proportion of the municipal budget comes from the state, based mainly on the number of inhabitants and the number of addresses. This may therefore be an incentive for municipalities to strive for population growth (see Tosisc and Gertheis 2010 and Chap. 13). Municipalities have a limited authority to raise taxes themselves, the most important being property taxes. Many municipalities are also active in the land market—selling land to property developers is an important source of income. A non-financial incentive for continued urbanisation is the employment argument, which leads to competition between municipalities to attract inward investment by companies by building business sites. In 2008 this led to a public discussion in The Netherlands, when environmental NGOs claimed that there was a surplus of business sites as a result of this competition.

At the state level, several ministries touch upon peri-urban planning issues. In the past, each ministry used to make its own sectoral plans from a perspective of, for example, housing, agriculture, traffic or economic development, but the previous national spatial plan (Nota Ruimte: VROM 2005) was a joint effort by four ministries. The Ministry of Culture had a great influence on the current discourse with respect to landscape preservation. It launched the ‘Belvedere’ programme, which promoted ‘preservation by development’ as an approach to cultural heritage and landscapes, as a reaction to rigid conservation and top-down planning.

Fig. 6.5 The boundary between the municipalities of Westland and Midden-Delfland is clearly visible in the landscape

'Preservation by development' was believed to be a more practical approach that could allow development as long as the total quality of an object or an area would be improved. The Ministry of Housing sets housing targets which are negotiated with provinces, city regions and cities. Subsidies are available for inner city renewal in the bigger cities. The Ministry of Agriculture delegated much of its responsibilities and funds for nature development, rural development and agri-environment schemes to the Provinces. The Provinces develop their own rural development plans, but have developed a joint agri-environment scheme.

The Hague Region, as regional authority, consists of nine municipalities and is part of South Holland Province. Special municipalities are Midden Delfland and Westland, formed by the merger of several smaller municipalities in 2004. The framing of these municipalities was deliberate: Westland as a 'glass' municipality and Midden-Delfland as a 'grass' municipality (see Fig. 6.5). The objective was to make two non-urban municipalities each with a distinct identity, with the goal of maintaining their character and keeping urbanisation in check.

The spatial plan of The Hague Region is called the Regional Structure Plan (RSP: Haaglanden 2008) and was prepared in consultation with the municipalities. 'Network thinking' is its motto. The green-blue network is one of the main items in the plan. Current green areas are to be physically connected to each other, both as ecological and recreational corridors. Green areas are to be made more accessible by improving recreational routes within them and from the inner city to the urban fringe. The RSP envisions the peri-urban enclaves to be developed into Regional Parks. Network thinking also applies to the transport system, especially public transport. This is to be improved and extended, combined with inner city densification and quality improvement. Quality is aimed both at residential quality of life and at commercial attractiveness. The overall goal of the RSP is to improve the competitiveness of the region.

The Hague Region as regional authority has limited powers and resources for planning (Aalbers et al. 2009). 'Concertation' (networking, negotiation, consultation, promoting cooperation, persuasion and other soft tools) is its main instrument, trying to gain support and raising funds for joint projects. Several of the peri-urban areas (or enclaves) of the region extend into the neighbouring city regions. This means that for policy development in these areas, cooperation is needed with the surrounding regions. 'Concertation platforms' are formed for joint policy development for these areas and other cross-border issues. For example, The Hague Region takes part in the Randstad South Wing administrative platform, where it consults with Rotterdam Region, South Holland Province and other parties.

Acting in concert is not only done with other governments: the region's idea of 'network governance' includes exchange of ideas with commercial private parties and NGOs. A large number of NGOs and lobby organisations are active in the region. Noteworthy among these are the area-based groups, such as the 'Friends of ...' (followed by the name of the area). These civil initiatives can be very influential for a period of time. The Farmers' Union is a must-have partner in any consultation about peri-urban issues. The three Environmental Cooperatives (associations of civilians and farmers focussing on the agri-environment) in the region also have a growing influence. Nature reserves may be managed by organisations ranging from the drinking water company to the state forest service and NGOs.

The main influence of commercial private parties in the peri-urban area is through land acquisition. Investing in land in areas that could be developed in future can be very strategic. However, other large companies and institutions are also of interest to The Hague Region as the regional authority, because of the international competitiveness of the region and the quality of life desired by and for their employees. In terms of the current agricultural land use, the dairy and the horticultural sectors are important. Diversified farms (for instance campsites at farms) and non-agricultural businesses (for instance consultancies) in former farmsteads are also increasing.

In summary, the main task of the city regional authority is organising cooperation between municipalities. With respect to planning, The Hague Region puts this into practice through developing a joint spatial strategy and by initiating and taking part in consultations with other tiers of government, the private sector and NGOs. In the following section, three strategies aimed at land use in the urban fringe that are in use in The Hague Region will be studied in more depth: green and blue services, discourse development and inner city densification.

6.4 Strategies for Governance of the Peri-Urban Area

6.4.1 Green and Blue Services to Strengthen Agriculture in the Urban Fringe

Agriculture in the urban fringe is under pressure as a result of several factors. The area of meadowland is diminishing because of urbanisation, glasshouse expansion

and the establishment of nature and recreational areas. The remaining farmers face high land prices (DLG 2009), which makes farm enlargement unaffordable. Many farmers do not have successors because their children are not interested in the farming life (Vonk Noordegraaf and Gloudemans 2004). Furthermore, peat shrinkage, as a result of mineralization and drainage is increasingly recognised as a problem by policy makers. The only way to reduce the mineralisation of peat is by increasing water levels, creating less favourable conditions for agriculture. Another 'competing claim' is the need for space for storm water storage (an increased demand as a result of the increase in built areas and sealed surfaces, combined with sea level rising and increasing peak discharge of the rivers), most of which is sought in the peri-urban areas (Delfland 2004).

For the government, in a situation with fewer or no active farmers, other ways would need to be found to manage the landscape. The maintenance of publicly managed nature and recreation areas has been found to be expensive. The recreational demand in the region surpasses the supply, in terms of parks and recreational areas (Fontein et al. 2009). The cultural landscape is therefore needed as additional recreational space. The government prefers to keep farmers in the area managing the landscape, not only because of the high costs of management by government agencies, but also because of the linkage between the cultural landscape and the dairy farming system which created it (Aalbers et al. 2009).

The strategy analysed in this section concerns local agri-environmental subsidy schemes set up to pay for green and blue services delivered by farmers. These services include measures to promote on-farm nature, to improve landscape quality, to supply storm water storage and to provide public access. Green and blue services are seen as a form of multifunctional agriculture, because food production is combined with landscape management. The strategy has two goals: to provide additional sources of income for farmers and to improve the ecological, aesthetic and recreational value of the landscape. Green and blue services can be considered as a governance strategy, because the concept opens up the normally top-down and centralised agri-environmental policy development to bottom-up initiatives and local variation (Westerink et al. 2010a). Local stakeholders, such as farmers and environmental cooperatives may design tailor-made subsidy schemes in cooperation with local, regional and national authorities and civil society groups.

The Hague Region has produced several of the first green and blue services initiatives in the Netherlands, including the Green Fund for Midden Delfland and the Farming for Nature project in the Biesland polder. These two schemes were developed in parallel: the Green Fund in 2003–2006 and Farming for Nature in 2003–2007. In addition to these schemes, which are currently operational, a scheme started in the Land van Wijk en Wouden area, which resulted in the establishment of six walking trails on farmland (around 40 km in total). More measures were envisioned, but insufficient funds were available. In 2008 a new pilot project started in this area, in cooperation with the Rijnland water board, to develop 'blue' services aimed at water quality and aquatic ecology in ditches.

Table 6.1 Varying arrangements for green and blue services in three areas

	Green fund Midden-Delfland	Farming for nature in Biesland Polder	Land van Wijk en Wouden
Area	Farms in area of 6,700 ha	97 ha	40 km of public footpaths
Number of farmers participating	76	1	Unknown
Annual expenditure payments	Approx. €225,000	Approx. €100,000	On av. approx. €40.000
Fund	9–12 M€	1.9 M€	€200.000
Duration	6-year contracts, paid from interest of fund	Contract 30 years, funding for 20 years, additional funding is sought	Unknown
Approach	Measures on farm: meadow bird protection, landscape elements, heritage elements. Measures are selected and applied for by the farmer	Farming system: self-sufficient for nutrients, adjusted water levels, and landscape elements: creating conditions for biodiversity and water quality (whole-farm)	Public footpaths. Other measures could not be funded
Main actors (apart from the farmers)	Midden Delfland Green Fund, Environmental Cooperative Vockestaert	South Holland Province, Friends of Biesland, Alterra	Area Committee, Environmental Cooperative Wijk en Wouden
Funding	The Hague, Delft, Midden Delfland	Ministry of Agriculture, South Holland Province, The Hague Region, Delft, Pijnacker-Nootdorp, Delfland water board, The Hague	South Holland, Zoetermeer, Leiden, Zoeterwoude, Leidschendam-Voorburg, Leiderdorp, Alphen ad Rijn and private donors

All these initiatives are characterised by an 'area fund' from which payments are made to farmers for their 'services'. The fund is provided with contributions from the surrounding municipalities, the province and sometimes the water board, the city region and the state. In the case of Land van Wijk en Wouden, the idea included a contribution per inhabitant from the municipalities (€0.75/head). The contributions from the governments to the funds are voluntary. The green and blue services initiatives were therefore preceded by painstaking concertation processes. Farmers, environmental cooperatives, 'friends of' groups and researchers took part in these activities. They led to different designs for measures and arrangements in the three areas (see Table 6.1). State aid procedures with the European Commission added to the preparation time.

When assessing the strategy, a distinction should be made between the general concept and the specific initiatives in the region. The selected initiatives differ with

respect to establishment, funding and the impact of the measures. In general, far-reaching measures can be expected to have a larger effect on biodiversity and landscape quality. However, such measures imply higher payments and will need longer-term contracts. The participation level of farmers is expected to be higher when the measures are less rigorous. Far-reaching measures also have a larger impact on farm management: many farmers prefer to incorporate green and blue services into their current way of farming without too many adjustments (Ruto and Garrod 2007). In Midden-Delfland and Land van Wijk en Wouden, a lack of funds limits the number of measures carried out and hence both the public effect and the effect on farm income.

To improve the value to the public of the peri-urban enclaves, far-reaching environmental measures and increased public access on farmland should be aimed at. Conflict resolution is also necessary. A balance should be found between protecting meadow birds and welcoming more people onto farmland, which might disturb the birds, especially in the nesting season. However, higher water levels and meadow birds can be a good combination with fewer conflicts. Higher water levels may be locally desirable for water management and for countering subsidence of peat and could be arranged as a 'blue service'.

The strategy is aimed at the main actors for sustaining agricultural land use: the farmers. It serves multiple goals (sustaining agriculture, promoting biodiversity) and leads to multifunctional land use (food production, biodiversity, public access). The strategy leaves, in theory, much space for locally developed and tailor-made solutions. However, the bureaucratic European context of the Common Agricultural Policy (CAP) and state aid regulations may hinder bottom-up initiatives (PLUREL 2008). It is hard to assess the extent to which goals are clear and effects are measurable. Participation by farmers in local agri-environmental schemes is voluntary and the evaluation of ecological effects is complex. In other words, the strategy has a large amount of uncertainty built into it. However, positive incentives may be more effective than (restrictive) rules when it comes to landscape management by farmers (Westerink et al. 2009).

6.4.2 Discourse Development to Raise Political Support for Green Space

The description of the formal planning system made it clear that the city regions in The Netherlands have very limited formal power with respect to land use planning. Power and financial resources are with the municipalities, the province and the state. The main task and instrument of the city region is therefore the soft method of bring people together in an informal way (in concert) (Aalbers et al. 2009), striving for cooperation between the municipalities and gaining support for joint objectives and projects. Discourse development is an important strategy of The Hague Region in these processes. Discourses are lines of thinking, perceptions, perspectives,

narratives and ideas. They are used for persuasion, for gaining support for certain policies, for lobbying and sometimes for branding. Discourses developed or adopted by The Hague Region often connect green space to other issues, in order to make green space more important in the policy arena (Westerink et al. 2010a). Linking themes is also used to obtain access to funds at a provincial or national level.

As an example, the public administration of The Hague Region forged links between green space and culture and heritage. In this way, green space is given a place in the 'regional sense of identity', especially concerning traditional agricultural landscapes or estates. Cultural history adds a valuable dimension to green space. Addressing landscape from this angle, an attempt can be made to raise interest from new target groups, in this case one which is culturally sensitive. The idea is to gain broader support both with the public and with the municipalities for preservation of and investments in green open space. In the course of the PLUREL project, the use of landscape paintings to stimulate public debate about changes in the landscape was investigated (Westerink et al. 2010b), using the historical painting of the same scene as a trigger for discussions about its current state.

The Hague Region also links green open space in a discursive manner to preferences of the expatriate community ('expats'). This community is important for The Hague Region because The Hague strives to be attractive for international institutes and companies to establish offices there and there are many embassies and other organisations with foreign staff. Linking green space to this 'international competitiveness' puts green space into the economic policy arena. According to this discourse, expats prefer to live in cities with abundant green space. Therefore the availability of green space is a factor for international organisations to come or to stay, because of the interests of their employees. In this context, green space is referred to as the 'green gold of the region' by the politicians responsible for it. Research among expats in three Dutch cities, including The Hague, confirms that both the availability and the quality of green space are important factors in expat living preferences (Veer and Luttik 2010, see also Florida 2002). Businesses also take into consideration the preferences of their employees when deciding on locations for setting up new operations (Love and Crompton 1999).

The use of spatial concepts fits into the use of discourses. In the Regional Structure plan the term 'connection' is much used, for instance with respect to green areas and the distances between them, or from the city core to the peri-urban zone. The connection concept illustrates both an attempt to improve the accessibility of green space and to combine or integrate themes (in this case green space and infrastructure). Another interesting spatial concept is that of the envisioned Regional Park Duin, Horst en Weide (Aalbers et al. 2009). This concept includes a landscape sequence, offering a diverse and interesting landscape to the urbanite visitor. The spatial concept (landscape sequence) is used to support the discourse ('the peri-urban area is a consumption landscape' Westerink et al. in press a).

To determine the significance of the effects of discourses with respect to land use change is a major challenge. In the course of PLUREL, we did not manage to do this effectively, so discourse development as a strategy could not be introduced into

Fig. 6.6 Cycling is one of the main recreational activities in the peri-urban areas of The Hague Region. Cycling below the water level in Midden Delfland, skyline of Rotterdam

the MOLAND modelling processes (see below). Although it is generally believed that discourses precede behaviour and decision making, they are rarely formulated in a measurable way. They are designed to inspire, not to monitor.

The discourse 'peri-urban areas are important as recreational space for the city dweller' includes a risk of excluding those groups of city dwellers for whom the peri-urban areas are not (yet) important from policy development. In peri-urban planning, attention should be given to the variety of recreation preferences and future changes in recreational behaviour (Fig. 6.6). The needs of immigrants from non-European cultures have, for instance, not yet been sufficiently recognized (Aalbers et al. 2009).

Discourses can be an effective instrument in communication about planning and area development. Recognizing the value and legitimacy of emotions, place attachment and identity may greatly improve communication processes. In addition, art forms can be considered as alternative communication tools to gather information about people's perception of an area and to start a discussion about the future that is not limited to the rational domain.

6.4.3 Urban Densification

Inner city densification is a strategy at the Randstad South Wing level. Randstad South Wing is an administrative concertation platform in which The Hague Region is one of the participating regions and The Hague is one of the participating cities. The parties agreed to strive for realising urbanisation 'as much as possible' within the existing urban fabric. The Hague Region adopted an 80 % objective of new

building to be within the inner city, in line with the South Wing aim, which is more than the national government's objective of 40 % inner city building for the Randstad as a whole (VROM 2008). This densification in Randstad South Wing (both commercial and housing) is to be concentrated around public transport nodes. The public transport system is to be expanded and improved at the same time.

The strategy has a number of goals. First and foremost, it aims at improving the international competitiveness of Randstad Holland (and South Wing in particular). Accessibility in Randstad South Wing is considered a major limitation on the current competitive position. Also, the quality of the landscape, as noted above, is seen as important for the attractiveness of the region. Space is very scarce and the peri-urban enclaves are treasured. Quality of life/environmental quality are acknowledged in the discussion platform as 'lagging behind' the economic development as policy themes thus far (Zuidvleugel 2006). However, quality of life *in* the city is a bottleneck for inner city densification. Inner city densification at the cost of, for instance, parks or other public spaces is a risk. Also, dense urban areas will have little opportunity for private green space—also seen as valuable by many people. The RSP acknowledges the need for private green space especially for families with children. In the Regional Structure Plan of The Hague Region, mixing functions, layered land use and high quality public space are identified as strategies to maintain quality of life in the dense areas, combined with improvement of the public transport network. Revitalisation of residential and industrial areas also needs to contribute to densification.

Building 80 % inside the city still implies that 20 % of construction will take place in peri-urban areas. The strategy for building in these areas is very different from building in the city: in the peri-urban the RSP envisions high-quality houses in a green environment: villas, housing estates and mixtures of housing and green space.

The strategy was derived from the compact city paradigm but applied to a polycentric region and worked out as a spatial network concept Westerink et al. (in press b). As a compact city strategy, its aims are geared towards sustainability in all three domains (environmental, social, and economic). However, work reported in the international literature has pointed to risks in compact city thinking, especially with respect to environmental scaling (environment at regional scale may improve, but may deteriorate locally in the city) and to social justice (can people live where they want to live?) (see for instance Schweitzer and Zhou 2010 and Burton 2001). The inner city densification strategy as described in the Regional Structure Plan acknowledges these risks in the sense that quality solutions are sought, such as mixed (including green) land use and underground parking (Fig. 6.7). However, part of the problem (the car as space consumer, noise producer and fine dust emitter), is not tackled, while car use in The Hague is much higher than in the other main Randstad cities (CBS, figures 2002–2003). The strategy assumes that urban residents will use the peri-urban area in addition to or in exchange with urban parks. Indeed, the peri-urban areas in The Hague Region are intensively used for recreation but not by all population groups. A survey in Delft showed that immigrants do not (yet) visit peri-urban areas: they depend on urban (neighbourhood) parks for leisure (Aalbers et al. 2009).

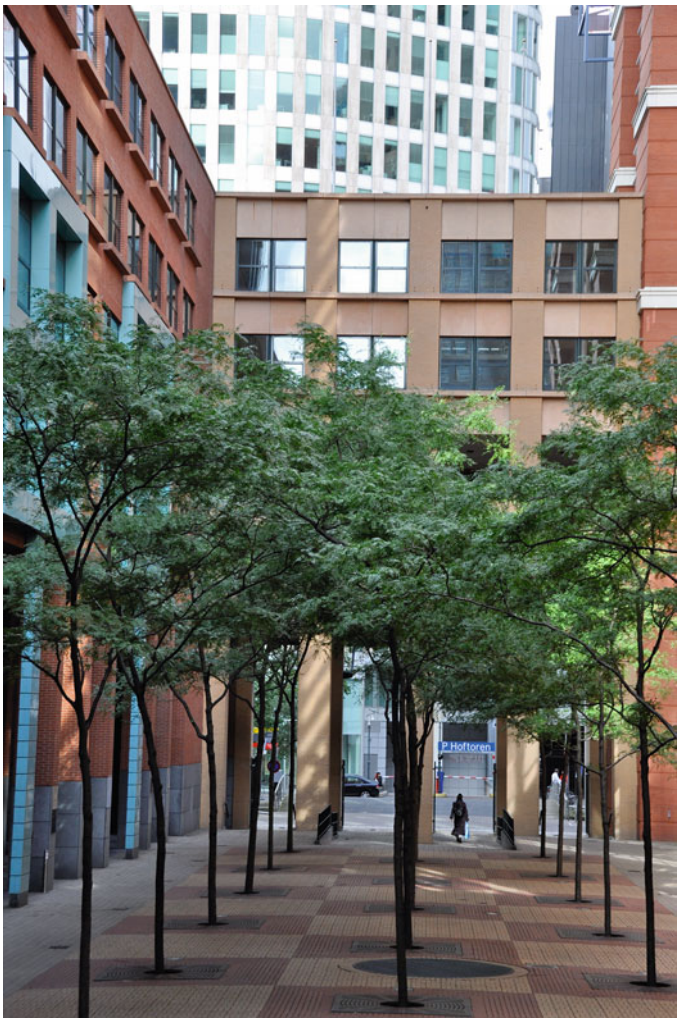

Fig. 6.7 These trees can only grow between high-rise buildings and on top of a car park because of an underground structure

The Hague Region has the highest urban density of all case study regions in PLUREL with on average 1,259 households and 2,202 inhabitants per km^2 (CBS 2006). There has to be a limit to densification. As a concept it may be too much of a quantitative approach that may sooner or later damage quality of life and the competitiveness of the region. In this way, economic and population growth as a policy objective may bite its own tail in the long term. A more qualitative approach to 'growth' that incorporates quality of life, environment and social cohesion (see Box 6.1), may be more sustainable (Westerink et al. 2010a).

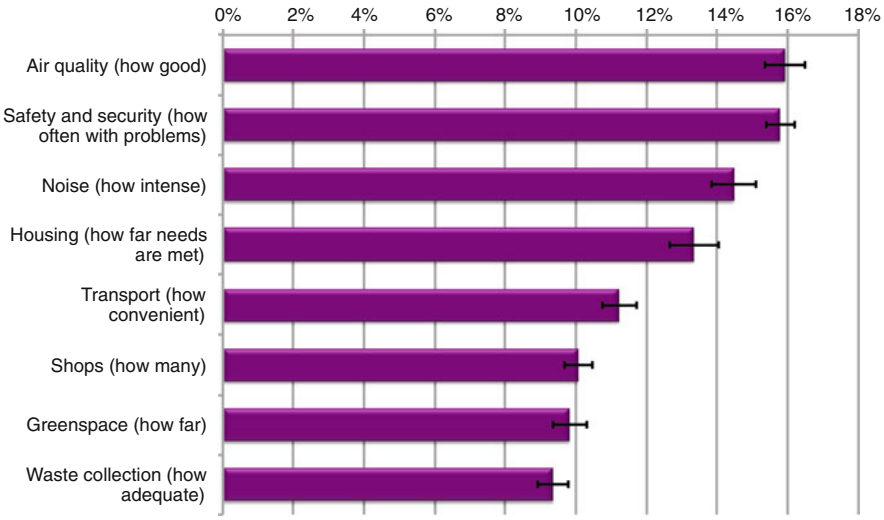

Fig. 6.8 A graph showing the ranking and percentages of importance of different indicator values for The Hague (Source: OPENspace research centre, Edinburgh College of Art)

Box 6.1 Quality of Life in The Hague Region: Indicators of Land Use Change and Its Effect

As part of the quality of life indicator work (see Chap. 3), a limited sample of people were asked about their perceptions of different factors of the environment in relation to their perceived quality of life. Although the results are not statistically valid owing to the restricted sample size, they offer some insights into the factors which people view as important (Fig. 6.8). The most important issue as an indicator of environmental quality of life is air quality, possibly because people are concerned about pollution and dust from cars, for example. This is followed by a feeling of safety and security which might change if areas become more densely populated. Noise is the next most important factor—traffic noise, aircraft and noisy neighbours may all have an impact. Housing suitability comes next followed by the convenience of transport—if land use change results in slower and less convenient transport or commuting times then people are less happy with their living environment. Availability of shops comes next with accessibility to green space coming second bottom before adequacy of waste collection. Thus, if land use change as a result of urban densification starts to affect the higher level indicators negatively people may try to move to somewhere better. More samples would have enabled a more sophisticated analysis of the variability amongst the population and their current environment—such as whether they lived in a leafy suburb or inner city. The Quality of Life Simulator enables some of these factors to be tested along with predicted land use changes.

6.5 Scenarios Exploring Possible Futures for the Hague Region

Four European-level storylines developed in PLUREL based on the SRES scenarios (see Chaps. 1, and 3, and Box 6.2 'Regional Urban Growth (RUG) modelling') were presented at a workshop to regional stakeholders (Westerink et al. 2010a). Unfortunately, not all four scenarios could be worked out for the regional level (see Bouwman et al. 2006 for a study using four similar scenarios for the same area). The stakeholders selected two storylines, B1 'Peak Oil' and B2 'Fragmentation', because a situation with weak planning as in the A scenarios was deemed unrealistic for The Netherlands. The officers of The Hague Region were particularly interested in B2, a regionalisation scenario, in order to explore the position of the regional authority. The qualitative storylines were developed further in the workshop for the specific situation of the case study area with reference to the PLUREL list of indicators. Afterwards, the Joint Research Centre interpreted the regional storylines for modelling with MOLAND (see Chap. 3). In addition to these two scenarios, a 'Business as Usual' scenario was worked out based on general projections by the Dutch central statistical bureau (CBS). All three scenarios were run with and without the strategies of inner city densification and green and blue services. Modelling the strategy of discourse development with MOLAND was not feasible because of its qualitative nature, as explained above. The storylines were mainly developed for The Hague Region with some reference to Rotterdam Region. The MOLAND modelling, however, was done for the whole of South Holland Province to comply with the RUR typology (see Chap. 2).

Box 6.2 Regional Urban Growth (RUG) Modelling for The Hague Region
All four scenarios were modelled with RUG for 2025, with less detail than MOLAND and without stakeholder consultation. The scenarios show a clear 'economy versus environment' divide and the two environment-oriented scenarios give very similar results. As there are very few rural zones in The Hague Region, the *Hyper-tech* scenario does not result in counter-urbanisation despite the technological change. High population and economic growth and few planning constraints lead to high urban growth throughout the peri-urban and urban areas. In the *Extreme water* scenario, the storm surge risk makes the coast less attractive. However, here this is partly compensated by the fact that the coast lies higher than the peri-urban areas further inland (below sea level) and the improved flood defences put in place since the 1953 flood. The *Peak oil* and *Fragmentation* scenarios show very similar results, as environmentally-aware planners forbid new construction in the large flood risk zone between the cities (centre of map). In the *Peak oil* scenario, high fuel costs and reliance on public transport further contribute to concentrating populations in city centres. In the *Fragmentation* scenario, clustered communities live closely side by side due to space constraints. There are no areas in the region where enclaves might form, so older local people either

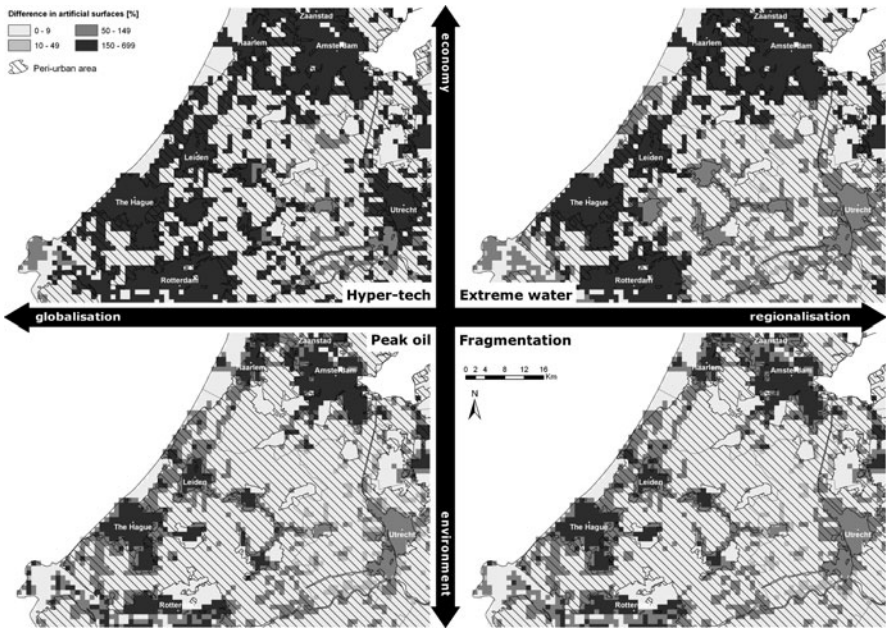

Fig. 6.9 (**a–d**) RUG modelling

form communities within the city or move to rural regions further afield (Fig. 6.9).

Source: University of Edinburgh

6.5.1 B1: Globalization, Strong Planning and Peak Oil – Regional Storyline

In the case of B1, the stakeholders expect The Hague Region to have a relatively favourable competitive position because of the international institutes in The Hague and the technology cluster in Delft. Traditionally there has been little industry in The Hague Region and the trend of globalisation and inter-governmental cooperation will lead to a growing importance of the institutes in The Hague and a strengthening of the economy related to this sector. There will also be a growing demand for the technological knowledge of the institutes in Delft and therefore they will also continue to grow. However, Rotterdam will shrink economically because of the declining harbour economy as a result of the energy crisis. The greenhouse sector in Westland and around Pijnacker will suffer from the rising transportation cost, but will have developed into a net producer of energy and a CO_2 consumer, due to advanced and efficient technology. From the current export-driven strategy, the emphasis will shift towards

closer markets, but the Greenport Westland/Oostland will not collapse. In summary, the stakeholders expect that the economy of The Hague Region will continue to grow moderately.

More than half of the population in The Hague Region will be of foreign origin. The proportion of elderly people continues to grow, up to maybe 30–40 % over 65 by 2040. Many of them will want to return to the city because of the levels of health and social services there. However, a strong movement to the cities from the peri-urban parts of The Hague Region is not expected, because of the short distances involved and the ease of public transport.

Energy and therefore transport will be expensive under this scenario. Public transport will be significantly subsidised to keep it affordable. The government will move strongly towards a sustainable energy transition. Land prices will remain high. This combination leads to restructuring of existing urban areas into more intensive and multifunctional, energy-efficient forms of land use. Urban land use functions that need a lot of space will be moved to the Rotterdam harbour, because space will become available there. In a situation of strongly cooperating government, it seems logical that the housing problem of The Hague Region will be solved by dealing with it together with Rotterdam. However, the harbour will not collapse completely. Among other changes, there will be a shift of transport from fossil fuels to biomass energy. New developments in the Rotterdam harbour will take place at the side of Maasvlakte, extending into the sea. The coastline will be broadened with extra sand deposition. This new land will not be used for housing (due to the risk of flooding), but for nature development and recreation.

The production costs of land-based agriculture will increase (land, energy, livestock feed). After a difficult period, soil-bound agriculture will recover, because B1 also offers opportunities after some time. Dairy farmers will produce energy through the fermentation of manure. The competitive disadvantage of local production will diminish. Alternative supply chains will emerge but the world market will remain influential.

In spite of the high land pressure, strong planning ensures that the green open areas, including the meadow areas remain more or less intact. Conservation and development of the green-blue network will remain an explicit policy goal. Land use will be planned 'up to the last mm^2'. The Regional Structure Plan (RSP) will be implemented, including intensification/densification and high-rise development around public transport nodes. The public transport network will improve, including its image. Densifying the city makes it urgent to take measures to maintain quality of life and public space, among others by creating green meeting places and using green roofs, walls and balconies in the densest areas. Multifunctional and multi-layered land use will be growing in importance. Building 80 % of new houses and offices in the current urban fabric (a goal in RSP) still means that 20 % will have to be built outside. Further urbanisation will, however, be small-scale, in the urban fringe next to the current built-up area, across the region. Even in the situation of an energy crisis, construction in existing urban space will be more expensive than in the fringe. It is uncertain whether the economy will be strong enough for that. High-rise apartment buildings will be constructed at the edge of

Westland, with a view over Midden-Delfland. Rising house prices lead to the necessity of subsidising housing for lower income groups. 'A house with a garden is for the rich'.

In B1 a strong government is needed for effective policy implementation, but The Hague Region as a government tier is designed to work through consultation. In B1 there will be cooperation between governments at higher tiers and it will be more top-down. It seems logical in B1 to upscale The Hague Region to the level of Randstad South Wing in order to become a more influential actor in the policy arena ('South Wing Authority').

6.5.2 *B2: Regionalisation, Strong Planning and Social Fragmentation – Regional Storyline*

According to the stakeholders, a B2 scenario would be disastrous for The Hague Region in economic terms because the regional economy depends on globalisation. The diminishing cooperation between countries and governments and the growing distrust among social groups in B2 will lead to the termination or shrinkage of international organisations and cooperation bodies. Many of the current institutes in The Hague will be closed down. The international community in The Hague will be decimated. This will have a large impact on the economy in the city. The EU will be dismantled or will at least become less important. European countries will again start to protect their own markets. The export from Westland/Oostland horticulture will collapse. Many companies will go bankrupt: half of the greenhouse area will fall out of use. At first, dairy farming will diminish, but it will recover due to a re-orientation to the regional market. Delft, however, will flourish because of the growth in demand for clean and efficient technology, as a result of the efforts of the government to achieve energy independence.

There will also be less cooperation, less concertation, less understanding, more intolerance and more differences of opinion between countries. This may lead to conflict situations and even war. In cities, criminal behaviour will increase. City centres will become unattractive for the higher social classes and for tourists. The population of the region will shrink because of the economic downturn and the limits to immigration ('our own people first'). Because of a lack of international cooperation, Randstad South Wing will face higher peak flows in the rivers, and floods will occur more often. This will limit the possibilities for land use.

The Hague Region has a strong international orientation and the Dutch trading spirit will not disappear in B2. People will try to benefit from two sides (hoping for the international market to recover or remain active, while protecting the home market), but it is questionable whether this strategy will work. The international market will not disappear completely, but exports will shrink. Also in this scenario, the Rotterdam harbour will reduce in size. The share of greenhouse horticulture that survives will aim more for the national and regional market. Land prices will not

drop dramatically, but will be lower than in B1 (Peak Oil) because of the shrinking economy and the available space in the greenhouse areas and the Rotterdam harbour. The surviving dairy farmers will aim for the national and the regional market. Some of the dairy farmers will change their farming strategy to produce meat. There will also be an increase in part-time farmers and care farmers aimed at the elderly. There will be a growing need for allotment gardens.

Tourism and recreation will remain but the emphasis will shift. People will remain interested in recreation, but international tourism will fall. The Dutch will prefer to spend their holidays in their own country because in B2 they cherish the Dutch identity. Whether recreation and tourism can develop into a strong economic sector, is hard to say. There may be a growing demand for cheaper forms of recreation, such as small-scale (exclusive) private campsites. In Midden-Delfland, horse-keeping will change the landscape. Well-off people from Delft will buy old farmhouses and convert them into private houses. These developments can lead to a 'messy' landscape. The landscape is, however, appreciated as part of the regional identity. It remains to be seen if the government will still be willing to pay for the maintenance of green space. However, the preservation of agricultural land use will be less disputed, because food production will again be important (self-sufficiency at regional or national level).

Delft will become the most economically important city in the region. From the Delft elite and what is left of the Hague elite, there will be a demand for 'gated communities' across the region, but with concentrations in Rijswijk and Vlietzone (the area between Rijswijk, Delft and Nootdorp) and along the coast of Westland. This could be new enclosed neighbourhoods, or reconstruction of former embassy buildings. The international zone of The Hague will be transformed into luxury dwellings for the elderly as well as educational and religious institutes—at least, if there will be sufficient capital for this. Degradation of this zone is also possible. The real need, in contrast, will be for cheap houses. However, government resources will be low. Because the poor will have to live in impoverished and degraded neighbourhoods, and only the well-off will be able to afford new housing or renovation, there will be greater differences in quality of life, in spite of the aim of the government for social sustainability.

Half of the greenhouse floor space will fall out of use. There will be no money, however, to dismantle them: this leads to a degraded landscape with all kinds of ad-hoc use of empty greenhouses for other purposes. Because the empty greenhouses are spread across the area, the government will try to reconstruct its land use pattern. This calls for strong planning and it is an expensive process. The reconstruction will concentrate the glass in the centre of Westland. Local initiatives will emerge, for instance for energy production with empty greenhouses and small-scale vegetable growing by civilians. Empty greenhouses will be reconstructed into energy plants. Other greenhouses will be covered with solar panels. Also, wind turbines will be erected. There will be an innovation subsidy for the reorientation of horticulture. At the Midden-Delfland side and along the coast there will be space for housing. Most likely, the development of luxury houses will be allowed in order to finance the reconstruction.

Table 6.2 Model characteristics

Resolution	100 m
No. of regions	1
Land use classes	No. of vacant states = 3, no. of functional states = 8, no. of feature states = 7
Input	Land use map 1995 and 2004, zoning map, suitability maps, transportation network
Calibration	Kappa (corr.) 0.191345

The Hague Region as an authority will achieve a central position in representing the regional interests. At a supra-regional level, there will be less cooperation between governments. However, at the local level, governance will remain important. Nevertheless, the position of The Hague Region will need constant attention, even in a world of 'Fragmentation'.

6.5.3 MOLAND Results and Comparison of Scenarios

The qualitative storylines were translated into quantitative assumptions for input in the MOLAND model (Table 6.2). One of the most important of these was population growth. For business as usual (BaU), the projections from CBS were used as noted earlier. Other trends were assumed for B1 and B2 based on the storylines. After 2015 a declining population trend is expected for South Holland Province. In B1 (Peak Oil), the population could still grow because of the relative good competitive position of The Hague Region in the storyline, but B2 (Fragmentation) would mean a substantial population shrinkage.

All three scenario's show a limited growth of the urbanized area. In BaU the expected population shrinkage prevents strong growth of the urban area; in B1 the energy crisis is expected to lead to more efficient and therefore compact development in spite of the population growth; in B2 population shrinkage and economic crisis will even lead to massive vacancy. The land use changes and the differences between the scenarios only become clear when taking a closer look at the maps and when comparing the statistical results (Fig. 6.10a–d; Table 6.3).

In BaU, residential development takes place at the expense of greenhouses, business sites and the Eastern part of Rotterdam harbour. The harbour grows further out into the sea. Delft grows a little to the Northwest, there is infill in The Hague, and some middle-sized towns expand. The model predicts densification of Wassenaar and a growth of business sites southeast of Zoetermeer and Leiden. In BaU, all vacant land is filled in towards 2040. There is little loss of pasture and arable land.

The projected land use map for the B1 Peak Oil scenario shows limited urbanisation, but slightly more than for BaU, mainly because of the growth of work locations (see Table 6.3). More than half of the vacant urban land is used by 2040. Residential development mainly takes place in the form of urban infill, but

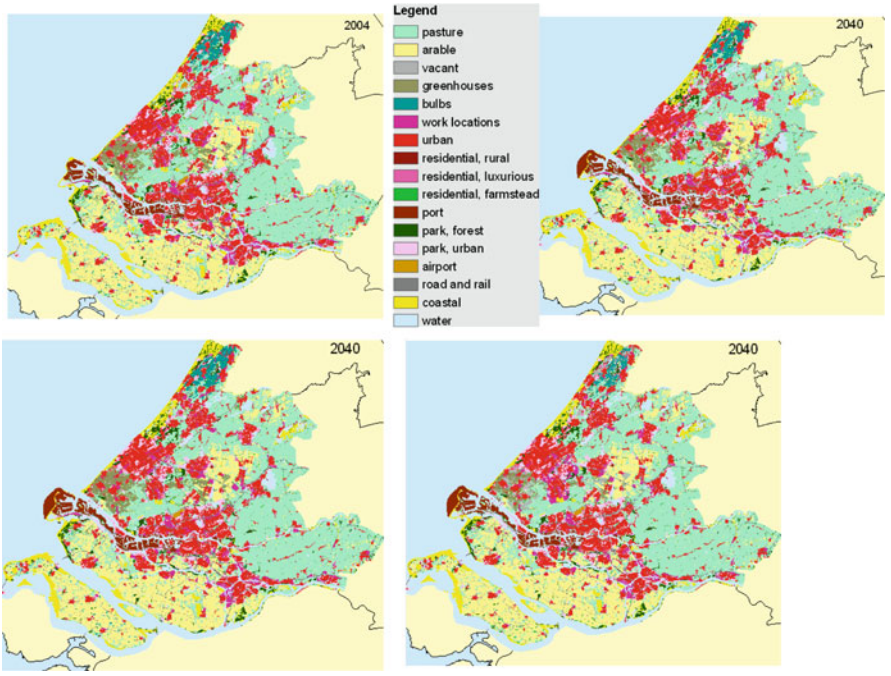

Fig. 6.10 (**a–d**) Land use projections for 2040 based on the scenarios Business as Usual (*top right*), B1 Peak Oil (*bottom left*) and B2 Fragmentation (*bottom right*) compared to the land use situation in 2004 (*top left*)

Table 6.3 The scenarios compared by their resulting land use changes (Source: JRC)

		Projected change 2004–2040					
	2004	BAU		B1 'Peak oil'		B2 'Fragmentation'	
Land use class	ha	ha	%	ha	%	ha	%
Pasture	104,167	−1,408	−1.35	−793	−0.55	−799	−0.77
Arable	60,048	−294	−0.49	−1,528	−2.45	−1,462	−2.43
Vacant	874	−872	−99.77	−513	−90.62	6,477	741.08
Greenhouses	8,950	152	1.70	154	1.70	−4,472	−49.97
Bulbs	4,028	70	1.74	68	1.74	−2,017	−50.07
Work locations	7,432	344	4.63	587	7.90	143	1.92
Urban	45,309	1,455	3.21	1,442	3.18	1,319	2.91
Residential rural	600	21	3.50	26	4.33	8	1.33
Residential luxury	1,555	48	3.09	73	4.69	43	2.77
Residential farmsteads	2,105	0	0.00	0	0.00	276	13.11
Port	5,834	566	9.70	566	9.70	566	9.70
Park forest	7,513	0	0.00	0	0.00	0	0.00
Park urban	17,237	−1	−0.01	−1	−0.01	−1	−0.01
Airport	270	0	0.00	0	0.00	0	0.00
Roads/rail	10,078	0	0.00	0	0.00	0	0.00
Nature (reeds/sand/marsh)	14,688	−75	−0.51	−75	−0.51	−75	−0.51
Water	50,087	−6	−0.01	−6	−0.01	−6	−0.01

also in work locations and greenhouses. There is also some growth in the greenhouse area, mainly through infill. The Rotterdam harbour extends further into the sea and derelict land in the harbour area is filled in. There is some housing development in the Eastern part of the harbour, near the city centre, but less than in BaU. Some work locations in the province grow because of their good accessibility by highway. The model predicts vacancy in other work locations, to be filled by luxury residences towards the end of the period. In Wassenaar, densification takes place in the upmarket neighbourhood. There is little loss of pasture and arable land: compared to BaU there is less loss of pasture and more loss of arable land.

The most striking land use changes in B2 Fragmentation occur in the greenhouse areas (the stakeholder assumption of 50 % decline in the greenhouse sector was inserted in the model). Much vacancy occurs here, which is only occasionally taken over by housing or work locations. Not only do the greenhouses suffer; also parts of the flower bulb cultivation area falls out of use. Other major contributions to vacancy are from work locations (932 ha), luxury residences (413 ha) and the port (171 ha). Vacancy occurs in some of the commercial areas in Rotterdam and The Hague. These are taken over by housing, or again by work locations. The economic crisis in B2 is illustrated by vacancy in the upmarket residential areas of Wassenaar. Some vacancy appears along the edges of the Rotterdam harbour in the city centre. Some housing appears here, but in most of the area the harbour functions return. Housing and working land use classes grow by much less than in the other scenarios. Urban housing takes place mainly in the form of urban infill, in The Hague replacing former work locations. Larger extensions of work locations are expected by the model in the vicinity of Delft, because of its economic attraction effect. Peri-urban Vlietzone will be filled up mainly with work locations. Also notable is the development of farmstead residences at the edges of the case study area and especially the South Holland islands. There is little loss of pasture and arable land: compared to BaU there is less loss of pasture and more loss of arable land. However, around Delft much pasture is converted to work locations. The low net loss of pasture is due to conversion of arable land to pasture elsewhere in the province.

After developing the different storylines, the performance of the strategies in these different ‘worlds’ was explored. The strategies ‘inner city densification’ (Strategy 1) and ‘green and blue services’ (Strategy 2) were added to the baseline scenarios for extra runs with the MOLAND model. The effect of the strategies on land use change in the three scenarios is presented in Table 6.4.

The modelling results for the strategies are sensitive to the assumptions made in the modelling process. The formulas developed for inner city densification (Strategy 1), for instance, prevent the model from re-urbanising vacant land, which in the B2 Fragmentation scenario leads to high vacancy levels in the city in addition to the massive amount of vacancy in greenhouses and flower bulb cultivation areas. Another important assumption was the improved chance of farm survival as a result of the green and blue Services strategy (Strategy 2). However, with the assumptions made (which are elaborated in Mubareka and Lavalle 2010), it is interesting to see that the strategies perform differently in the three scenarios.

Table 6.4 Comparison of baseline scenarios and two strategy alternatives on land use change in South Holland 2004–2040

		BAU 2040			B1 2040			B2 2040		
		Baseline	Strategy 1	Strategy 3	Baseline	Strategy 1	Strategy 3	Baseline	Strategy 1	Strategy 3
Land use class	2004 (ha)	Change (ha)	Change (ha)	Change (ha)	Change (ha)	Change (ha)	Change (ha)	Change (ha)	Change (ha)	Change (ha)
Pasture	104,167	−1,408	−613	−573	−793	−227	−691	−799	−499	−1,887
Arable	60,048	−294	−112	−114	−1,528	−1,111	−150	−1,462	−1,125	−398
Vacant urban	874	−872	−516	−218	−513	−752	−474	6,477	17,091	6,500
Greenhouses	8,950	152	152	12	154	14	14	−4,472	−4,472	−4,472
Bulbs	4,028	70	70	0	68	−2	−2	−2,017	−2,017	−2,017
Work locations	7,432	344	200	230	587	97	204	143	−1,284	144
Urban	45,309	1,455	322	138	1,442	1,452	565	1,319	−8,053	1,320
Resid rural	600	21	−2	2	26	14	6	8	−107	8
Resid luxury	1,555	48	15	15	73	30	20	43	−267	42
Resid farmsteads	2,105	0	0	24	0	1	24	276	249	276
Port	5,834	566	566	566	566	566	566	566	566	566
Park forest	7,513	0	0	0	0	0	0	0	0	0
Park urban	17,237	−1	−1	−1	−1	−1	−1	−1	−1	−1
Airport	270	0	0	0	0	0	0	0	0	0
Roads/rail	10,078	0	0	0	0	0	0	0	0	0
Reeds/sand/marsh	14,688	−75	−75	−75	−75	−75	−75	−75	−75	−75
Water	50,087	−6	−6	−6	−6	−6	−6	−6	−6	−6

Table 6.5 Land use change 2004–2040 for agricultural classes and reduction of loss, compared to land use change for urban classes and reduction of growth, as result of green and blue services strategy (Source: JRC)

2004–2040	BaU		B1		B2	
Land use change (ha)	Baseline	Strategy 3	Baseline	Strategy 3	Baseline	Strategy 3
Pasture	−1,408	−573	−793	−691	−799	−1,887
Arable	−294	−114	−1,528	−150	−1,462	−398
Total	−1,702	−687	−2,321	−841	−2,261	−2,285
Reduction of loss agricultural classes		60 %		64 %		−1 %
Work locations	344	230	587	204	143	144
Urban	1,455	138	1,442	565	1,319	1,320
Total	1,799	368	2,029	769	1,462	1,464
Reduction of growth urban classes		80 %		62 %		0 %

Inner city densification has varying impacts for the different scenarios, but was in general quite effective in containing urban growth, according to the modelling results:

- In BaU, inner city densification has no influence on greenhouses and flower bulb cultivation, but leads to lower growth in the urban and luxury residential class and even a decrease in the rural residential class.
- In B1, inner city densification leads to a lower loss of farmland than in the scenario without strategies. Work locations grow much less as a result of urban densification. Rural residences and luxury residences are also constrained, which leads to a slight growth of the urban class compared to a B1 baseline. There is no growth in greenhouses and flower bulb cultivation as a result of the urban densification strategy.
- In B2, inner city densification has no influence on greenhouses and flower bulb cultivation, but the strategy leads to shrinkage in work locations, urban residential and rural and luxurious residential land use classes. Implementation of urban densification in B2 results in a total of 17.091 ha vacant land in 2040, or 10,614 ha extra compared to the scenario without this strategy.

Both in BaU and in B1, green and blue Services have quite a significant effect on land use change and are fairly effective in protecting farmland from urbanisation and the growth of greenhouses and flower bulb cultivation, in spite of the difference in subsidy level (see Table 6.5). In B2 Fragmentation, the effect of green and blue services is negligible: the reduced loss of work locations is more than compensated by extra residential farmsteads.

6.6 Conclusions for Improved Strategies

Peri-urban areas represent a problem of governance and scaling (Padt and Westerink in press). They are the ‘back side’ of cities and are intersected by municipal and regional boundaries. The peri-urban enclaves of The Hague Region

are no exception to this. Some of these extend into neighbouring regions. Coherent planning in these areas therefore requires cooperation between a large number of local and regional authorities. The second section of this chapter explained how The Hague Region tries to operate in this governance context, with limited formal competences and budget (Aalbers et al. 2009). The most important government tier in planning is the municipality, which has a directly elected democratic representation. Democratic representation within the board of city regions is indirect. For guiding developments in its peri-urban landscapes, the regional authority may have insufficient power and resources and the area of jurisdiction of The Hague Region may be too small. The Hague Region is smaller in size than the rural–urban region of Rotterdam-The Hague (Loibl et al. 2010). For a more coherent and powerful directing of land use change in the rural urban region, the Province could take a more active role. The Province is the only tier of government that oversees the peri-urban areas of The Hague Region as a whole. The provincial tier, between the municipalities and the central government, has more power and resources than the city region and has direct democratic representation.

So far, planning efforts have been quite effective in preserving peri-urban landscapes and in containing the cities of the region (see e.g. Van Rij et al. 2008). The Hague Region has the highest urban density of all case study regions in PLUREL. Further densification is a policy goal to spare the peri-urban landscapes, but densification may have unwanted consequential effects, such as traffic congestion, loss of green space in the city and an urban flight of those who can afford to move to a house out of town. The combination of urban densification with improved public transport, multifunctional and intensive land use and urban renewal are among the strategies in the region to improve the quality of life in the cities. However, the availability of green space in the city is a point of concern. For the growing group of immigrants, urban parks are more important for daily leisure than the peri-urban areas. In city regional planning, attention should be given to the variation of recreational preferences and future changes in recreational behaviour.

Urban containment can contribute towards keeping options open for the future. Storm water management, local food production, renewable energy production and public and private green space should be among the issues addressed by urban planning. The urban fabric should be flexible enough for conversion and re-use in the future if necessary. Mixing functions, creating flexible spaces and buildings, establishing gardens on roofs and providing ‘quality of place’ seems to call for a shift of tasks from planners to designers. The ‘human scale’ in urban design should be aimed at, and possibilities for high density without high-rise should be explored (see e.g. Uytenhaak and Mensink 2008). Densification is typically an issue that could lead to much resistance from citizen groups. Urban renewal drastically changes the area where people have sometimes lived for decades. Citizen participation is therefore necessary to take account of these emotions and to create renewed place attachment. Recognizing the value and legitimacy of emotions, place attachment and identity may greatly improve communication processes.

In communicating about planning and area development, discourses can be powerful instruments. They are very important in the consensus-seeking

governance style common in The Netherlands. Discourses can be valuable when they are combined with or lead to other dimensions of policy arrangements, such as coalitions, legislation and financial means (see Chap. 13).

The peri-urban agricultural landscapes in The Hague Region are a clear example of public goods delivered by the private sector (in this case agriculture): they are appreciated by urban dwellers but not paid for directly by those who enjoy them. Local agri-environment schemes are arrangements trying to correct this 'market failure', by using tax funds to pay for them. Green and blue services will not solve all the problems of agriculture in the urban fringe of The Hague Region. However, the strategy can contribute more to strengthening agriculture if:

- European state aid regulations would allow payments akin to adequate levels of profit to farmers for public goods and services;
- Agri-environment payments are classified in the World Trade Organisation 'Green Box', to avoid lengthy state aid procedures and to foster local initiative;
- Farmers' groups are encouraged to develop new ideas for green and blue services;
- More budget is reserved for agri-environmental schemes, for instance through the Common Agricultural Policy (CAP);
- Green and blue services are combined with other strategies, such as land banking, zoning (which has been quite effective in keeping the land price down) and the development of commercial urban–rural relationships.

The modelling results show rather modest land use changes (with the exception of the high greenhouse vacancy in B2 that was an input rather than a modelling result) based on explorative storylines. Other modelling exercises (Kuijpers-Linde et al. 2007; VROM 2008) show a heavier urbanisation of the region based on scenarios with higher projections of demographic and economic growth than used in this research. The large differences illustrate that scenarios should be used with care, because policy implications can be significant. While the national government is still aiming for growth in Randstad Holland (VROM 2008), South Holland Province is starting to anticipate a slight population decrease in the near future, leading to modest projections for land use change (Provincie Zuid Holland 2010). Re-thinking growth seems a major challenge for governance and land use planning in the case study area for the near future.

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