The rural-urban fringe in the Netherlands: recent developments and future challenges

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Abstract

In recent decades, most rural-urban fringes in the Netherlands have seen substantial urbanisation. Urban expansions at the rural-urban fringe have formed complex hybrid landscapes consisting of residential areas, commercial zones, agricultural land, recreational and nature areas. In certain regions, urbanisation is rather compact and concentric, whereas others show dispersed and polycentric morphological patterns. Based on quantitative and qualitative spatial research, this article analyses recent urban developments and urbanisation patterns along the rural-urban fringe in the Netherlands, and identifies challenges for planning and design at national, regional and local levels.

Urban compaction policy has prevented urban sprawl in the Netherlands. However, in some regions traditionally unwanted urban development patterns can be discerned. On a national level, an important question is how increasing dispersed urbanisation may affect the economic performance of cities and the efficient use of existing infrastructure. On a regional level, there is a need for urbanisation strategies that transcend municipal boundaries. On a local level, innovative urban design/re-design strategies may help improve connections between separated functions, involve local stakeholders, and upgrade the identity of places at the fringe.

Key words

Rural-urban fringe; urban morphology; suburbanisation; spatial policy; spatial planning; regional planning; urban planning; urban design

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Introduction

The Netherlands has a distinct and internationally much acclaimed tradition of spatial planning on national, regional and municipal levels. In a context of limited space, challenges of water management and a strong demographic and economic growth, Dutch planners and policymakers have strived for compact and well-organised forms of urbanisation, since the 1950s. Nevertheless, over the past decades, urban developments at the rural-urban fringe have accelerated in response to growing welfare, global economic forces, improved transportation links and increased personal mobility. This has made it possible for people to live and work increasingly farther away from city centres, while retaining all the advantages of a central city location. Large-scale residential areas and recreational parks have been developed. Furthermore, a considerable number of commercial areas, business parks and retail centres have been constructed around cities, mostly in locations near motorways.

In general, in the Netherlands, as in many other countries (see Bryant et al. 1982; Audirac 1999; Furuseth and Lapping 2006; Gallent et al. 2006), the rural-urban fringe is characterised by a large degree of spatial and functional heterogeneity. At the rural-urban fringe, new urban expansions emerge adjacent to established areas, large-scale developments take place near small-scale locations, and urban functions are developed next to rural functions. Former agricultural and nature areas around villages and cities have slowly transformed into a complex and hybrid landscape with a combination of rural and urban functions. Compared to other countries, most of the urban developments in the Netherlands take place close to city edges due to urban compaction policies. Therefore, here, we define the rural-urban fringe as a rather narrow area (with a maximum width of approximately 2 kilometres) between the city and the countryside. This area is like a shell around the existing urban area and follows its irregular contours. In other countries, such as the United States and Canada, definitions of the rural-urban fringe in metropolitan areas often describe much larger areas, in some cases up to 50 kilometres.

Rural-urban fringes in the Netherlands still have a predominantly green character (MNP 2007; Vreke et al. 2007; Piek and De Niet 2010). However, various land-use functions compete over the scarce amount of space available in this area. Nature and agricultural areas have lost space to benefit the urban functions of housing, employment and recreation. It is expected that, also in the future, pressure on the rural-urban fringe will remain strong (Ritsema van Eck et al. 2009; Hamers and Piek 2012). Moreover, the recent liberalisation and decentralisation of Dutch spatial policy is expected to accelerate the shift towards the rural-urban fringe. This process is likely to have different results in different regions, since more responsibility concerning spatial planning is given to regional and local authorities (PBL 2011).

Research questions

This article addresses five main questions: What is the scale of recent urban developments at the rural-urban fringe in the Netherlands? What types of urban developments can be distinguished? What are the morphological structures of new urban developments on a regional scale? How do urban developments relate to the policy ambitions of keeping urban areas compact? And finally, what are future challenges for policymakers, urban planners and designers concerning urban developments at the rural-urban fringe?

First, a short overview is given of the history of relevant Dutch spatial policy, including its main objectives of urban compaction and more liberal spatial planning. The following section introduces seven significant types of urban developments at the rural-urban fringe and analyses three regions showing different patterns of urbanisation. Finally, the most important findings are summarised and evaluated in light of relevant policy objectives – not to evaluate the planning policy in the strictest sense, but to identify future challenges for policymakers, urban planners and designers, on local, regional and national scales.

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Taming urbanisation: spatial policy in the netherlands

In the Netherlands, national spatial policy has had great influence on urban developments. To get a better understanding of urban – and suburban – spatial morphology, it is important to have a look at the history of national spatial policy and leading concepts of spatial planning. For over sixty years, Dutch planners and policymakers have strived for more compact forms of urbanisation. The most important objectives of keeping the existing cities compact and avoiding extensive and uncontrolled urban and suburban sprawl were those of protecting nature and recreational areas, limiting the further increase in car use (reducing traffic congestion by reducing commuting distances), decreasing the environmental impact of mobility (less car use, more public transport and bicycle use), and strengthening urban functions in cities (varying from local shops to museums) (e.g. see Bartelds and De Roo 1995; Faludi and Van der Valk 1994; Nabielek et al. 2012). Different strategies to achieve compact urban development have played a prominent role in various Dutch national spatial policy documents. The following passages briefly describe the most important concepts and strategies.

Buffer zones

Already in the years following the Second World War, planners and policymakers feared that cities would grow towards each other, leaving little green space in-between. Therefore, protected buffer zones were introduced in the First National Policy Document on Spatial Planning (1960). These buffer zones restricted urban development in these zones. The first two buffer zones were located between Amsterdam and Haarlem (Spaarnwoude) and between Rotterdam and Delft (Midden-Delfland). Over the following 50 years, the strategy of 'green' restriction zones was extended and further elaborated.

Clustered dispersal

Moreover, the Second and Third National Policy Document on Spatial Planning (Ministry of VROM 1966 and 1978) introduced the concept of 'clustered dispersal' and 'growth centres'. This concept was guided by the idea to limit new urban expansion at the urban fringe by creating new towns that were located at a distance of 10 to 30 kilometres from the bigger cities. Some of these settlements were completely new (e.g. Almere, northeast of Amsterdam) while others were linked to existing small towns or villages (e.g. Zoetermeer, east of The Hague).

Compact city

In the beginning of the 1980s, the concept of 'clustered dispersal' became more and more criticised, as the new towns were dominated by a residential character and showed a lack of urban qualities, such as population density, cultural diversity and mixed functions. Furthermore, big cities such as Amsterdam and Rotterdam were faced with population decline and growing socioeconomic problems. The response to this was a re-orientation on existing big cities that was framed by the concept of the 'compact city'. In this concept, the focus shifted from urban expansion to revitalising and densifying existing urban areas. The aim was to curb suburbanisation and limit new urban development at the urban fringe. The Fourth National Policy Document on Spatial Planning (Ministry of VROM 1988) was based on the concept of the 'compact city'.

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This policy document of 1988, however, did not stop suburbanisation. In the ensuing period, large-scale suburban neighbourhoods (in Dutch called Vinex locations) were planned according to a supplement to the Fourth National Policy Document on Spatial Planning (Ministry of VROM 1991). These residential neighbourhoods were planned in a top-down manner in relatively high densities and good access to public transport. Nevertheless, the sheer scale of developments led to massive urbanisation in some parts of the rural-urban fringe, especially in the Randstad. As a consequence, the population of inner city areas continued to decline (Nabielek 2011). Moreover, the economy was growing strongly and municipalities were developing new commercial zones at the fringes of their cities. However, due to a very restrictive policy concerning retail developments, large out-of-town shopping malls were avoided.

In the subsequent National Policy Document on Spatial Planning (the 'Nota Ruimte', Ministry of VROM 2004), the focus shifted towards urban networks and urban developments on a regional scale. This document set specific goals for so-called concentration areas around greater urban conurbations and 'urban densification' in existing urban areas. Furthermore, valuable green areas were protected by national buffer zones, a national ecological network (EHS) and national parks. However, this document also left more locations for local authorities and the private sector to develop residential and commercial areas.

Liberalisation and decentralisation

The most recent National Policy Document on Spatial Planning SVIR (Ministry of Infrastructure and the Environment 2012) strongly focuses on economic growth and large-scale infrastructural investments. Spatial planning is decentralised to regional and local authorities, and national planning strategies, such as the national buffer zones, urban concentration and densification, have been abolished. The main aims of the liberalisation and decentralisation of planning are to strengthen the urban economy by stimulating so-called agglomeration economies (achieved in larger urban areas) and providing attractive places to live and work, promoting the efficient use of existing infrastructure (e.g. by allowing new urban development near infrastructural nodes), facilitating traffic flows where necessary (by building new roads and new railway connections), and enabling people (both entrepreneurs and residents) to actively participate in urban development. It can be expected that the liberalisation and decentralisation in the spatial policy will accelerate urban development at the rural-urban fringe and possibly beyond, depending on the policy decisions of regional and local planning authorities.

Spatial development at the rural-urban fringe in the recent past

The paragraphs above described drivers of urbanisation within the context of Dutch spatial policy. The following section provides an insight into quantitative and qualitative aspects of the developments at the rural-urban fringe. We used two approaches to the urban fringe: a delineated definition to facilitate calculations based on GIS analyses, and a less rigid approach to facilitate qualitative analyses of urbanisation patterns in the region surrounding the city. The qualitative analysis describes seven types of urban developments in close detail. Before turning to the morphological particularities, however, first the results are presented of the quantitative analysis that outlines important land-use changes at the rural-urban fringe in the Netherlands.

Quantitative analysis

In the quantitative analysis, a distinction was made between urban area, rural-urban fringe and countryside, using the definition by Hamers et al. (2009). This definition assumes that the size of the urban fringe depends on the size of the urban area: the larger the existing urban area, the wider the urban fringe. In this quantitative approach, the widest urban fringe in the Netherlands (around the urban area of Amsterdam-Zaandam) is two kilometres wide; the narrowest urban fringe is only a few hundred metres wide. Lucas and Van Oort (1993) use a relatively traditional concentric shell model, while Hamers et al. (2009) also explicitly take the urbanisation near motorway slip roads into account. Finally, the dynamics of the urban fringe are important. Because of urban expansion, the urban fringe has continued to shift outwards, over the years. During the 1996-2003 measurement period, the urban fringe made up 14% of the land area of the Netherlands, compared with 9% in urban area and 77% in countryside. As an example, Figure 1 shows the size of rural-urban fringes in the Rotterdam-The Hague region.

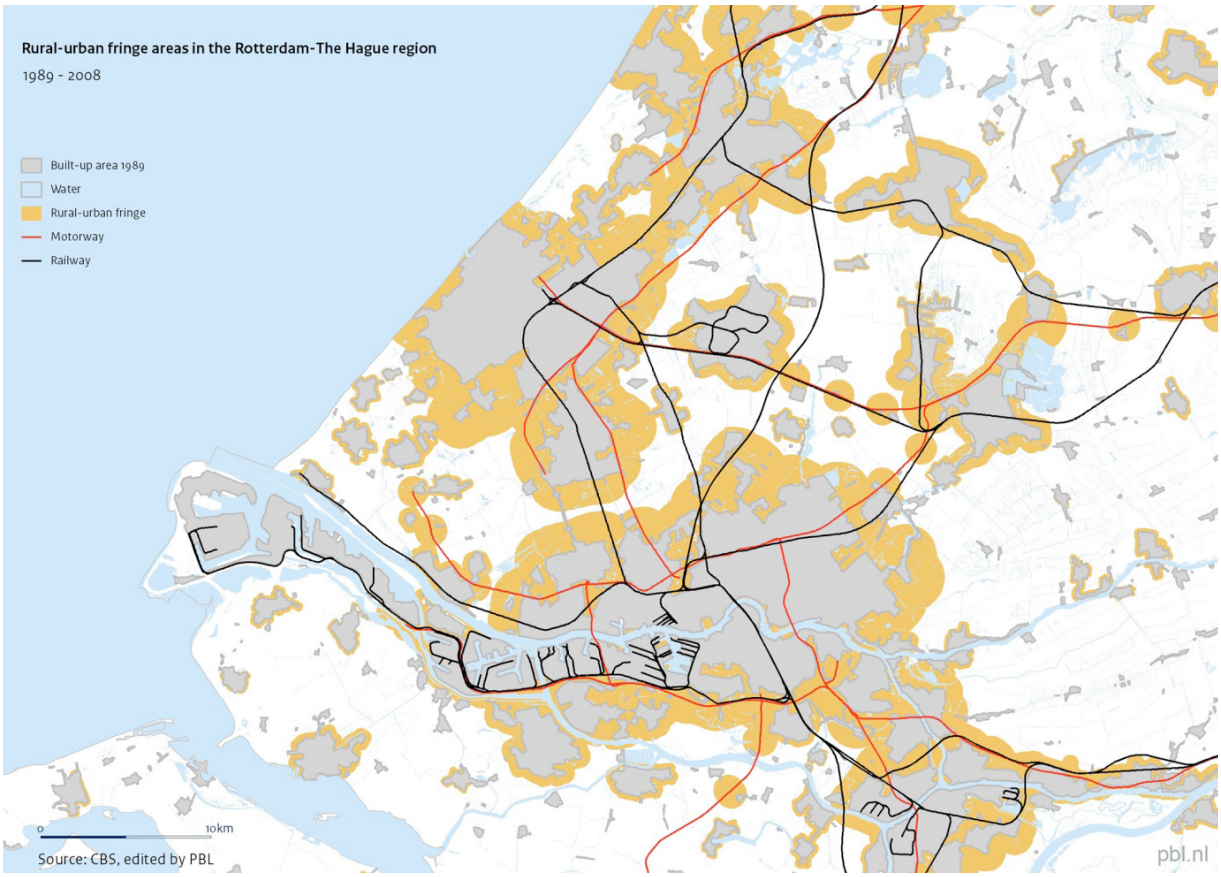

Figure 1
Rural-urban fringe areas in the Rotterdam-The Hague region, according to the definition by Hamers et al. (2009)

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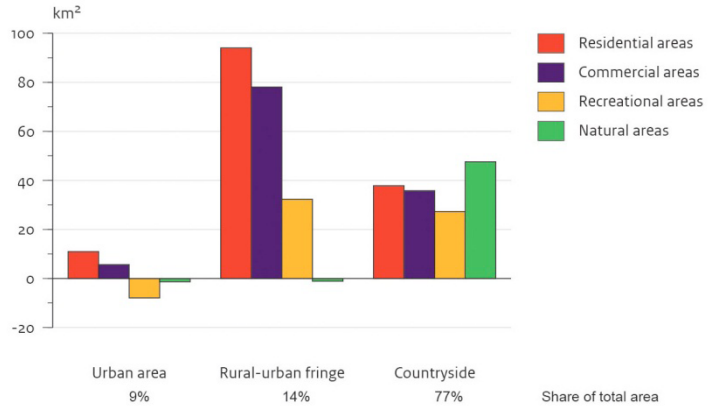

Figure 2
Land-use change in the Netherlands, 1996-2003

A GIS analysis of land-use statistics by Statistics Netherlands (Bodemstatistiek, CBS) was used to compare developments in housing, commerce, recreation and nature, for the three areas mentioned above, over the 1996-2003 period. This comparison showed that the overall majority of developments in housing, commerce and recreation took place in the rural-urban fringe area (see Figure 2). For housing, developments per square kilometre were over 5 times greater than within the urban area, and nearly 14 times greater than in the countryside. Commercial developments led to an eightfold expansion in the rural-urban fringe area compared with the urban area, and were 12 times larger than in the countryside. The area of recreation also increased the most within the rural-urban fringe; per square kilometre with nearly 6.5 times that of recreational areas in the countryside. In the urban area, recreational areas actually decreased. The increase in land use for housing, employment and recreation in the rural-urban fringe occurred at the expense of areas available for nature and especially agriculture (not included in the figure). In itself, development of the varying areas provides no information about numbers of new buildings, densities or building heights. It does, however, clearly show the relatively fast and large-scale urbanisation of the rural-urban fringe. The qualitative analysis provides an elaboration of the different types of urbanisation as is taking place in fringe areas in the Netherlands.

Qualitative analysis: seven types of urban developments at the rural-urban fringe

Figures alone offer an insufficient basis on which to base urbanisation policy for the rural-urban fringe. For this purpose, qualitative insight into the spatial developments is also required. Which land-use functions seek the urban fringe, and which spatial patterns are created as a result? Below, seven characteristic types of urban developments at the rural-urban fringe are presented in detail (see Figure 3): large-scale residential areas (Vinex locations), small-scale residential areas, commercial areas, business parks, retail centres, recreational areas and in-between areas. These development types were selected on the basis of field research and literature studies. The qualitative analysis included urban developments within a larger area than the delineated zone used in the quantitative analysis discussed above.

Large-scale residential areas

Housing is one of the most dominant urban functions at the rural-urban fringe. The residential areas built in recent years primarily consist of large-scale suburban neighbourhoods, planned as part of the supplement to the Fourth Policy Document on Spatial Planning (VROM 1991). Some of these neighbourhoods are intended to house more than 30,000 inhabitants. These neighbourhoods either form a new 'edge' of existing concentric cities, or have such an independent position within the urban network that they serve as new centres of a polycentric urban region (Boeijenga and Mensink 2008; Lörzing et al. 2006). A concentration of

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large-scale residential areas can be found in and around the four largest cities in the Randstad: Amsterdam, Utrecht, The Hague and Rotterdam. Examples of such large-scale residential areas are Ypenburg (The Hague), Carnisselande (Rotterdam), Leidsche Rijn (Utrecht) and Almere Buiten (Almere). Although, generally speaking, there is a wide variety of housing types and styles, these so-called Vinex locations are criticised for their monofunctionality and inflexibility with regard to the future urban transformation task.

Small-scale residential areas

Small-scale residential developments lay scattered along the urban fringe, mostly in the vicinity of small villages and cities. They are predominantly found in more rural areas, such as the region around the city of Groningen. These kinds of residential areas commonly are small neighbourhoods with detached houses. There are also more 'exclusive' residential developments, residential neighbourhoods designed for high-income target groups. These neighbourhoods are characterised by having clear boundaries with surrounding areas (Nabielek 2009) and by distinctive (themed) architecture (Kronberger 2011). In some cases, dwellings are combined with recreational functions (e.g. golf course, harbour).

Commercial areas

In addition to the increase in residential developments, there also has been a strong growth in commercial areas. Between 2000 and 2006, more than one third (about 60 km²) of new developed urban areas was dedicated to commercial and industrial purposes (Ritsema van Eck et al. 2009). Many commercial estates have been developed in the immediate vicinity of motorway junctions and slip roads. They are often located in the left-over areas between motorways and housing areas. The extent and character of such developments have led to severe criticism. On a regional scale, there are complaints about open spaces being 'filled in' (mostly along infrastructure) and about them blurring the contrast between city and countryside. On a local scale, business estates are characterised by a very functional design and a lack of basic urban or architectural qualities (Van der Gaag 2004). Furthermore, business estates without public transport facilities have a negative impact on the environment as they increase traffic and therefore also pollution and carbon emissions. Another problem is the growing number of decaying business estates with vacant plots and empty buildings

Business parks

In recent years, there has been a strong increase in business parks at the rural-urban fringe in the Netherlands. Head offices of national and international companies in the past were mostly located in city centres, but today they are increasingly found along the fringe of big and medium-sized cities and along motorways (Hamers and Nabielek 2006). Compared to commercial areas, the total surface area of these business parks is relatively small. However, they usually have eye-catching structures with high-rise buildings that are visible from far away. Furthermore, most business parks are primarily designed to be accessed by car and, therefore, increase traffic congestion (PBL 2012). Increased car use also has a negative impact on the environment in general and on areas adjacent to those business parks in particular (noise, pollution). Moreover, the construction of new (peripheral) business parks has contributed to a record number of office vacancies in the Netherlands. In 2013, more that 7 million m2 of office space stood vacant, which is 16% of the total office space in the Netherlands (PBL and ASRE 2013).

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Large-scale residential areas (Vinex locations)

Small-scale residential ares

Commercial areas

Business parks

Retail centres

Recreational areas

In-between areas

Figure 3

Seven types of urban developments at the rural-urban fringe.

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Retail centres

Despite the policy restricting retail functions, there has been a considerably growth in retail functions in the rural-urban fringe, in recent times. As mentioned above, restrictive policy on national level has prevented the development of large out-of-town shopping areas. Compared to other European countries, where huge shopping malls can be found on urban peripheries, this is a remarkable achievement of Dutch urban planning policy. However, there has been a significant increase in the number of large furniture and building supply outlets and garden centres at the rural-urban fringe, and especially in the vicinity of motorways (Hamers and Nabielek 2006; Evers and Hamers 2010). In general, such retail areas have a very functional layout. In most cases, public space is poorly designed and dominated by parking areas. Similar to industrial and business parks, they cause environmental pressure by contributing to an increase in traffic.

Recreational areas

As stated above, the land area used for residential and commercial functions at the rural-urban fringe has increased the most. In addition, recreational areas have also been increasing. They may have either a 'red/urban' or a 'green/rural' character. There is a difference between indoor recreational functions (buildings or structures) and outdoor recreational functions. Examples of the first are indoor skiing facilities, thermal baths and multiplex cinemas, whereas the second group includes sports grounds, allotment gardens, natural areas and parks. Indoor facilities are mostly located in the vicinity of motorways and have large parking areas to facilitate the sometimes high concentration of visitors. In the category of outdoor facilities, the growing number of golf courses is particularly striking. Between 1998 and 2006, the total area of golf courses increased from 1,300 to 7,300 hectare (Schuit et al. 2008). The footprint of indoor recreational facilities is much smaller than outdoor recreational functions. However, large and 'stony' buildings and complexes, such as large indoor playgrounds built in open areas can negatively affect the original landscape around the city.

In-between areas

In-between areas are characterised by administrative (municipal borders) and spatial fragmentation. In many cases, large-scale infrastructure cuts through these areas, and new, established, small and large functions lay randomly distributed within them. These fragmented areas can often be found along the urban fringe. They are also characterised by coexisting, different functions that have little in common (Frijters et al. 2004; Hamers and Rutte 2008). These areas have an organic, unplanned layout and public-space quality is mostly poor. In-between areas are, therefore, are often perceived as 'untidy'. On the other hand, these areas offer opportunities for local activities for which there is currently little space in inner cities; for example, ateliers, allotment gardens and sports grounds. In recent years, however, many of these areas have been transformed, among other things, into business parks and other types of commercial areas.

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Regional comparison

This section presents an analysis of the morphological patterns of recent urban developments on the rural-urban fringes of three Dutch regions: around Amsterdam, Rotterdam-The Hague and Groningen city. These three regions were selected because they contain different types of urban structures. The Amsterdam region is an example of an urban region in which smaller towns are clustered around a dominant city. The Rotterdam-The Hague region has a polycentric structure, containing two big cities of more or less the same size. Finally, the Groningen region is an example of a monocentric medium-sized city in a rural region. This regional scale provides an impression of the scale, location and spatial patterns of urbanisation at rural-urban fringes. Figures 4 to 6 indicate where urban expansions are compact and where they show a dispersed structure.

Amsterdam region

The city of Amsterdam is a typical example of a compact European city. Together with the surrounding smaller cities, however, it forms a polycentric region in which Amsterdam clearly takes a central and dominant position. The regional map (Figure 4) shows that there has been little urban expansion on the fringe of the city, over the past 20 years.

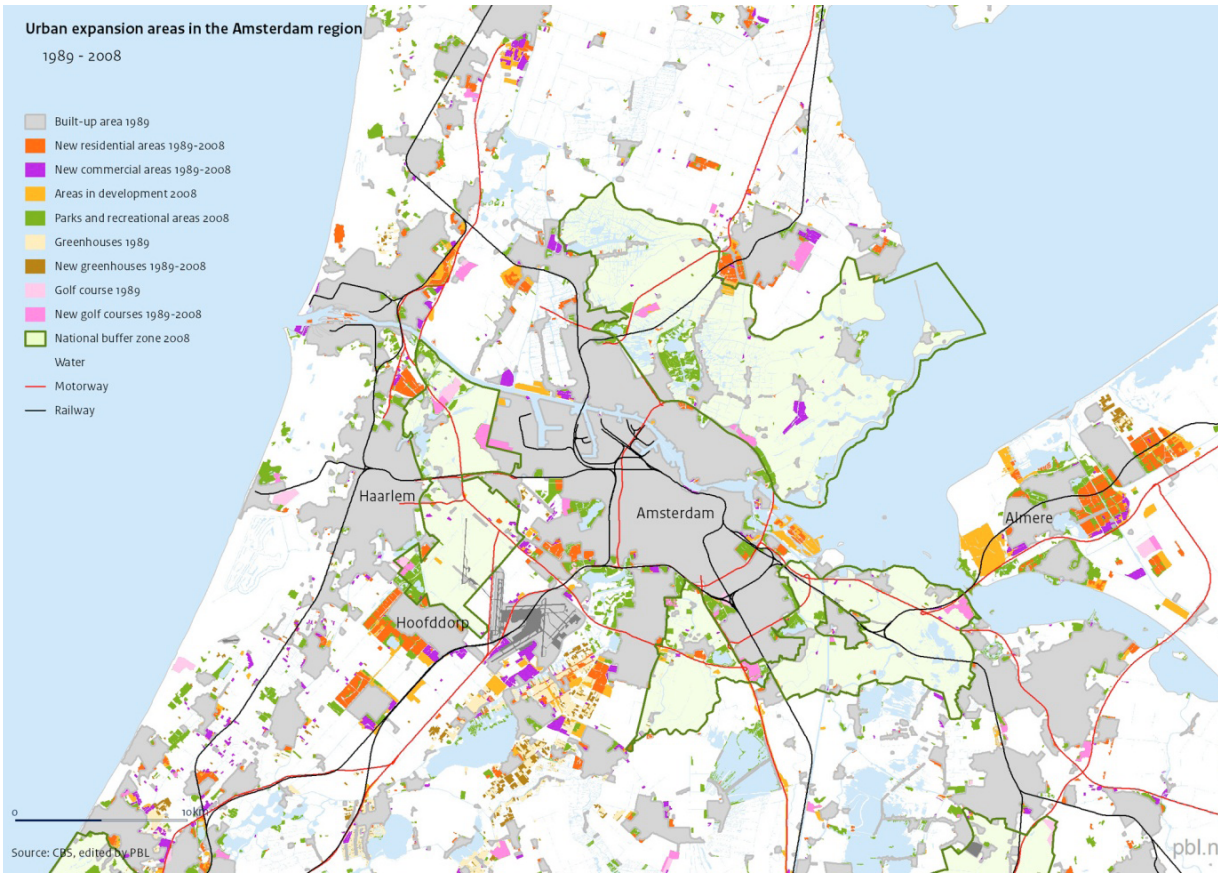

Figure 4
Urban expansion areas, 1989-2008, in the Amsterdam region

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The map shows that Amsterdam is surrounded by green buffer zones that have successfully protected these areas from suburbanisation. Furthermore, in the south of Amsterdam, the airport and the related noise contour have limited possibilities for residential expansion. Surrounding the airport, however, are the strong dynamics of new business locations.

Looking at the urban developments in the Amsterdam region, it can be argued that these are in line with spatial policy ambitions. The city has managed to keep its compact character and the green buffer zones have protected it from fusing with neighbouring cities. However, smaller cities, such as Haarlem, Hoofddorp and Almere, show much larger suburban developments. Because the city of Amsterdam could not expand along its edges, these expansions have shifted towards locations further away from the city. In the south-west of the Amsterdam region, a ring of continuous urbanisation can be seen to emerge between the smaller cities. Moreover, locations at a greater distance from Amsterdam, such as large-scale expansion areas around the new town of Almere (more than 30 kilometres away from Amsterdam), have put serious pressure on the (national and regional) road system. A spatial mismatch between residential locations (e.g. in Almere) and employment locations (primarily in Amsterdam) has increased the number of commuters and has increased the need for large-scale infrastructural investments, both in the railway and motorway systems.

Rotterdam-The Hague region

The Rotterdam-The Hague region can be described as a polycentric urban region with two big cities. With 600,000 inhabitants, Rotterdam is slightly bigger than The Hague (500,000 inhabitants). Smaller cities in this region are Delft, Zoetermeer, Gouda and Dordrecht. Furthermore, the region is characterised by large areas of greenhouses for the production of vegetables and flowers.

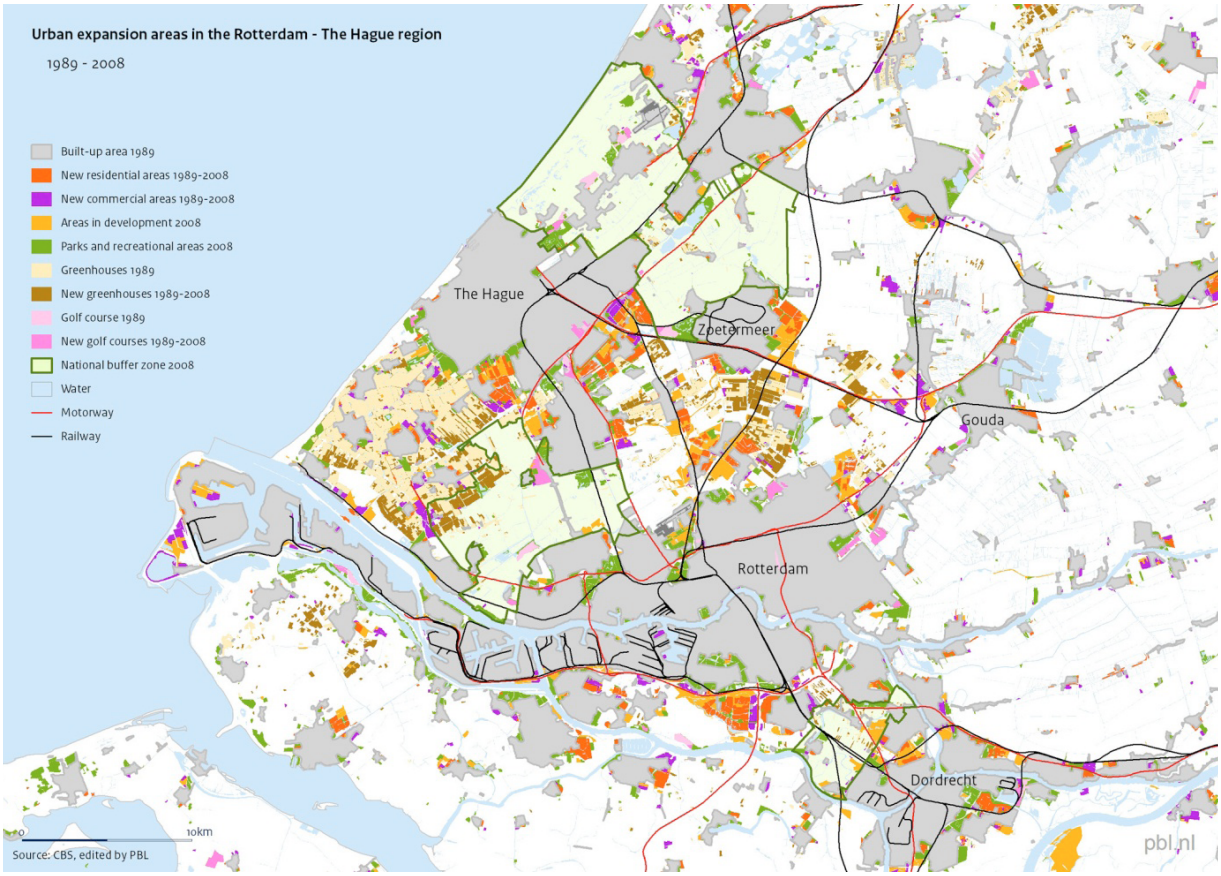

Figure 5
Urban expansion areas, 1989–2008, in the Rotterdam-The Hague region

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The map of urban developments in this region (see Figure 5) shows there has been almost no urbanisation between the cities of Rotterdam and Delft. In this area, the open landscape has been protected by the national buffer zone of Midden-Delfland that was established in 1960. The area between Rotterdam, Zoetermeer and The Hague, on the contrary, shows quite widespread urban developments. These developments are a combination of residential and commercial functions (mostly greenhouses). In these areas, a new regional railway line has been established, connecting Rotterdam to The Hague. New residential neighbourhoods were constructed along this line. This has led to a fragmented morphology: a scattered, widespread urbanisation pattern that is quite unusual for the Netherlands. Furthermore, there have also been a number of new large-scale residential developments in the Rotterdam-The Hague region. These areas are located on the urban fringes of the cities. In Rotterdam and The Hague, large residential Vinex locations were built on the 'other' side of the motorway. In these cases, the motorway forms a strong spatial barrier within the urban structure.

Groningen region

The Groningen urban region has a monocentric structure. Urban expansions in the period between 1989 and 2008 (see Figure 6) were relatively modest (in comparison with the Amsterdam and Rotterdam-The Hague regions) and they are mainly concentrated around the city of Groningen and some surrounding small towns. The majority of peripheral developments consist of new residential neighbourhoods situated concentrically around the historic towns, adjacent to established urban areas. However, the small town of Assen seems to have faced a relatively strong growth in the recent past. In comparison to the size of the existing town, the new development areas on the western and northern side of Assen are relatively large. On the western side, on the other side of the A28 motorway, there is a new residential area (Kloosterveen) and a large golf course. To the east of Assen, the National Landscape Drentsche Aa has prevented urban expansion.

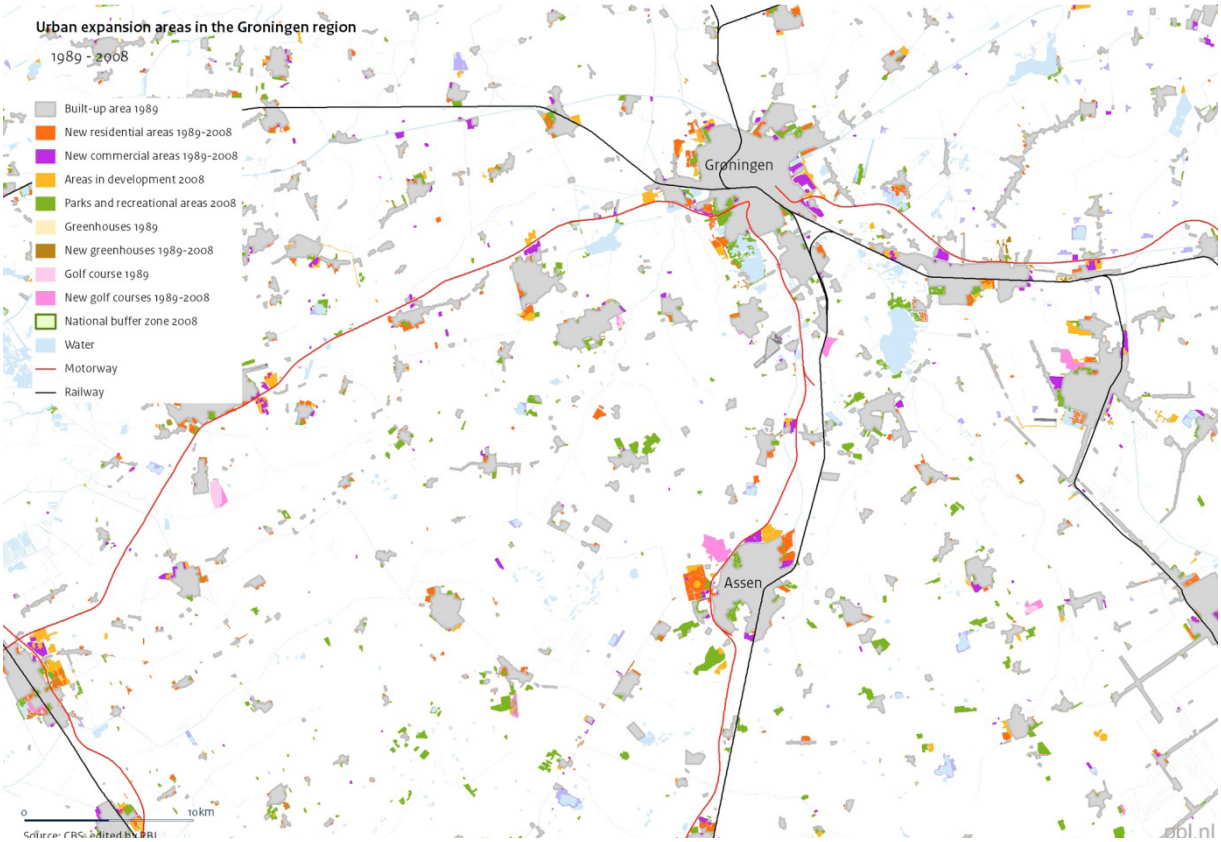

Figure 6
Urban expansion areas, 1989-2008, in the Groningen region

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Main findings and evaluation

The maps and figures in this article show the strong growth in urban functions at the rural-urban fringe in the Netherlands. Based on the quantitative and the qualitative analysis, the developments in the fringe areas can be summarised and evaluated in the light of the objectives of the traditional urban compaction policy and the more recent liberalisation and decentralisation of spatial planning in the Netherlands.

The quantitative analysis based on land-use statistics shows that the overall majority of developments in housing, commerce and recreation have taken place at the rural-urban fringe. For housing, for instance, development per square kilometre in the rural-urban fringe area was over 5 times greater than that within the urban area. The area of commercial developments at the rural-urban fringe expanded eightfold compared with those within the urban area. The urbanisation of the rural-urban fringe took place at the expense of space for nature and especially agriculture.

In addition to the quantitative analysis, the maps show the scale and morphological patterns of urban developments along the edges of cities and villages. The maps of the three separate regions show significant regional differences. In more rural areas, such as the region around the city of Groningen, the new urbanisation shows a very compact structure. New urban developments are located adjacent to existing settlements. However, in regions with a more polycentric urban structure, such as the Rotterdam-The Hague region, spaces between cities and villages have filled up with new urban developments that show a much more fragmented morphological character. Urban developments are also found at greater distances from the original urban edges.

In general, new urban residential areas are rather compact and located close to cities, whereas for new commercial and recreational areas the pattern is more fragmented. Paradoxically, on a local level, urban compaction policy seems quite successful, whereas on regional levels, some local developments add up to traditionally unwanted urban development patterns. In the Rotterdam-The Hague region and the Amsterdam region, national buffer zones have successfully protected certain areas from urbanisation, thereby leaving open spaces between cities. However, concentrations of new urbanisation can be found along the edges of the buffer zones. Furthermore, the maps show that diverse local expansions around bigger and smaller cities have resulted in a contiguous urbanised region. Patterns such as these conflict with urban compaction policy objectives. Although we do not agree with critics (e.g. Bontje 2001) who have argued that the urban compaction policy has not succeeded in countering the deconcentration trend – from an international comparison point of view, few areas in the Netherlands show urban sprawl – we do conclude that certain areas of the Randstad hardly have any distinct compact cities left.

Although it was beyond the scope of this study to determine the extent to which urban functions in fringe areas compete with those in the older parts of cities, on the basis of findings in a variety of other studies, a distinction could be made between commercial functions (e.g. shops and offices) and social and cultural institutions (e.g. museums). It is clear that new business parks, for instance in motorway locations, add to the problem of vacancies in older commercial areas (see e.g. PBL and ASRE 2013). In spite of the liberalisation of spatial planning, in 2012, the national government, provinces and municipalities, together with market parties, signed a covenant to collectively address this problem. Also, it seems clear that, depending on the types of shops, new peripheral shopping centres compete with older local shopping centres in residential areas in cities and/or with shopping areas in city centres. The number of offices and the number of shops have both reached the point of saturation (see e.g. Evers 2011; Evers et al. 2006). On the other hand, some functions in certain parts of city centres, primarily those with a regional public function (e.g. museums), may benefit from the increase in the number of residents in fringe areas, as these areas do not have these facilities themselves. In this field competition does not seem to pose a problem.

From the point of view of more recent liberal urban planning policy, it is important to note that urban growth may help cities to achieve agglomeration economies. For instance, increasing numbers of suppliers and workers entering an area may be beneficial to the economic productivity of an urban region. However,

agglomeration economies are not only about the size of urban areas, but also about densities and amenities. Knowledge spill overs (creativity and innovation), in particular, seem to ask for frequent interactions in relatively dense urban areas (see e.g. Glaeser 2011; Porter 2000; Scott and Storper 2003). As Raspe and Van Dongen (2013) have shown, Dutch cities still lack the densities that characterise many of their counterparts abroad. Based on the character of the urban and suburban expansions observed (such as peripheral business parks and industrial estates), we would argue that fringe areas are unlikely to help increase the density of most urban areas. The maps and the analysis of urban types show that recent urban developments consist of relatively large spatial units with relatively low densities that are functionally and spatially separated from each other. Many recently developed urban areas at the rural-urban fringe are characterised by function separation and single functionality; hardly a creative urban environment, and quite distinct from higher density inner-city locations, where, for example, housing and businesses are located much closer together within the same area.

This 'island-like' structure of distinct and monofunctional spatial entities at the urban fringe can also be evaluated in terms of mobility consequences. From the urban compaction policy as well as a more liberal point of view, these consequences seem to be problematic. Both types of planning aim for a good accessibility of the larger cities. As PBL (2012) has shown, however, urban development in peripheral locations, such as in fringe areas near motorways, results in an increase in traffic along already congested routes. Accessibility would benefit more from building near public transport hubs; road congestion could then decrease and the business case for public transport connections would improve.

Finally, in many cases, urban developments in fringe areas are separated by infrastructural, often large-scale, bundles that create spatial barriers. This results in spatial fragmentation. The barrier effect of infrastructure (as well as of large industrial estates) also limits the possibilities for easy access to the countryside, for example, for recreational purposes. In terms of providing an attractive residential environment – an objective in both the urban compaction and liberal planning policies – additional urban design efforts seem in order, to increase the quality of living in places such as these; for instance, by creating or restoring connections between residential neighbourhoods and green spaces.

Planning, design and policy discussion

From the perspective of future spatial planning tasks at the rural-urban fringe, it will be important to anticipate on regional differences due to specific regional developments and conditions. For example, the land-use demand for housing and employment in the northern, south-eastern and south-western part of the country is expected to be much lower than in the western and central parts (primarily the Randstad). Therefore, generic planning concepts appear to be inadequate for steering urbanisation in the desired direction. The recent liberalisation and decentralisation of spatial policy in the Netherlands is in line with this observation. However, it can be expected that the liberalisation will strengthen the trend of an increasingly dispersed urbanisation and will make regional differences even larger. In this context, planning and (re-) designing urban developments at the rural-urban fringe raise some complex planning and design issues on local, regional and national levels.

Challenges on a local level

Considering the local and municipal ambitions to create more sustainable and more liveable urban areas in the future, it is an important challenge to improve the quality of existing and new areas at the rural-urban fringe. In the future, in many urbanised regions in the Netherlands, combinations of urban, recreational and natural programmes will occur, which is a challenge not only for regional and local planning, but also for local

design. In light of the characteristics discussed in this article, local authorities, urban planners and designers should develop strategies to create multi-functional areas with shared facilities, improve connections between separated functions and upgrade the identity of locations on the fringe, instead of continuing a 'tabula rasa' approach. Concerning commercial functions that attract large numbers of visitors, such as retail centres and recreational areas, a relevant task would be to improve the quality of their public spaces. And finally, in times of decentralisation and severe budget cuts, it will be necessary to take a closer look at innovative small-scale and bottom-up strategies to enhance the quality of areas at the rural-urban fringe. Lessons can be learned from informal planning and design in in-between areas. There, local and small-scale activities often have a positive effect on the area, for instance, in terms of social participation and a feeling of belonging. Instead of demolition and new construction, a more sustainable approach to urban restructuring and transformation could be to strengthen local identity and place-specific landscape qualities, and involve local stakeholders in the planning and design process (e.g. see PBL and Urhahn Urban Design 2012 for recent best practices).

Challenges on a regional level

Per region, parties must take into account the various urban, recreational and environmental tasks for each municipality. For example, one centre may be faced with a strict landscape protection programme, while another could accommodate urban expansion more easily. To form a clearer image of specific planning and design tasks, spatial needs must be outlined per region, together with conditions for urbanisation and policy and nuisance restrictions. For a region to successfully deal with complex problems in multiple domains (e.g. housing, employment, infrastructure, water management) and take advantage of opportunities where possible, planning will require cooperation on a regional scale. It is advisable to develop an urbanisation strategy for the rural-urban fringe that transcends municipal boundaries, focuses on regional interests and leaves room for sub-regional differences. Within such a framework, smaller projects may then be implemented on a lower scale. Although transcending municipal boundaries, in the past, has proven to be a formidable challenge (competition still seems to be more widespread than collaboration, especially in times of economic crisis), experience with such an approach is currently being gained in various regions of the Netherlands, in terms of long-term strategic planning and (temporarily) changing public-private alliances.

Challenges on a national level

At this moment, it is too early to evaluate the effects of liberalisation and decentralisation of large parts of national spatial planning. Because of the financial and economic crisis, to date, there have been too few construction activities to assess the impact of these policy changes. An important question will be how the increase in dispersed urbanisation has affected the most urbanised regions in the Netherlands, in terms of the economic performance of cities as well as the efficient use of existing infrastructure – both of which are important policy objectives of the current national government. For instance, urban expansion may lead to the desired agglomeration effects, whereas increased urban sprawl may negatively affect various aspects of the environment and quality of living (which is a basis for an attractive business climate), and raise the need for additional investments in new roads (see e.g. Hilbers et al. 2009). One way or another, a balance will have to be struck between a certain 'critical urban mass' needed to achieve the desired level of agglomeration and some form of urban containment that will guarantee desired levels of quality of living (e.g. clean air, close proximity to nature areas), and the efficient use of existing infrastructure. The outcome will differ from region to region, depending on the amount of space needed for urban land use, as well as on regional decisions about where urban development will be allowed to take place: within existing urban areas, at the urban fringe or further out. In a quantitative sense alone, urban planning will be an enormous task (especially in the Randstad). Moreover, in the light of issues such as the loss of open landscapes, the blurring contrast between city and countryside, and poor accessibility of recreational land surrounding urban areas, there is an additional qualitative (planning and design) task that should not be underestimated.

Conclusions

In the past twenty years, there has been a significant increase in urban developments at the rural-urban fringe in the Netherlands. Policymakers, urban planners, landscape designers and architects will have to acknowledge that the rural-urban fringe has become much more than just a peripheral zone. In the context of future quantitative and qualitative planning tasks, the rural-urban fringe requires special attention, not only when planning new areas, but also when redesigning existing ones. Because of specific regional conditions and diverging future land-use demands, it will be important to anticipate on regional differences. On a local level, planners and designers should develop strategies to create multi-functional areas with shared facilities, improve connections between separated functions and upgrade the identity of places at the fringe. Opportunities to involve local stakeholders should be explored. On regional and national levels, sector-based policy for housing, employment, infrastructure, recreation and nature will remain necessary, but an integral spatial policy is also required. Transcending the boundaries between policy dossiers can help cities improve the quality of living and working in urban areas, (re)connect these areas with the surrounding landscape, stimulate economic productivity by increasing densities and enhancing infrastructural connections, and promote the efficient use of existing infrastructure.

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