

The Rural-Urban Fringe in the Netherlands: a Morphological Analysis of Recent Urban Developments

Kersten Nabielek, Pia Kronberger-Nabielek, David Hamers

(Dipl. Ing. Kersten Nabielek, PBL Netherlands Environmental Assessment Agency, PO Box 30314, NL-2500GH The Hague, The Netherlands, kersten.nabielek@pbl.nl)

(Dipl. Ing. Pia Kronberger-Nabielek, KRONBERGER NABIELEK, Beatrijsstraat 20a, NL-3021RE Rotterdam, The Netherlands, rtm@yea.info)

(Dr. David Hamers, PBL Netherlands Environmental Assessment Agency, PO Box 30314, NL-2500GH The Hague, The Netherlands, david.hamers@pbl.nl)

1 ABSTRACT

In spite of a strong tradition in spatial planning and ambitions to create compact cities, most rural-urban fringes in the Netherlands have seen substantial urbanization in recent decades. Urban expansions at the rural-urban fringe have formed complex hybrid landscapes consisting of residential areas, commercial zones, agricultural land, recreational functions and natural areas. These hybrid landscapes are characterized by great diversity in size, density, form and composition. Moreover, the urban developments in the rural-urban fringe take divergent forms in different urbanized regions. This paper analyses recent developments and urbanization patterns at the rural-urban fringe in the Netherlands. In some regions the urbanization is rather compact and concentric, whereas other regions show dispersed and polycentric morphological patterns. Paradoxically, at the local level, urban compaction policy seems quite successful, whereas at the regional level, local developments add up to traditionally unwanted urban development patterns. Moreover, the ongoing urbanization at the rural-urban fringe has been entailing many spatial, environmental, financial and social problems. Therefore, recent suburbanization and uncertainties concerning future spatial developments at the urban fringe raise some complex policy and design issues on the local, regional and national scale. At the national level, an important question is how increasing dispersed urbanization will affect the most urbanized regions in the Netherlands, in terms of both the economic performance of cities and the efficient use of existing infrastructure. At the regional level, there is a need for urbanization strategies that transcend municipal boundaries. At the local level, developing and deploying inventive urban (re-)design strategies to improve the spatial and functional quality of the rural-urban fringe are a challenge for local authorities and urban planners. Important design tasks are to create areas with combined functions, to improve connections between separated functions and to upgrade the identity of places at the fringe.

2 INTRODUCTION

The Netherlands has a distinct and internationally much acclaimed tradition of spatial planning on the national, regional and municipal level. In a context of limited space, challenges of water management and a strong demographic and economic growth, Dutch planners and policy makers have strived for compact and well organised forms of urbanization since the 1950s. Nevertheless, most rural-urban fringes in the Netherlands have seen substantial changes in land-use in recent decades. Large-scale residential areas and recreational parks were developed. Furthermore, a considerable number of commercial areas, office parks and retail centres were constructed in the surroundings of cities, mostly on locations in the vicinity of motorways. In general, the urban fringe, as in many other countries (see Bryant et al. 1982, Audirac 1999, Gallent et al. 2006), is characterized by a large degree of spatial and functional heterogeneity. At the rural-urban fringe, new urban expansions emerge next to established areas, large-scale developments next to small-scale locations and urban functions next to rural functions. Formerly agricultural and natural 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 at the rural-urban fringe in the Netherlands take place nearby existing cities. Therefore we define the rural-urban fringe as a rather narrow area (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.

2.1 Research questions

This paper addresses four main questions: What types of urban developments can be distinguished at the rural-urban fringe in the Netherlands? What are the morphological structures of recent urban developments

on the regional scale? How do the urban developments relate to policy ambitions to keep urban areas compact? And finally, what are future challenges for policy makers and urban planners concerning urban developments at the rural-urban fringe?

In the first part of the paper we will briefly describe the main drivers of urban deconcentration and related environmental, social and spatial effects. Subsequently, we will give a short overview of the history of relevant spatial policy in the Netherlands. In the following section, we will introduce seven significant types of urban developments at the rural-urban fringe and analyse three regions showing different patterns of urbanization. Finally, we will summarize the most important findings and conclude with identifying challenges for policy makers and urban planners on the local, regional and national scale.

2.2 Drivers of urban developments at the rural-urban fringe

In the past decades urban developments at the rural-urban fringe have accelerated in response to growing welfare, global economic forces, improved transportation links and enhanced personal mobility. This has made it possible to live and work increasingly farther away from city centres, while retaining all the advantages of central city location. In Europe today, even where there is little or no population pressure, a variety of factors are still driving urban deconcentration. Suburban residential, recreational and commercial developments are attractive for people, companies and municipalities for many reasons. Residential projects on suburban locations offer affordable houses with gardens, that are especially attractive for families with children. For companies, initial investment costs for suburban real estate locations are relatively low compared to inner city locations. Moreover, locations at the urban fringe offer good accessibility, especially for motorized vehicles. Furthermore, suburban developments have been an important source of income for municipalities and project developers in the past decades. The development of new commercial areas enabled municipalities to attract new companies and employment, and project developers could earn money with land transactions and the development of residential and business projects. On the regional and national level, the government has been facilitating these developments by financing the road, rail and public infrastructure serving new locations at the rural-urban fringe.

2.3 Effects of urban deconcentration

As described above, urban developments at the rural-urban fringe have economic benefits and offer space for commercial, residential and recreational functions. However, urban deconcentration causes a number of negative environmental, social and spatial effects. There is a general consensus that dispersed urban developments have been putting pressure on the environment. Due to the larger area consumed by suburban neighbourhoods compared to inner-city neighbourhoods, more farmland and wildlife habitats are displaced per resident (Benfield et al. 1999). Furthermore, international studies show that suburban residents generate more per capita pollution and carbon emissions than their urban counterparts because their increased personal mobility and a higher car dependency (Fuller and Crawford 2011). In the Netherlands, suburban residential areas have a relatively high density compared to other countries. Nevertheless, car-ownership and traveling distances are higher compared to inner-city neighbourhoods (Snellen et al. 2005). Next to environmental issues, suburban developments have other costs. For example, the cost of providing and maintaining streets, utilities, and other public facilities to suburban communities is significantly higher than for high-density residences in a city. Urban sprawl also separates classes of people. According to Dam et al. (2010) suburban residential developments increase segregation by income and ethnical background. Moreover, suburban developments can have significant negative impacts on neighbourhood vitality and the accessibility of the recreational land surrounding urban areas. From a more qualitative point of view, the loss of open landscapes and the lessening contrast between city and countryside are negative effects of suburbanization. Next to that, the urban fringe is frequently cut through by infrastructural bundles that create spatial barriers, resulting in spatial fragmentation. As a result, many areas at the urban rural-fringe are perceived as cluttered (Veeneklaas et al. 2006).

2.4 Current transitions and future expectations

At the present time, the rural-urban fringes in the Netherlands still have a predominantly green character (MNP 2007, Vreke et al. 2007, Piek and De Niet 2010). However, due to the developments mentioned above, urbanization is increasing rapidly. At the rural-urban fringe, various land-use functions fight over the scarce amount of space. Natural and agricultural areas have lost space to benefit the urban functions of

housing, employment and recreation. It is expected that pressure at the rural-urban fringe will remain strong in the future (Ritsema van Eck et al. 2009). Moreover, the recent liberalization and decentralization of the spatial policy in the Netherlands is expected to accelerate the shift towards the rural-urban fringe, and to make regional differences even bigger since more responsibility concerning spatial planning is given to regional and local authorities (PBL 2011). Additionally, the current financial and real estate crisis has brought an end to the large-scale and top-down planning approach that has dominated urban developments in the Netherlands in the past decades. In this context it will be necessary to take a closer look at small-scale and organic approaches to transform and develop urban areas (Buitelaar et al. 2012 and Tennekes and Harbers 2012). Considering the ongoing pressure at the urban fringe, recent changes in spatial planning policy, and ambitions to create more sustainable urban areas in the future (European Commission 2011), planning and (re-)designing areas at the rural-urban fringe is a significant challenge for policy makers and urban planners.

3 TAMING URBANIZATION: SPATIAL POLICY IN THE NETHERLANDS

In the Netherlands, the national spatial policy has had great influence at the urban developments in the country. 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. Since more than sixty years Dutch planners and policy makers have strived for compact forms of urbanization. The aim was to keep the existing cities compact in order to avoid extensive and uncontrolled urban sprawl. In various Dutch national spatial policy documents different strategies to achieve compact urban developments have taken a prominent position (Nabielek et al. 2012). In the following passages the most important concepts and strategies are briefly described.

3.1 Buffer zones

Already in the years following the Second World War, planners and policy makers 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 developments in these zones. The first two buffer zones were located between Amsterdam and Haarlem (Spaarnwoude) en between Rotterdam and Delft (Midden-Delfland). Over the following 50 years the strategy of ‘green’ restriction zones was extended and further elaborated.

3.2 Clustered dispersal

Moreover, the Second and Third National Policy Document on Spatial Planning (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 to the bigger cities. Some of these new settlements were completely new (e.g. Almere to the northeast of Amsterdam) and others were linked to existing small towns or villages (e.g. Zoetermeer to east of The Hague).

3.3 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 density, cultural diversity and mixed functions. Furthermore, the big cities like Amsterdam and Rotterdam were faced with population decline and growing socio-economic problems. The reaction to this was a re-orientation on the existing big cities that was framed by the concept of the ‘compact city’. In this concept the focus shifted from urban expansion to revitalizing and densifying existing urban areas. The aim was to limit new urban suburbanization on the urban fringe. The Forth National Policy Document on Spatial Planning (VROM 1988) was based on the concept of the ‘compact city’.

However, this document should not stop suburbanization. In the following period large-scale suburban neighbourhoods (so-called Vinex-locations) were planned as part of the supplement to the Forth National Policy Document on Spatial Planning (VROM 1991). These residential neighbourhoods were precisely planned in a top-down manner with relatively high densities and good access to public transport. Nevertheless, the sheer scale of developments led to massive urbanization in some parts of the rural-urban fringe, especially in the Randstad. As a consequence, the population of inner city areas should continue to

decline (Nabielek 2011). Moreover, the economy was growing strongly and municipalities were developing new commercial zones at the fringes of their cities. However, it is remarkable that large out-of-town shopping malls could be avoided due to a very restrictive policy concerning retail developments.

In the following National Policy Document on Spatial Planning, the so-called 'Nota Ruimte' (VROM 2004) the focus shifted towards urban networks and urban developments on the 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 space to local authorities and the private sector to develop residential and commercial areas.

3.4 Liberalization and Decentralization

The most recent National Policy Document on Spatial Planning SVIR (I&M 2012) strongly focuses on economic growth and large-scale infrastructural investments. Spatial planning is decentralized to regional and local authorities and national planning strategies, such as the national buffer zones, the national ecological network, urban concentration and densification, have been abolished. Therefore, it can be expected that the decentralization of the spatial policy will accelerate urban developments at the rural-urban fringe.

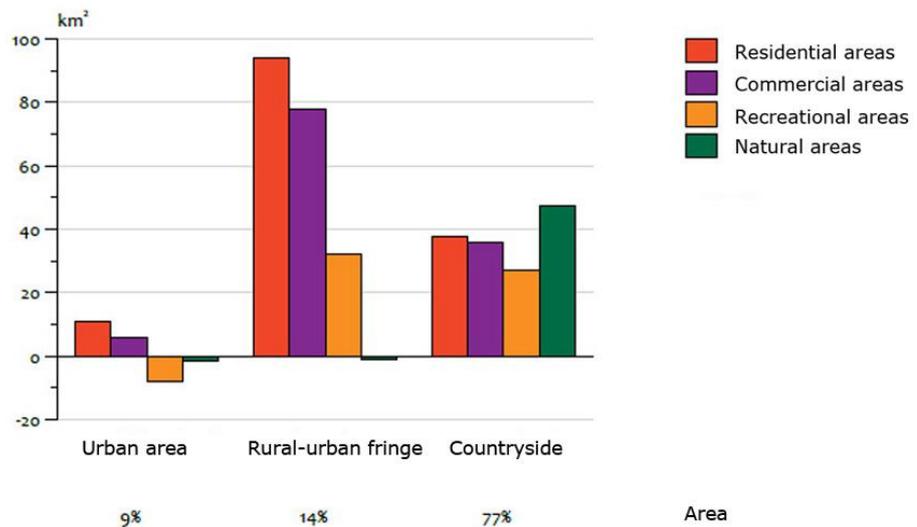
4 SPATIAL DEVELOPMENTS ON THE RURAL-URBAN FRINGE IN THE RECENT PAST

The previous paragraphs have described drivers of urbanization on the periphery of cities in the context of spatial policy in the Netherlands. This paragraph will provide an insight into quantitative and qualitative aspects of the developments at the rural-urban fringe. We used two approaches to the urban fringe: a strictly delineated definition to facilitate calculations based on GIS analyses and a looser approach to facilitate qualitative analyses of urbanization patterns in the region surrounding the city. In the qualitative analysis, we will describe seven types of urban developments in closer detail. Before turning to the morphological particularities, however, we will present the results of our quantitative analysis of the rural-urban fringe that maps out important land-use changes in the Netherlands.

4.1 Quantitative analysis

In the quantitative analysis we have made a distinction between existing urban area, rural-urban fringe and countryside. For this distinction we have used the definition of 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 broader the urban fringe becomes. In this quantitative approach, the broadest urban fringe in the Netherlands (for the urban area Amsterdam–Zaandam) is 2 kilometres wide; the narrowest urban fringe is only a few hundred metres wide. While Lucas and Van Oort (1993) used a relatively traditional concentric shell model, Hamers et al. (2009) also took explicit account of urbanization near motorway slip roads, both in the immediate vicinity of cities (circles with a radius of 1800 m) and at larger distances (circles with a radius of 900 m). Finally, the dynamics of the urban fringe are important. Due to the expansion of the urban area, the urban fringe has shifted outwards through 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 the existing urban area and 77 % in the countryside.

To analyse the spatial developments, we used a GIS analysis of the land-use statistics from Statistics Netherlands (Bodemstatistiek, CBS) to compare the developments in housing, commerce, recreation and nature in the three areas mentioned above, for the period 1996–2003. This comparison showed that by far the majority of developments in housing, commerce and recreation took place at the rural-urban fringe (see Figure 1). For housing, the development per square kilometre at the rural-urban fringe was over 5 times greater than that within the urban area and nearly 14 times greater than in the countryside. For commercial developments, the area at the urban fringe expanded eightfold compared with the rural-urban area and became 12 times larger than in the countryside. The area of recreation also increased the most in the rural-urban fringe: per square kilometre with nearly 6.5 times that of the countryside. In the city, recreational areas actually decreased. The increase in land use for housing, employment and recreation at the rural-urban fringe took place at the expense of space for nature and especially agriculture.



Source: CBS, edited by PBL

Fig. 1: Land-use changes in the Netherlands 1996-2003

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

Figures alone offer an insufficient basis for urbanization policy for the rural-urban fringe. For this purpose, qualitative insight into the spatial developments is also required. Which types of land-use functions seek the urban fringe, and which spatial patterns are created as a result? Before we show spatial patterns on the regional scale in the following paragraph, we present seven types of urban developments in greater detail that are specific for the recent past (see Figure 2): large-scale residential areas (Vinx-locations), small-scale residential areas, commercial areas, peripheral office parks and retail centres, recreational areas and shadowland (in-between areas). We have selected and analysed these types based on field research and literature studies. In the qualitative analysis we have studied urban developments in a larger area than the strictly delineated zone of the quantitative analysis discussed above.

4.2.1 Large-scale residential areas

Housing is one of the most dominant urban functions in the rural-urban fringe. The residential areas that are built in the recent past are primarily the large-scale suburban neighbourhoods that were planned as part of the supplement to the Fourth Policy Document on Spatial Planning (VROM 1991). Some of these neighbourhoods are planned for more than 30.000 inhabitants. These neighbourhoods can either create a new 'edge' of existing concentric cities or have such an independent position in the urban network that they serve as new centres of a polycentric urban region (Lörzing et al. 2006, Boeijenga and Mensink 2008). A concentration of 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 residential areas are the neighbourhoods Ypenburg (close to The Hague), Carnisselande (close to Rotterdam), Leidsche Rijn (close to Utrecht) en Almere Buiten (close to Almere).

Although there is in general a wide variety of housing typologies and styles, these so-called Vinx-locations recently are criticized for their monofunctionality and inflexibility concerning the future urban transformation task. The large housing stock, that is developed at the same time, could also become obsolete (and thus a major transformation task) in the same period of time. Furthermore, not all areas are provided with good public transport connections and are mainly designed for motorized vehicles.

4.2.2 Small-scale residential areas

Small-scale residential developments lay scattered in the urban fringe, mostly in the vicinity of small villages and cities. They can predominantly be found in more rural areas, such as the Groningen region. Common examples of these kinds of residential areas are small neighbourhoods with detached houses. More particular

examples of these residential developments are 'exclusive' residential neighbourhoods that are designed for certain target groups, often higher-income earners. They are characterized by clear boundaries towards their surroundings and distinctive (themed) architecture (Nabielek 2009). In some cases the residential function is a combination with recreational functions (e.g. golf course, harbour).

Although there is a growing number of residential neighbourhoods with an enclosed character in the Netherlands (Hamers et al. 2007), compared to gated communities in the United States or South America, the scale of the developments is much smaller and the gradation of enclosure relatively soft (e.g. by stretches of water). Nevertheless, these developments are examples for an increasing trend in the housing market that leads to increasing segregation by income and ethnical backgrounds.

4.2.3 Commercial areas

Next to housing areas, there is a noticeable large area for commercial purposes. Between 2000 and 2006, the total urban area has been growing with approximately 150 km² and a large part of it (60 km²) has been developed for commercial use Ritsema van Eck et al. (2009). In the area of employment, it is traditionally the nuisance-causing businesses (noise, stench) that are located at the urban fringe. However, many other types of businesses have also found their way here, especially those that need a relatively large amount of space and that must be accessible by vehicle. Many business estates have been developed in the immediate vicinity of motorway junctions and exits. They often fill up the leftover areas between the motorway and housing areas. In some areas, however, commercial parks are located at a larger distance of existing urbanized areas, for example the area of Schiphol airport. The extend and type of the development has led to severe critic of the Dutch society. On the regional scale, there are complaints about the 'filling up' of open spaces (mostly along infrastructure) and the lessening contrast between city and countryside. On the local scale, business estates are characterized by a very functional design and lack basic urban or architectural qualities (Van der Gaag 2004). Furthermore, business estates without a connection to public transport that are designed for vehicles have a negative impact on the environment as they increase pollution and carbon emissions. Another problem is the growing number of decaying business estates with vacant plots and buildings.

4.2.4 Office parks

In recent years, there has been a strong growth of office parks at the rural-urban fringe in the Netherlands. Headquarters of national and international companies used to be located in the city centre but today one can find them increasingly on the urban fringe of big and medium-sized cities and along motorways (Hamers & Nabielek 2006). Statistically, office parks often belong to the category 'business estates', but spatially their dynamic development and architectural layout is different. Between 2000 and 2006, the number of peripheral office clusters has been increasing significantly in comparison with other employment areas, namely with 26 per cent compared to 3, 5 per cent of all employment areas. In a spatial sense, the total surface area of office parks is relatively small. Office parks have, however, usually are eye-catching structures with high-rise buildings that are visible from far away. Some office parks are carefully designed in relation to their surroundings including a park-like setting that is accessible for the public. Examples are the office park Papendorp at the motorway junction Oudenrijn (Utrecht) or De Hoef at the motorway junction Hoevelaken (Amersfoort).

Currently, there is a record of vacant office space in the Netherlands. In 2012, more than 7 million m² of office space was vacant, that is almost 15 per cent of the total amount of office space in the Netherlands. New peripheral office parks contribute to the high vacancy rate because they attract firms that are already settled in office buildings elsewhere in the Netherlands. Furthermore, office parks are primarily designed for car access and therefore foster commuting. They therefore entail a negative impact on the environment in general and in particular on their surrounding (noise, pollution).



Large-scale residential areas (Vinex-locations)



Small-scale residential areas



Commercial areas



Office parks



Retail centres



Recreational areas



Shadowland (in-between areas)

Fig. 2: Seven types of urban developments at the rural-urban fringe

4.2.5 Retail centres

The development of commerce near motorways on the urban fringe is especially apparent: commerce on the urban fringe as a whole has already grown much more than in the cities, but at motorway locations, the development is even greater. There has been a particularly striking increase in the number of large garden centres and in furniture centres in existing and new out-of-town retail centres such as ‘factory outlets centres’ and ‘retail parks’ (Hamers and Nabielek 2006). However, compared to other European countries, it is remarkable that large out-of-town shopping malls could be avoided due to a very restrictive policy concerning retail developments.

In general, retail areas have a very functional layout. In most of the cases, the public space is poorly designed and dominated by parking spaces. Like business and office parks, they put pressure on the environment by

contributing to the increase of car traffic. Furthermore, peripheral retail centres can have a negative effect on the existing retail structure in, for example, inner city locations. Therefore, the matter of new peripheral retail centre is highly political. In 2009, a referendum of the population of the city of Tilburg has stopped the development of a large shopping mall on the northern edge of the city.

4.2.6 Recreational areas

As stated previously, the area for housing and employment at the urban fringe has increased the most. In addition, the area for recreation is also growing. Recreational land use can have both a 'red/urban' and a 'green/rural' character. There is a difference between buildings or structures with a recreational function (indoor) and outside areas with a recreational function (outdoor). Examples of the first group are ski halls, thermal baths, mega cinemas and examples of the second group are sports grounds, allotment gardens, natural areas and parks. Indoor-facilities are mostly located in the vicinity of motorways and are equipped with larger parking areas as they sometimes have high concentrations of visitors. In the category of outdoor-facilities, the growing number of larger peripheral golf courses is particularly striking. Between 1998 and 2006 the total area of golf courses has increased from 1.300 to 7.300 hectare (Schuit et al. 2008). A third important category is the clustering of vacation homes, mostly concentrated in recreation parks.

The footprint of indoor recreational facilities is much smaller than outdoor recreational functions. However, large-scale and 'stony' buildings and complexes, such as large indoor playgrounds built in open areas, can negatively affect the original landscape around the city. Other developments are more compatible with the landscape, such as the construction of bicycle paths. Another problematic issue is the construction of so-called vacation villages – a cluster of vacation houses – because they contribute to the urbanization of rural areas.

4.2.7 Shadowland (areas in-between)

In-between areas are characterised by administrative and spatial fragmentation. In many cases, large-scale infrastructure is cutting through these areas and new, established, small and large functions lay like randomly distributed in the area. This so-called 'Shadowland' can be often found in the urban fringe. It is characterised by the coexistence of different functions that have little in common (Frijters et al. 2004). Shadowland has an organic, unplanned layout and the quality of public space is mostly poor. Shadow land is therefore often perceived as 'untidy'. On the other hand, these areas offer opportunities for small-scale local activities for which there is currently little space in the inner city such as artist ateliers, allotment gardens and sport fields. In recent years, however, many Shadowland areas have been transformed into (among others) business parks or commercial areas.

The usual way to transform Shadowland is mostly by demolition and new building. In doing so, however, local activities that may have a positive effect on the area in the long term are banished. A more sustainable way to transform Shadowland could be to strengthen the local identity and landscape qualities and to improve (public) transport connections.

5 REGIONAL COMPARISON

In this part of the paper, we will analyse the morphological patterns of recent urban developments on the rural-urban fringe in three Dutch regions: The Amsterdam region, the Rotterdam-The Hague region and the Groningen region. These three regions were selected because they show different types of urban regions. The Amsterdam region is an example of a monocentric city region in which smaller cities are clustered around a dominant city. The Rotterdam-The Hague region has a polycentric structure with 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. On the regional scale we can get an impression of the scale, location and spatial patterns of urbanization at the rural-urban fringes. On the maps we can distinguish where the urban expansions are compact and where they show a dispersed structure.

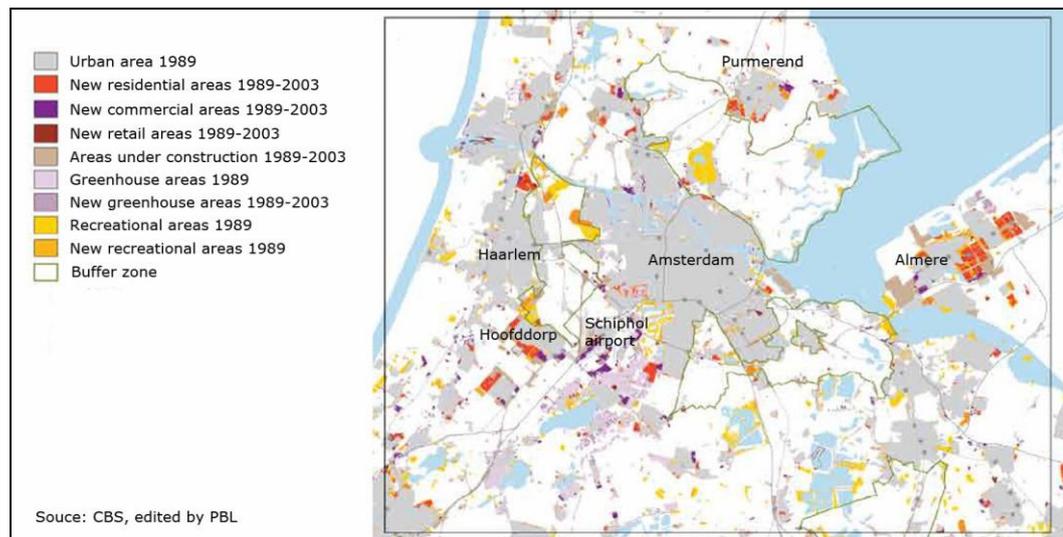


Fig. 3: Urban developments 1989-2003 in the Amsterdam region

5.1 Amsterdam region

With its monocentric structure, the city of Amsterdam is a typical example of a compact European city. Together with the surrounding smaller cities, it forms a polycentric region in which Amsterdam clearly takes a central and dominant position. The map of the region (see figure 2) shows that there have been very few urban expansions on the fringe of the city in the past 20 years. The map shows that Amsterdam is surrounded by green buffer zones that have successfully protected these areas from suburbanization. Furthermore, in the south of Amsterdam, the airport and the related noise contour has limited possibilities for residential expansions areas. In the surroundings of the airport, however, the map shows a strong dynamic of new business locations.

Looking at the urban developments in the Amsterdam region, it can be argued that the developments are in line with the national concentration policy. The city has very much kept its compact character and the green buffer zones have protected Amsterdam from growing together with neighbouring cities. However, the smaller cities in the surrounding, such as Haarlem, Hoofddorp and Almere, show much larger suburban developments. Because the city of Amsterdam could not expand on its edges, these expansions have shifted towards locations at a greater distance of the city. In the southwest of the Amsterdam region we can see that a ring of continuous urbanization emerging between smaller cities. Moreover, decentral locations in the regions, such as large-scale expansion areas around the newtown of Almere (more than 30 kilometres away from Amsterdam), have put serious pressure on the road system in the Amsterdam region. If we look at the urban developments at the rural-urban fringe on the local and on the regional level, we can conclude that the concentration policy has had positive as well as negative effects on the region.

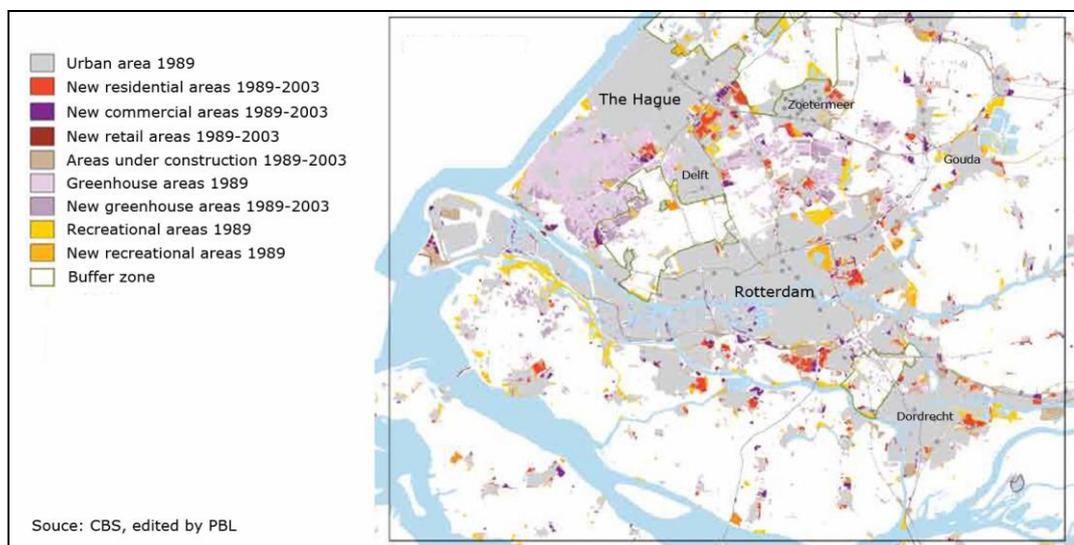


Fig. 4: Urban developments 1989-2003 in the Rotterdam-The Hague region

5.2 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 characterized by large areas of greenhouses for the production of vegetables. The map of urban developments in the region (see Figure 4) shows there has been almost no urbanization between Rotterdam and Delft. In this area, the open landscape has been protected by the national buffer zone of Midden-Delfland that has been established in 1960. However, there have been strong urban dynamics in the area between Rotterdam, Zoetermeer and The Hague. The urban developments are a combination of residential and commercial (mostly greenhouses) functions. In these areas, a new local railwayline has been established in to connect Rotterdam with The Hague. New residential neighbourhoods were constructed along this line. This has led to a fragmented, spread out morphological pattern that is quite unusual in the Netherlands. Furthermore, we can see a number of new large-scale residential areas in the Rotterdam-The Hague region. These areas are located at the urban fringe of the cities. In Rotterdam and The Hague, these large 'Vinex-locations' were built on the 'other' side of the motorway. In these cases, the motorway forms a strong spatial barrier in the urban structure.

5.3 Groningen region

The city of Groningen has, like the city of Amsterdam, a monocentric structure. The urban expansions on the urban fringes in the period between 1989 and 2003 in the Groningen region (see figure 5) are comparably modest and mainly concentrated around Groningen and surrounding small towns. The majority of peripheral developments are new residential neighbourhoods that are situated concentrically around the historic towns, directly next to established urban areas. However, the small town Assen seemed to have faced a relatively strong growth in the recent past. In comparison 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, over the A28 motorway, there is a new residential area (Kloosterveen) and a large golf course. In the east of Assen, the National Landscape Drentsche Aa has prevented urban expansions.

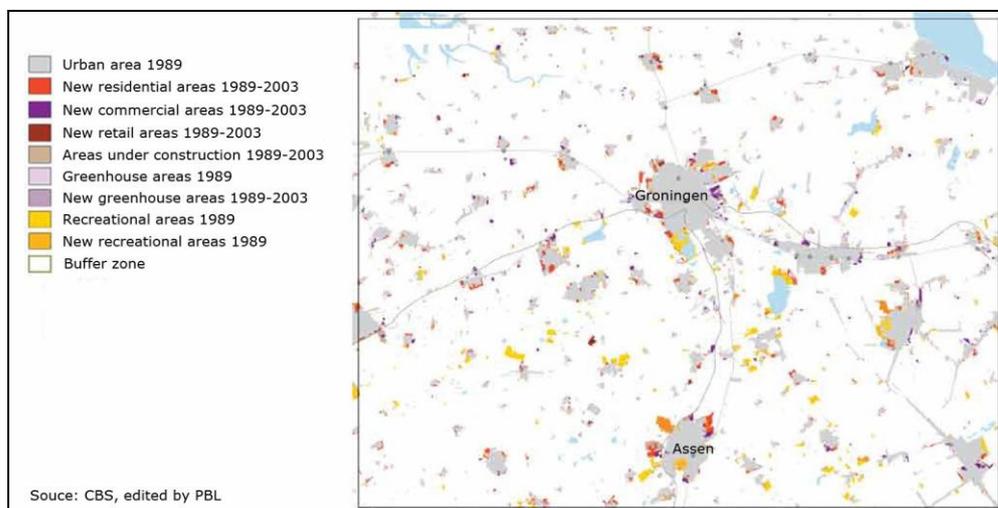


Fig. 5: Urban developments 1989-2003 in the Groningen region

6 CONCLUSIONS

Looking at the urban developments in the Netherlands in recent years, we can question how they relate to the aim of keeping urban structures compact. We can observe a strong shift towards a highly urbanized rural-urban fringe. In general, we can observe that new suburban residential areas are rather compact and are located close to cities, whereas new commercial and recreational areas show a more fragmented pattern. Paradoxically, at the local level, urban compaction policy seems quite successful, whereas at the regional level, local developments add up to traditionally unwanted urban development patterns. The maps in this paper show that diverse local expansions can result in contiguous urbanized regions. Moreover, we can see

significant regional differences. In more rural areas, such as the Groningen region, the new urbanization shows a very compact structure. However, in regions with a more polycentric urban structure, such as the Rotterdam-The Hague region, we can see that spaces between cities and villages have been filled up with new urban developments that show a much more fragmented morphological character.

With an outlook on 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 expected spatial need for housing and employment in the north and the south of the country is expected to be much lower than in the Randstad. Therefore, generic planning concepts appear to be inadequate for steering urbanization in the desired direction. The recent liberalization and decentralization of spatial policy in the Netherlands is in line with this observation. However, it can be expected that the liberalization will strengthen the trend of an increasingly dispersed urbanization and will make regional differences even bigger. In this context, re-designing existing suburban areas and planning new developments on the rural-urban fringe raises some complex policy and design issues on the local, regional and national scale.

6.1 Challenges on the local scale

The qualitative analysis and the maps in this paper show that many recently developed urban areas at the rural-urban fringe are characterized by function separation and single functionality. As a result, from a morphological perspective, the urban fringe clearly differs from inner-city locations, where, for example, housing and businesses are mixed together within the same area much more frequently. At the urban fringe, there are many new areas with divergent functions located next to each other as distinct spatial entities. In many cases these entities are separated by infrastructural bundles (often large-scale) that create spatial barriers, resulting in spatial fragmentation. In addition, the barrier effect of infrastructure (together with aspects such as large business estates) limits the possibilities of urban residents to reach the countryside easily, for example, for recreation.

Considering 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 many urbanized regions in the Netherlands, urban, recreational and natural programmes will occur in combination in the future, which is a challenge not only for regional and local planning but also for local design. Therefore, local authorities, urban planners and architects should pay attention to developments at the rural-urban fringe and come up with strategies to create multi-functional areas with shared facilities, to improve connections between separated functions and to upgrade the identity of places on the fringe by, for example, supporting small-scale local activities that have a positive influence on their environment. Concerning commercial functions attracting many visitors, such as retail centres and recreational areas, a relevant task is to improve the quality of the public space in such areas. Finally, in times of decentralization and financial crisis it will be necessary to have a closer look on inventive small-scale and bottom-up strategies to enhance the quality of areas at the rural-urban fringe.

6.2 Challenges on the regional level

Within the region, parties must take account of differing urban, recreational and environmental tasks for each municipality. For example, one centre can be faced with severe green restrictions, while another can accommodate urban expansion more easily. To acquire a sharper image of the specific planning and design tasks, the spatial needs, together with the conditions for urbanization and the policy and nuisance restrictions, will have to be mapped out region by region. If a region wants to deal with problems as successfully as possible and take advantage of opportunities where possible, then planning will require cooperation at a regional scale. It is advisable to develop an urbanization strategy for the rural-urban fringe that transcends municipal boundaries, that focuses on the regional interest and that provides room for sub-regional differences. Within such frameworks, integral regional development projects can then be implemented at a lower scale. Although transcending municipal boundaries has, in the past, proven to be a formidable challenge (competition still seems to be more widespread than collaboration), experience with such an approach is currently being gained in various regions of the Netherlands, in terms of long-term strategic planning and (temporary) changing governance alliances.

6.3 Challenges on the national level

An important question is how increasing dispersed urbanization will affect the most urbanized regions in the Netherlands, in terms of both the economic performance of cities and the efficient use of existing infrastructure that are important policy objectives of the national government. For instance, whereas urban growth can lead to the desired agglomeration effects, increased urban sprawl can negatively affect various aspects of the environment and the quality of living (which is a basis for an attractive business climate). One way or another, a balance will have to be struck between a certain 'critical urban mass' that is needed to reach agglomeration effects and some form of urban containment that will guarantee desired levels of quality of living (e.g. clean air, proximity of natural areas). The outcome will differ from region to region, depending on the amount of space needed for urban land use as well as regional decisions on where exactly 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 lessening contrast between city and countryside and poor accessibility of the recreational land surrounding urban areas, there is an additional qualitative task that should not be underestimated. To face this challenge successfully, the urban fringe requires special attention. Sector-based policy for housing, employment, infrastructure, recreation and nature will remain necessary, but an integral spatial policy is also required where the possibilities and limitations are viewed in relation to each other, transcending the boundaries between policy dossiers.

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