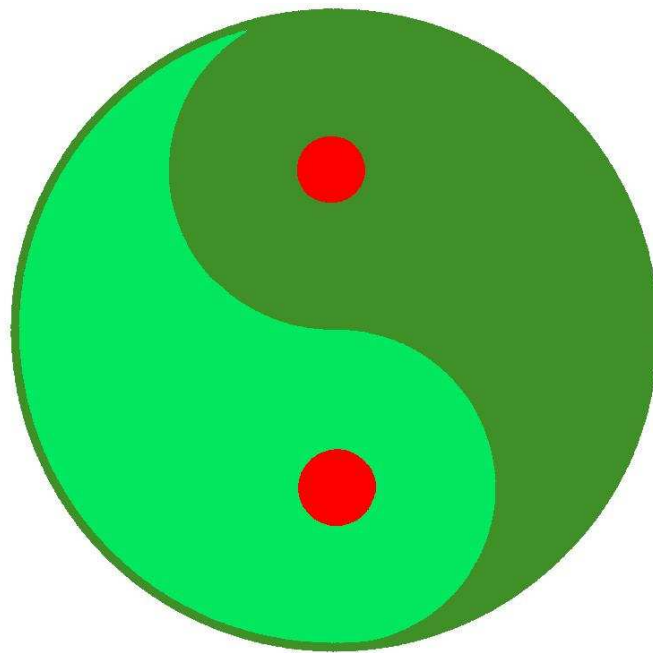


COMMISSINDED BY WAGENINGEN UNIVERSITY & RESEARCH

Research report

Twentse Stadsranden



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Wageningen, 23th February 2010

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1. Introduction

Wageningen, February 2010

The report in front of you is the result of 8 weeks of work by our group "De Punt". It is the end-product of a project commissioned by the "Groene Kennispoort Twente". The assignment consisted of the task to explore the possibilities in developing the city borders in 13 municipalities in Twente. The so called "stedenband", in this report referred to as "Regional Urban Network Twente", is formed by the cities of Enschede, Hengelo, Borne, Almelo and Oldenzaal and was our main subject during this project.

During this assignment we made use of two methods; the Strategic Choice Approach and the Scenario Method. The different steps of these methods will be explained and developed in the following chapters of the report. If these steps are being taken in the right order and at the right time, a vision for Twente as well as a commitment package will be created and will lead to a sufficient solution on the field of city borders.

In this report we will give the region Twente advice on how the city borders should be developed, both on the short term as on the long term. Several examples will show the process and by making use of certain assumptions, we have created a set of possible concrete measures. We would like to emphasize that the assumptions we have made, and the solutions we have come up with, are not necessarily the right ones and we would definitely encourage the region Twente to walk through this process in their own way, and use this report as a guiding tool.

We hope this report can be of use during the challenge which lies ahead of the region Twente. Also, we would like to wish the region Twente good luck with developing their vision and set of concrete measures.

Yours sincerely,

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2. Problem focus

‘Develop an integral vision for the future development of the city borders in the Regional Urban Network Twente’. This is the assignment given to us by the region Twente. This vision had to be translated to long and short term strategies and measurements.

The term “city borders” is a broad term and can be translated into several definitions. Before further research is possible, a definition for the broad term city borders is needed. This definition will put all further research into a singular context. (Visscher and Schulte, 2008)

The definition of city borders, as established by Workgroup “De Punt” is:

City borders are a multifunctional area to connect, intertwine and form a transition between the urban and rural areas.

In this definition the exact form of the city borders is not defined, but just the function. This decision was made, because the form should be designed according to the specific landscape. This will give the city border not only a multifunctional purpose, but also a multifunctional look. (Friend and Hickling, 2005)

3. Analysis present situation

Map 1: Present situation: agriculture, infrastructure, industry & housing in the Urban Network Twente

Map 2: Present situation: nature, recreation, water & cultural heritage in the Urban Network Twente

Map 3: Present situation: landscapes & reliefs in the Urban Network Twente

Map 4: Present situation: Borne

In this step the present situation will be analyzed and described. The analysis will consist of the spatial description and visualization of the most important social activities, divided in areas such as residential-, commercial-, nature areas. A model to guide this analysis is the model formulated by Kleefman. He sees the physical world as two separate, but also intertwining organizations. On one side is the physical organization, divided into two subsystems (biotic and a biotic), and on the other side the social organization, divided into three subsystems (economic, political and cultural). These two organizations intertwine and form the social – physical organization of an area. An important part of this analysis is that current social and spatial problems can be identified. Gaining further knowledge about these problems can reveal driving forces in the area. Driving forces are powers which we can't influence but which can have great long term effects on developments in the region. Even though you cannot influence these driving forces, it is important to adjust your policies to them. (Gemeente-Borne, 2009; Gemeente-Hengelo, 2007; Oyen, 2009; Strootman, 2006; Veenstra et al., 2009)

Infrastructure

On the regional scale the connections between the main roads can be described as good. There are two highways; the A1 and the A35. The former enters the region in the southwest and runs towards Germany, the latter connects Almelo with Enschede and beyond Enschede it continues as a provincial road towards the Ruhr-area and the city of Münster.

There are several provincial roads connecting the cities and villages in the region. Especially around the city of Enschede the road network is denser than in the rest of Twente. The secondary roads run into the rural area and connect the townships and farms with the primary road network.

The railroad network enters the region in the west and connects Almelo with Enschede. From Enschede the network continues into Germany. The other railway which enters the region in the west runs towards Oldenzaal. There are a few industrial railroads which join the main network. Furthermore, an airfield lies in between the cities of Oldenzaal, Hengelo and Enschede. This airfield was used by the Dutch Air Force but is no longer being used. However, there are plans to reopen the airfield for commercial flights.

Furthermore, there are several industrial important canals situated in Twente. The most important one for this region is the Twente-kanaal which runs from Enschede to Zutphen and merges with the river 'de IJssel'. Another important canal in Twente is the Kanaal Almelo – De Haandrik which flows in between the cities of Almelo and Hardenberg. Lastly, there is a canal in between Almelo and the German City of Nordhorn. This canal is not being used for commercial shipping anymore.

Industry

The heavy industry is situated near the harbours and alongside the Twente and Almelo – De Haandrink canals. The canals provide good possibilities for transporting goods which makes them attractive locations for industrial companies in the area. These good transport possibilities are referred to as conditional factors.

Due to Dutch Law heavy industry cannot be located nearby housing zones since the danger for explosions is too high and because of the risks of pollution. Thus, the heavy industrial companies are located outside the cities, close to infrastructural facilities such as railroads or canals. Other locations for industry lay at the intersections of the highways. These locations provide good access to the infrastructural network. In case of the Twente region the highways give quick access to the Randstad, but also to the German harbours of Hamburg and Bremen.

Examples of heavy industrial areas can be found around the harbours in Enschede, the harbours located at the south side of Hengelo and in the harbours of Almelo. These industrial sectors can vary from steel products to bulk products like petrol.

Commerce

The commercial business is mainly clustered along and nearby intersections of the highways, which especially consists the transport sector. These so called business parks are located here because the conditions for transport are optimal. Also these locations near the highway provide them with free publicity, the so called view locations. The smaller business sectors such as the service sectors are mostly located in the city centres. However, this area is rather small compared to the big commercial areas at the city borders. The business sector is not that developed in the region so that it can compete with more vital regions, like for example the Randstad.

Some service buildings can be found back in the rural parts of the region, these locations can be chosen because of the referential conditions, such as a wealthy and a green image. There are only a few of these locations in the region, because the companies that locate themselves here are less dependant on access to the physical network but they rely more on the access to the social network. Telecom networks provide enough access for these companies.

Another important sector in the Twente region is the education. The Twente University is an important knowledge centre and a big employer in the region, it employs some 2.800 people.

Urban areas

Within the region Twente, a Regional Urban Network is visible which consists roughly of the cities of Almelo, Borne, Hengelo, Enschede and Oldenzaal. Around these cities there are several villages, townships and hamlets present. The rural area contains a lot of farms.

Both Hengelo and Enschede have been expanding over the last decades, leading towards housing projects which have been built on the other side of the highways. This has led to segregation within these two cities. Even though population stagnation is being foreseen, all the cities in this area are expanding in some way. Because of these expansions, mostly located in the city borders, some parts of the

inner cities are non-built areas or have to deal with vacancies. Furthermore, the cities do not contain a lot of high buildings due to radar equipment of the Dutch Ministry of Defence. This can become a problem in the future if cities still want to expand; expanding upwards is not an option.

Rural areas

The rural areas around the cities are mostly characterized by dairy farms and the land types which accompany these farms; meadows for the cattle and arable land for crops. The meadowlands are, in small scale, alternated by arable land. The arable lands are being used to grow crops as food supply for all the cattle in the area. The third important type of land use in the area is forest. In between the meadows and arable lands a lot of wooded banks appear as well as bigger forested areas, for example the Twickel estate area. The farmlands begin where the urban area stops, at some places the farmlands are intertwined with the housing. In the North-East of Twente the landscape is more small scaled than in the South-West of Twente. The North-Eastern part of Twente is a National Landscape and therefore will remain small scaled. Because of this governmental measure it is harder for farmers in that area to apply scale enlargements and thus to compete with farmers who work on bigger scale.

Lastly, there are several other types of nature areas which appear in the region Twente, but only on a small scale, for example heath lands and peat bogs.

Geomorphology and culture

The cities of Enschede and Oldenzaal are largely situated on the from North to South pointed lateral moraine, which is shown on Map 1: Present situation: agriculture, infrastructure, industry & housing in the Urban Network Twente. This is mainly due to the past when people settled on the flanks of lateral moraines to live safe and dry. In the direction from Enschede towards Almelo the elevation decreases from fifty meters down to ten meters above NAP. In the lower areas the landscape type "veen-en kraggenlandschap" appears. The main characteristic of this type of landscape are the relatively wet circumstances. The "maten- en flierenlandschap" mainly occurs in the lower situated areas, about fifteen meter and below. This type of landscape consists of the "maten" and "flieren"; wet hayfields and pastures, within a village area and nearby watercourses.

In the city borders of Enschede, the most dominant landscape type is the "essen landschap". Characteristic for this type of landscape are the large, contiguous fields, the "essen", situated on the flanks of lateral moraines. These arable lands are alternated by meadows.

Culture, nature and water

Most of the estates are situated in or nearby forests and nearby the cities. These estates were mainly built by textile barons in the nineteenth century. Nowadays these estates are valued as recreational attractions. A well know estate is the estate of Twickel which has a lot of recreational options. There are a lot of recreational routes which lead through the forests of the estate, for example the 'Marskramerspad' and the 'Handelsweg'.

Marinas are located next to the cities, among rivers and canals. This is obvious, because in this way people have straight access to their boats and yachts and can immediately go on the water.

The area located at the North East of the Regional Urban Network Twente is designated as a National Landscape. This means that this area is seen as a valuable area which needs to be maintained and that there are strict policies against any disturbance.

There are several Natura 2000 areas within the Regional Urban Network Twente. These areas are namely covered by forests and heather and are protected by European law, implemented by the Dutch government.

Recreation and culture

In the Regional Urban Network Twente there are several touristic transfer points with touristic information and the possibilities to visit the area through different forms of transportation, for example cycling and walking. Most of these points are situated relatively far from the cities in the rural areas.

There are a lot of campsites, some bungalow parks and a few group accommodations in the Twente region. These attractions are dispersed in the area. Also the cycling- and walking routes are spread trough the entire area. The network of these routes becomes denser nearby the cities. So in the areas where most people live, there are more opportunities for cycling and walking in the surroundings.

Politics

Political views and opinions will always have some impact on the spatial organization of the landscape. When these opinions change, the spatial organization will change as well. At the moment spatial organization problems are an important issue on the policy agenda of the Netherlands. There is a lot of attention for nature protection, energy use and sustainable developments. These developments can influence the spatial organization in a way that there will be more protected nature areas and more renewable energy resources.

Currently people's awareness of cultural heritage grows, this is reflected in the trend to strengthen and protect the cultural heritage in the Netherland and the Twente region.

Now that we have finished the analysis of the present situation we will continue with the first step of the Strategic Choice Approach. This step is what we call the 'shaping mode'. The shaping mode focuses on identifying and structuring the complex decision problems, which results in a set of decision areas. A decision area is the most fundamental element of the Strategic Choice Approach; it is a problem situation where people see different options to choose from. (Friend and Hickling, 2005)

4. Decision areas

The shaping mode starts with a brainstorm session, which eventually has to identify the stakeholders in the areas, with their means, goals and positioning towards the planning task. Our brainstorm session led us to almost a dozen stakeholders. We have narrowed these down to the five stakeholders, which have the most influence and/or the biggest stake in this planning task. Figure 1 shows the five stakeholders with their means, goals and positioning towards the planning task.

Stakeholder	Means	Goals	Position towards planning task
Municipalities (Almelo, Borne, Hengelo, Oldenzaal, Enschede)	Money, knowledge of the area, expertise, power of policymaking	Definitive organization of the city borders	+/- Not all the municipalities show readiness to cooperate with each other, they would rather follow their own strategies.
Farmers	Large scale landowners in the area	Maintain the company and a steady income	- Changes in the area will most likely cause trouble for the farmers, because their production and income will be threatened.
Twente Region	Power of advising (expert knowledge)	Policy that spans the different municipalities	+ Twente Region is a cooperation of the municipalities in the region. This cooperation wants to reach an integrated vision concerning the city borders
Recreational sector	Public support, several organized associations, knowledge of recreation in the area	Maintaining and developing recreational possibilities	+ An integral developed city border could make the entire region more attractive and accessible for tourists, recreants and inhabitants
Twickel/Overijssels Landschap	Large scale landowners in the area,	Maintain the Characteristics of the land-	+ An integrated plan of the city borders will give more certainty

	public support, cooperation with famers, knowledge of the landscape	scape, expand this where possible	about the future of the landscape and makes investment more profitable.
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Table 1: Stakeholders

After identifying the stakeholders we have tried to find out the most relevant points of interest of these stakeholders in a new brainstorm session. When this brainstorm session was finished, we placed all these points of interest in one of the four important categories; decision area, uncertainties, preconditions or goals. These four categories give us more in depth knowledge about the stakeholders.

Decision areas:

Municipalities – Allowance for business parks to develop in the area
Municipalities – Allowance for residential areas to develop in the area
Municipalities – Accessibility of the area
Municipalities –Public services
Farmers – Expansion of their companies
Farmers – Secondary activities (Broadened farms)
Recreational sector – Recreational possibilities in the area
Recreational sector – Amount of recreational routes through the area
Twickel/Overijssels Landschap – Maintaining the characteristics of the landscape
(Prevent fragmentation of the landscape)

Uncertainties:

Municipalities – Rate of population growth
Farmers – Finding successors for the companies
Farmers – Maintaining the companies and amount of agricultural area
Farmers – Expanding of the size or amount of parcels
Twente Region – Where to invest their budget.
Twickel/Overijssels Landschap – Amount of visitors to the park or estate

Preconditions:

Municipalities – Available budget.
Municipalities – Policy plans for the region
Municipalities – Public support for their plans
Municipalities – Transition from urban to rural area
Twente Region – Transition from urban to rural area
Recreational sector – Available money for the execution of plans, made available from other parties.
Twickel/Overijssels Landschap – Facilities in the landscape
Twickel/Overijssels Landschap – Accessibility of the landscape

Goals:

Municipalities – Attractive landscape

Municipalities – Creating a good level of public services

Farmers – Making their farms profitable.

Farmers – Maintaining a steady income level.

Twente Region – Creating an integrated vision concerning the city borders

Twente Region – Ensuring the cooperation between the different municipalities

Recreational sector – Promotion of the region, through the unique landscape.

Recreational sector – Creating awareness of the aesthetics of the region

Recreational sector – Providing recreational information of the area

Twickel/Overijssels Landschap – Maintaining the characteristics landscape

Decision links

After this, the issues belonging to the decision areas will be grouped, in order to prevent overlap between the decision areas, and if necessary reformulated. Next, the groups will be labelled and a selection of the most important groups (labels) has to be made. The next step is to make the relations between these selected groups visible, for example by drawing lines between linked decision areas. By looking at the interrelations between the decision areas and the number of decision links between the areas, we will be able to achieve a problem focus: the decision areas on which will be focused in the further process.

During this process the knowledge we have acquired in the analysis of the present situation should be used in defining the decision areas, preconditions and uncertainties.

After we decided on the decision links we used STRAD, a computer program, to fasten the process of getting to know the focus area and further decisional problems. In this program there is an option to let the computer calculate the most relevant decision areas. After using this option the five most relevant decision areas were left over. These are shown below; the decision links are coloured in blue. The brown/orange decision areas are decision areas for the municipalities, yellow is for the recreational sector and grey stands for Twickel/Overijssels Landschap.

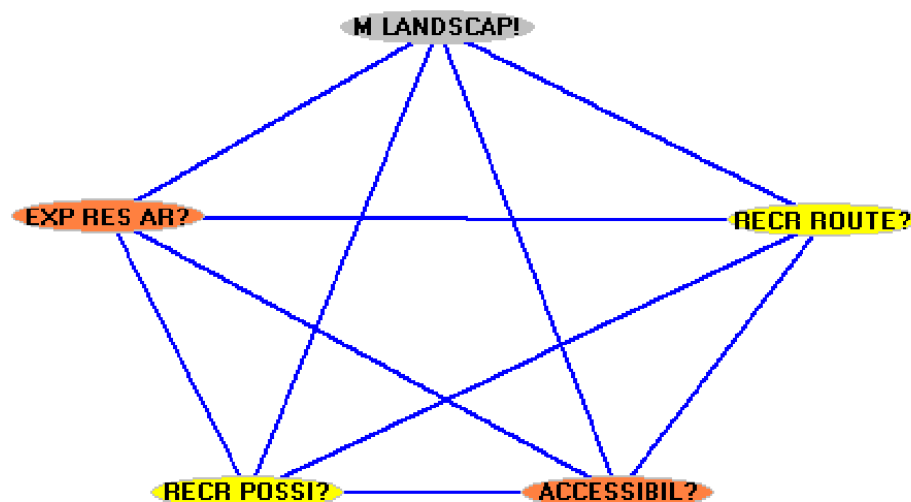


Figure 1: Focus area

5. Description of the decision areas

The problem focus consists of five different decision areas; landscape, expansion of the residential area, number of recreational routes, recreational possibilities and accessibility of the area. All these areas represent several options, these options need to be named. But before naming these options, clear descriptions of the decision areas are needed:

Landscape:

Currently the landscape of the Twente region is very diverse and has an open character, this is described in the analysis of the present situation.

However, this landscape can change due to the new measures which can be taken in order to achieve a desired future on the longer term. The question therefore is: what do we want with the current landscape? Possible answers to this question are: maintaining the characteristics of the landscape (as much as possible), develop and strengthen these characteristics of the landscape. Or to not formulate preconditions and goals for the landscape at all and just implement the future measures. With landscape and its characteristics – in this case – we mean the more natural and ecological values of the landscape. In the STRAD program these decision area with the belonging options are formulated as:

Decision area: landscape

Options: develop recreational, develop ecological, maintain

Expansion of the residential area:

According to the inventory of the stakeholders and their means, goals and position towards the planning task, another important issue is to take care of the residential area and whether this area will expand or not. Decisions which can be made about this decision area are: expansion of the residential area or maintaining the size of the residential area as it is right now. With maintaining the residential area is meant that no extra area will be used for new houses. However, it remains possible to build more houses by the use of infill locations or high buildings. The option of decreasing the residential area is not considered feasible, because the expectation of the Twente region is that still some extra houses are needed in the future.

Decision area: residential area

Options: expand, maintain

Recreational routes:

Although there are several recreational routes (“line recreation”) in the environment already, it is possible to create more of these routes or on the other hand, decrease the amount of this type of routes. This leads to the following options: expansion of the recreation network, maintain the current amount recreation routes or decrease the amount of recreation routes.

Decision area: recreational routes

Options: exp#routes, main#route, decr#routes

Recreation possibilities:

With recreation possibilities, recreational attractions such as restaurants, hotels and

theatres are meant; in other words "fixed recreation". For this type of recreation the same options are possible as for recreational routes: the current amount of recreation possibilities can be increased, maintained or decreased.

Decision area: recreation possibilities

Options: expand, maintain, decrease

Accessibility:

Accessibility of the city borders is an important aspect as well. Due to changes in the environment, the accessibility can decrease or increase. Since it makes a huge difference if there is low or high access between the housing areas and the city borders and the surrounding environment, it is recommended to formulate preconditions for this aspect and for this reason it is included in the problem focus as a decision area on which a decision should be made. Possible options are increasing the accessibility of the city borders and the surrounding environment or decreasing the accessibility of the city borders and the surrounding areas. Because the concept of "city borders" is a whole new concept, there is not such a thing as the current accessibility between housing areas and city borders. For this reason the option of "same accessibility" is not formulated.

Decision area: accessibility

Options: higher acces, lower acces

We will now switch back to the Scenario Approach, and continue with the exploration of driving forces in the area. Since long term planning is a very useful tool to get clear what needs to be done on the short term, we will now start with this approach.

Driving forces are trends which occur and cannot be influenced by our government. These forces have considerable impact on the spatial order and should therefore be included in the research of this area. Also the Scenario Approach is based upon the relation between the uncontrollable and controllable futures. The driving forces will determine the shape of the uncontrollable future, called the external scenarios. Determining and examining the driving forces is a crucial step in developing the external scenarios.

6. Driving forces

In our research we have identified several important driving forces:

- Economical development
- Technological development
- Demographic development
- Energy prices development
- Agricultural developments
- Climate change

The next step is to examine the borders of these driving forces, this will reveal the highest and lowest boundaries of the driving forces and thus the width of the impact. Furthermore, it will reveal how uncertain the driving forces are, because the closer the boundaries are to each other, the better the estimation will be and thus the driving force is more certain.

6.1 Economical development

In figure 2 and table 2 the volume changes of the Gross National Income (BBP in Dutch) per year are shown for Oost-Nederland (Eastern part of the Netherlands), Overijssel and Twente. The boundaries of these changes over the last twelve years are a decline of minus one percent and a growth of maximum five percent. The numbers of 2009 (economical crisis) are not yet available, but will most likely be in line with the trend downwards. As we are thinking about the boundaries of the economy for the next twenty years we will face a maximum of five percent growth each year. The minimum will be around stagnation of the current level. (Centraal-Bureau-van-Statistiek, 2010; The-World-Bank, 2010)

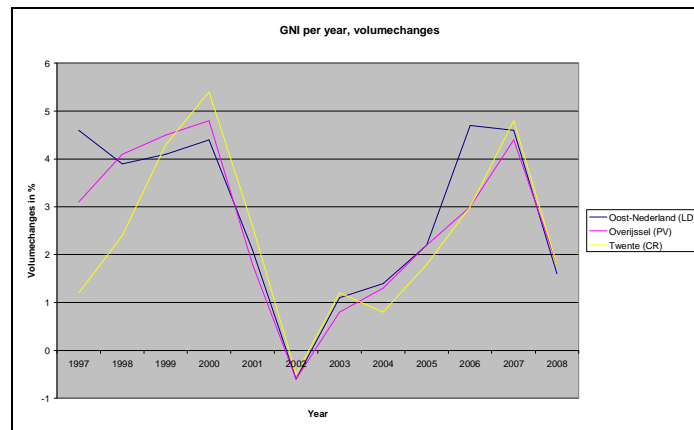


Figure 2: Gross National Income per year, volume changes (Centraal-Bureau-van-Statistiek, 2010)

GNI per year, volume changes			
Year	Oost-Nederland	Overijssel	Twente
1997	4,6	3,1	1,2
1998	3,9	4,1	2,4
1999	4,1	4,5	4,3
2000	4,4	4,8	5,4
2001	2,1	1,8	2,6
2002	-0,6	-0,6	-0,5
2003	1,1	0,8	1,2
2004	1,4	1,3	0,8
2005	2,2	2,2	1,8
2006	4,7	3,0	3,0
2007	4,6	4,4	4,8
2008	1,6	1,8	1,8

Table 2: Gross National income per year, volume changes(Centraal-Bureau-van-Statistiek, 2010)

6.2 Technological developments

When analyzing the technological development in the Twente region, there are several topics which are important. We have selected different developments according to technological issues in the region.

University of Twente

The first topic of technological development is the University of Twente which is located in the city of Enschede. At this University a lot of different innovations in different scientific fields are being made. For example the University has research fields and education fields where students are taking part in. Another aspect of the University is that they focus on the cooperation with companies and educational facilities. (UniversityTwente, 2010)

Living and building environment

In the region there are initiatives for sustainable building. An example of this can be found in Hengelo. In the district 'Slangenbeek' they are developing water basins -

called *wadi's* – which are a possibility for the rainwater to seep into the ground. (Afdeling Natuur & Milieu communicatie, 2008)
Sustainable building will also be developed in the district ‘Hart van Zuid’ in the municipality of Hengelo. (VROM, 2008)

Development in the health sector

Looking for technological development in the health sector, a lot of developments are being implemented. One example is combining different health services for different target groups. This will be done in the Health Park in Hengelo which is for elderly people and other target groups who are in need of care which is focused on their specific needs and preferences.

Flexible working places

This technological development does not only take place in the region of Twente, but in the whole country, and even in some other countries. It is a trend that more people want to work in flexible workplaces, in different office buildings, or at home.

Bio energy

There are different developments in the field of bio-energy and renewable energy sources. For example in Goor, there is a factory which processes rest wood into bio-energy. (EnergieMedia, 2010)

ICT-network in the Twente region

Another big subject of technological development is the ICT sector. In the Twente region the ICT sector is growing, like in other regions of the Netherlands. Companies are, for example, working together with the University of Twente to research and implement new possibilities of ICT.

The designation by the Ministry of Economics to stimulate the growth of the Twente region on ICT-services has led to development of the Twinning Centre. In Enschede the third Twinning Centre of the Netherlands is developed. (SZW, 1999)

Exploring the boundaries of the technological development

Off course there are more examples in the Twente region, but there is too much information we can use in exploring the boundaries of the technological development.

It is difficult to give figures as argumentation about this driving force, therefore we have chosen to do it otherwise. The lowest boundary of the technological development is the situation where there will be no technological development in the future. The technological innovations that are being created today can be still present. Taking the highest boundary of this driving force into account, it means that there are no limits to technological development in the next 20 years. There are many possibilities to implement technological innovations in different scientific fields.

6.3 Demographic development

Researching the demographic development of the Twente region has resulted in the prognoses which have been made by Central Bureau of Statistics (CBS). The have made a demographic prognoses for the entire Netherlands on a regional level. The

graphs in the annex show the results of these prognoses by the CBS. The prognoses give us with some interesting developments for the Twente region (Centraal-Bureau-van-Statistiek, 2010):

Stagnation

The population of Twente will reach its peak around the year 2030. This peak lays around 413.000 people. This trend is caused by the stagnation in population growth in the cities of Almelo, Hengelo and Enschede. The smaller cities of Borne and Oldenzaal will keep on growing, until the year 2040. Around 2040 these cities will reach their peak as well. The demographic trend in the rural municipality "Hof van Twente" will be a declining trend. This trend can be seen in the entire Netherlands; the rural areas are emptying. (Centraal-Bureau-van-Statistiek, 2010)

Gender ratio

Another trend in the Twente region is that the gender ratio is changing. By 2040 the ratio between men and women is estimated to be bigger than it is in 2010. The male population will grow with only five hundred men, while the female population will grow with almost ten thousand women. Making the exact difference nearly eleven times bigger than the difference in 2010, from eight hundred to nine thousand. This difference is mainly due to the fact that the city of Enschede will house ten thousand more women than men. The following tables will show the exact numbers. (Centraal-Bureau-van-Statistiek, 2010)

Exact numbers

Twente region			
	Total	Men	Women
2010	400.712	199.956	200.756
2040	410.389	200.453	209.936

Table 3: Population in the Twente Region

Population per municipalities:

Almelo			
	Total	Men	Women
2010	72.820	36.236	36.584
2040	75.851	38.155	37.696

Table 4: Population in Almelo

Borne			
	Total	Men	Women
2010	21.247	10.603	10.644
2040	22.658	11.219	11.439

Table 5: Population in Borne

Enschede			
	Total	Men	Women
2010	157.265	78.847	78.418
2040	156.962	73.497	83.465

Table 6: Population in Enschede

Hengelo			
	Total	Men	Women
2010	82.439	41.010	41.429
2040	88.392	44.534	43.858

Table 7: Population in Hengelo

Hof van Twente			
	Total	Men	Women
2010	35.177	17.408	17.769
2040	32.763	15.864	16.899

Table 8: Population in Hof van Twente

Oldenzaal			
	Total	Men	Women
2010	31.773	15.852	15.921
2040	33.763	17.184	16.579

Table 9: Population in Oldenzaal

Although the city of Enschede is mostly responsible for the change in the gender ratio, the total population is shrinking with almost one thousand people. Together with Hof van Twente these two municipalities are shrinking, while the others grow to their peaks in 2040. This is however one border and this can be seen as the low boundary. The high boundary in case of the demographic development is that the population will not shrink, but grows, even after the year 2030. This is however highly unlikely, because it is in conflict with the national trend, because on the national scale, and on European scale, the population growth will stagnate in the period 2030-2040.

6.4 Energy prices development

In 2030, prices for oil will be somewhere between the prices of today or double of that price. Prices for gas will slowly shrink, because they will be replaced by other forms of energy, like electricity. Technologically improved efficiencies will result in better and more use of renewable energy resources, depending on those technologies itself. In 2030, almost all households in Twente will be provided of locally produced energy. Because it is locally produced, it is likely prices will decrease, but it is still uncertain at what rate. (Nekkers et al., 2009) (Peak-Oil-News, 2010)

6.5 Agricultural development

Labour has become more expensive in the Netherlands over the last few years which has led to a systematic decline in the share of the agrarian sector in the Dutch economy. Partly because of this trend, the Netherlands have become the leader of the world in the area of developments in the agricultural sector; innovation is needed to maintain a profitable business.

There is one factor which had a leading role in these developments; the increase of the Dutch prosperity. This factor has influenced both the demand- and the offer side of the economy in the Netherlands. This can be explained as follows:

Once people get more money, the amount of money they spend on food declines disproportionate. Since people spend their money on other things than food, the production of these ‘other things’ increases more than the production in the agricultural sector. The share of the agricultural sector in the Dutch economy decreases.

A positive development is, as mentioned earlier, that the Dutch are now leaders in innovative solutions in the agricultural sector. They reached this position because of the higher payments for their personnel; it was cheaper to invent new machinery and methods, which they did.

The last decennia the situation in the Netherlands has changed a lot. Since the Netherlands are densely populated, the price per square area has risen to a high level. A result is that the productivity and the yield per square area have to be of a high level as well. Countries with a lower income level can produce crops cheaper than we can produce them in the Netherlands. The only reason we still can compete with them is because of our leading position on techniques and methods. Since the agrarian sector is ‘space-dependant’, it keeps getting harder to continue an agricultural company in a profitable way. (Poel, 2010)

6.6 Climate change

The Meteorological Institute of the Netherlands made 4 scenarios for climate change and the climate in 2050. These are the main conclusions: The warming-up of the earth will continue, resulting in warmer winters and summers occurring more and more. Average temperature will rise with between 0,9 and 2,8 °C. On average, winters will become more wet, a rise which will lie in between 4% and 14%. Also extreme precipitation amounts will increase. The severity of extreme showers in summer increases, but the number of rainy days in the summer will decrease. The calculated changes in wind climate are small compared to the natural characteristics. Furthermore, sea level will keep rising. (KNMI, 2006)

7. Impact uncertainty matrix

		Economical development Technological development
	Climate change Energy prices	Agrarian development
		Demographic development

Table 10: Impact-Uncertainty matrix

The driving forces climate change and energy prices have a medium impact and uncertainty. Because it is relatively clear how these driving forces will develop the impact in the region will not be as high as in other region of the world. The main effects of climate change are rise of sea levels and global warming. The global warming will have an impact in the Twente Region, but not very major ones. Energy prices will rise in the years to come, but it will not be high enough to make a serious impact on the region. Demographic development will have a high impact, but a low uncertainty comes out of the fact that the trend of Twente is the same on the national and European level, so it is very unlikely that it will change. The agrarian development has a higher uncertainty because there is quiet a range of agrarian developments. Developments as scale enlargement, production intensification or broadening of the activities. Together with the fact that the agriculture is already spatially diverse, this diversity can only become bigger in the future.

The economical development and technological developments are the two driving forces that have the most uncertainty and impact, because they are in nature

already very diverse and thus these driving forces can develop in very extreme levels. For example, the economy can boom or not, but it can also change in function, mainly seen from a governmental point of view. State driven or not. The predictions on technological developments are already very diverse, nanotechnology and biotechnology are just two scientific fields that can develop tremendous in the world to come.

<p>HIGH TECHNOLOGICAL DEVELOPMENT/LOW ECONOMICAL GROWTH</p> <ul style="list-style-type: none"> - demographic stagnation - new technique for public transport system, but lack of money - no expansion business parks - social government - farming is not in danger - due to <i>clean</i> technologies less environmental impact 	<p>HIGH TECHNOLOGICAL DEVELOPMENT/HIGH ECONOMICAL GROWTH</p> <ul style="list-style-type: none"> - demographic stagnation - better position as a region - more efficient public transport - more (green) business parks - more money to spend - use of the recreational routes and facilities - more liberal thinking in the political system; freedom to choose / market economy - productions farms are gone because of efficiency - use of more different new energy sources - more awareness of the natural environment (policy making)
<p>LOW TECHNOLOGICAL DEVELOPMENT/LOW ECONOMICAL GROWTH</p> <ul style="list-style-type: none"> - demographic stagnation - maintain the same public transport possibilities - no expansion of business parks - more interference by government, social system - agriculture on a large scale to improve competitive position - awareness of natural situation, but no priority in decision making 	<p>LOW TECHNOLOGICAL DEVELOPMENT/HIGH ECONOMICAL GROWTH</p> <ul style="list-style-type: none"> - demographic stagnation - expansion of existing public transport - expansion of business parks - liberal government - no farming since economical pressure and lack of technological developments - money available for preserving nature which is necessary due to all polluting techniques used in the past

Table 11: Scenario matrix

Now the impact-uncertainty is done, we will derive two external scenarios. The two most extreme scenarios will be described below. We chose to describe the most extreme scenarios because this shows us the range of possible futures. First we will describe the scenario with a high economic growth and a high technological development (scenario Twente on the move). The other scenario described is the 'low/low'-scenario (Twente on track).(Friend and Hickling, 2005)

8. External scenarios

8.1 Twente on the move

Map 5: Twente on the move

Map 6: Detailscenario 1 : High economic growth & high technological development; wijk Stroom Esch Borne

Map 7: Detailscenario 2: high economic growth & high technological development; Lonneker near Enschede

In 'Twente on the move' we will face a lot of changes and challenges in the area. These changes and challenges are described below. The main issues are the economic growth and the expansion of technology in all matters. This will be integrated with more awareness of the environment.



Figure 3: Impression

More business parks

The business parks on the planning at this very moment will be developed further on, but in a green, low density way. The business parks will be integrated in the landscape, instead of obstructing it (for example the blue IKEA building obstructing sight in the green corridor between Hengelo and Borne).



Figure 4: Impression

More efficient public transport

It is not possible to introduce a complete new transport system in the next 20 years. What will be possible is a more efficient and more frequent transport system for the region as it is now. This could be done by introducing more buss lanes, since the train network is already at its highest capacity as it is now. We put bus lanes next to the already existing main roads, in this way there will be a rapid bus connection between the triangle of cities (Enschede, Hengelo, Oldenzaal and Twente airport) and Borne and Almelo.

More spare time due to teleworking and smarter routes to work

Since a lot of traffic already passes through the highways in the region there will be a small expansion of the network. People can now make use of this extended network and/or the improved public transport system. Since teleworking will be more accepted and integrated in the society, people lose more time travelling to work and will thus have more spare time. This spare time can and will be used for recreation in

and around the cities. This makes the city borders more important as a link between the rural area and the cities.



More use of recreational routes and facilities

The extra spare time described above makes it possible for people to be more outside their home-work-sleep rhythm and will be triggered to explore the beautiful developed city borders developed. The city borders will be the link between the city and the rural area. People are delighted to walk, cycle and sport around here, but will also be invited to simply relax in the area.

Figure 5: Impression

Agricultural changes in the area

Since farming will face great concurrence from other cheap producing countries, farming in The Netherlands will most likely disappear. What will be left are some



bigger, large scale farms. Hobby farming is still possible, but only in combination with secondary activities. Existing farms may eventually become residential areas on a small scale. This means new opportunities for living in the rural area, and no expansion of the urban area towards the rural area. This creates extra money for the development of the rural area.

Figure 6: Impression

Demographic stagnation

We will face the increasing number of 10.000 households towards 2030. This is a maximum. The new houses will be integrated in the city borders and the landscape as much as possible. The 'houses for farms' concept described above will have a great account in the meeting of 10.000 households. If any extra housing is needed this will be developed near Enschede. This means less pressure on the green corridor of 'Groene Poort' and no need to grow towards Twickel and Overijssels Landschap. The expansions will take place in the south of Enschede and the east, and a little in the north.

More awareness of natural environment > protection

People will become more aware of this 'last chance' we get to change our lifestyles and get busy with the environment. Therefore this leads to a bigger budget to spend on green technologies and nature protection. Cleaner technologies will reduce pollution, and rural areas will not become urban areas. We think green corridors in the region have the future. They can connect different areas of the Ecological Main Structure and are also a 'green' way out of the cities into the rural areas.



Figure 7: Impression

Use of new energy sources

The use of cleaner technologies will result in a cleaner environment. In the detail elaboration of the scenario, some solar panel fields are placed. We expect that solar



energy is the energy of the future and with a high economic growth and high technological development, solar panels will be much more efficient and cheaper then they are nowadays. Besides solar panels in the rural area it is very well possible to place them on roofs in the city.

Figure 8: Impression
Opening of the airport

Due to the free market economy the Twente Airport will open again for commercial flights. This will attract new investors to the area, and will bring new businesses to the area close to the airport. This will be tolerated, but only on a small scale, in which the business park will fit in the landscape and will not expand to its maximum



limits. The Weerseloseweg will be upgraded to fulfil the increasing traffic demand. Due to the awareness of the natural environment, the most important road to the airport, Weerseloseweg, will be deepened, to keep the damage to the nature around the airport to a minimum.

Figure 9: Impression

8.2 Twente on track

Map 8: Detailscenario 1: low economic growth & low technological development; wijk Stroom Esch Borne

Map 9: Detailscenario 2: low economic growth & low technological development; south of Hengelo

In this scenario the economic development will stagnate in the Twente Region in the next 20 years. Also the state of the technique will stay at the same level as it is nowadays. These developments have consequences on the daily life of the people. This scenario is called “Twente on track”, because of the fact that there will be less new developments in the city borders regarding the current situation. The government as well as the inhabitants of the region will have the same amount or less money to spend. This will lead to a situation in which both have different priorities as nowadays and there will be a higher intervention of the government on some aspects of life. The consequences of this will be sketched in the next sections.

Empty business parks and industrial areas

The stagnation of the economic growth causes that there is no demand for more room for business parks and industries. As in the current situations parts of the existing business parks in the city-fringes are not in use. Nowadays the part of business parks and industrial areas which are empty is about an average of 15 percent. (Harmsen, 2008) We expect that, due to the economic stagnation, this percentage will increase in the future till about 30 percent in 2030. The business and industrial sector in Twente has difficulties to compete with more vital regions, for example the Randstad. The problem is that the government doesn't have the money to invest in this inefficient situation. Therefore the situations in the business parks will not change and still parts of these areas will stay empty. Because of the lack of money the business parks cannot become converted in green business parks, so they will still be a barrier for people to enter the rural area (this can be seen very well on map 6).

Exceptions on this are the knowledge related companies. The knowledge sector gets high support of the government, especially in economically hard times. Support of this sector is one of the important issues of the government to stimulate economical growth and technological development.



Figure 10: Impression

Demographic stagnation and housing

The stagnation of the population growth causes that the amount of people living in the Twente region will nearly stay the same the next 30 years. Furthermore a small part of the population will leave Twente and migrate to the west of the Netherlands to find work. This will only be a small amount of people due to the high bondage of people to the region. For this reason the region does not have to provide new houses.

Less spare time, no need for extra recreational facilities

Due to the lack of development of new technological possibilities, the public transport system will stay roughly the same and the road network will not be extended. Traffic jams will still be present. Because of that, people still have to spend a lot of time on commuting. Aging will become a bigger issue, so people in Twente have to work more and longer to provide the social services needed for elderly people. Because of this and because the commuting time won't decrease, less spare time remains for the people. So there is no need for extra recreational facilities, like recreational routes, in the city-fringes. The still existing recreational routes will remain in the future.

More social thinking in the political system (social government)

Due to the aging of the population and the weak economical situation there will be a high interference of the government. With high interference of the government they can reach a situation in which economical growth and technological development will be present again.

Agricultural farms are gone or will face scale enlargement

In the next 20 years the current trends in the agrarian sector will go on, but there development of new techniques for farming will stop. This means that the only possibility for the farmers to get a more profitable company is to increase their farms. The possibilities of secondary activities to raise their income are limited. This is because the residents hardly need these kinds of facilities. They need their money to provide in their primary needs. Because of the small scale landscape also many farmers will make the decision to quit their companies or leave Twente to start again in another area. The released agrarian buildings largely will get a residential function. Also the existing land use of orchards will extend to a larger scale. The tendency of the remaining farmers and orchard-owners to scale-enlargement has implications for the appearance of the landscape around the cities. If the government doesn't protect the small scale landscape, because of other priorities, the landscape slowly will change in a less scattered landscape with bigger farms.



Figure 11: Example of the transition from a small scale landscape to a less scattered landscape (ROM3D, 2009)

More awareness but less attention for the natural environment

The current areas meant for nature development and recreational purposes are still the same in the future. There will be more awareness about nature protection. However, there will be less attention for the protection of nature in policy plans. This is because the government has other priorities like stimulation of the economy, so the availability of nature in the city-fringes will remain the same. Despite of less attention for nature protection in policy plans, the nature still can be protected, for example by nature protection clubs.

After describing the scenarios two different desirable futures will be developed. The opinions of the stakeholders will be taken into account during the development of these futures. This gives us an insight in the wider social problems in the region. The aim of developing these futures is to generate discussion and broaden the scope of the inhabitants of the planning area. These desirable futures will give an insight in how broad the developments of the city borders can be.

9. Desirable images of the future

9.1 Vision: TINC – Twente Innovation and Culture in 2030

Map 10: Vision TINC Twente region

Map 11: Vision TINC wijk Stroom Esch

Map 12: Vision TINC Lonneker near Enschede

The Netherlands are a small and dynamic country, which changed a lot over the past 150 years. These changes are very diverse; spatial changes, but also social, technical and cultural changes have been occurring rapidly. Twente reacted to these developments by restructuring their city borders, an approximately 400 meters wide stroke around the cities, in a sustainable and efficient way. Right now these borders are of high quality and very attractive for inhabitants and even for people outside the area to visit and enjoy. (Stichting-ZijdeOost, 2008)

The most important aspects of these borders are culture and innovation; the focus the region Twente is using since the start of the ‘city boarder project’ in 2010.



Culture

The cultural heritage of the area is strengthened and made visible in the landscape. Within the city borders the characteristics of the present landscape type is explicitly made visible. Around Borne for example, the characteristics of the “kampenlandschap”- landscape type, a small-scale land type, are strengthened in the city border by for example developing hedgerows.

Figure 12: Impression

On cultural grounds there have been several changes as well. The open air theatre in Hertme has been transformed to a successful cultural platform and is now functioning as an example for other cultural stages in Twente. Neighbourhoods use those platforms to meet, bond and enjoy each other’s talents. In imitation of the success of the open air theatres, artists in the Twente area have their own workplace in the city fringes around the cities. Inhabitants and visitors can visit these artistic shacks; they can enjoy the artworks and for the artists it is a great opportunity to present their work. Workshops for the inhabitants are frequently organized on these workplaces.

Nature

Within the city borders the nature will be maintained and if possible strengthened according to the occurring landscape type. Like mentioned before with the development of the hedgerows in the "kampenlandschap"- landscape type. The area between Borne and Almelo is kept open and development as a green border.

Culture, innovation and recreation

Culture and innovation is now intertwined with nature and recreation networks and the city borders are an attractive landscape for people to experience. Children can play and learn at one of the many educative playgrounds at which they are stimulated to think, explore and invent. These are not ordinary standard playgrounds, but more "do-it-yourself"- playgrounds. Elderly people can enjoy the different recreation routes, for example bicycle- and walking routes, and adolescent people



are able to meet with their friends, enjoy games or just hang out. As an example: frisbee golf is introduced in the city borders of Twente.

Furthermore, there are several authentic 'Twentse' restaurants in the area. These restaurants use ingredients which are grown close by. In this way restaurants and their customers can get food from their own area and at the same time help the farmers in earning a

living.

Figure 13: Impression (City-of-Liberty-Lake, 2005)

Agriculture

Most of the in 2010 present farmers in the city borders were able to continue their work, and at that point not much has changed for them. But, expansion of farms in the city borders was and still is not allowed. Another change is, as mentioned before, the fact that right now farmers are also producing food especially for restaurants and shops in their own environment.

Industry

Except for restaurants and recreational attractions no new industry is allowed in the city borders. The business parks and industry which were already present in 2010 are right now changed in more 'green business parks'. With more attention for nature, reducing the energy use and emissions and a clean environment.



Innovation and energy use

As people are making more and more use of electric cars and bikes since about 2010, there are several charging points for electric cars and bikes across the city borders. Because of the goal to reduce the energy use, there are new and efficient street lamps which will only switch on if somebody is passing by.

Figure 14: Impression (UniversityTwente, 2010)

Innovation and education

The University of Twente has offered to play a part in the project of restructuring the city borders, in order to enlarge the relation and communication between the university and the inhabitants of the region. Now, the University of Twente has test-fields at some places in the region. Here they can perform experiments in front of interested people. In this way they got in contact with the locals in the area and the University and interested people help each other doing research and stimulating each other.

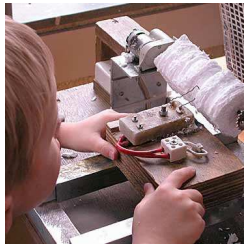


Figure 15: Impression (De-Ontdekhoek, 2005)

Communication with visitors and inhabitants

Inhabitants and visitors of the area are informed about the activities in the area via several communication systems. For example there are information boards across the borders with information about routes, networks, stages to pause, catering possibilities, restrooms and attractions. The VVV provides folders about these topics and it is also possible to receive this information by mobile phone.

Due to the restructuring of the city borders, people have a bond with the area and like to go there after their school- or work time or other mandatory activities.

9.2 Vision Green Twente

Map 13: Vision Green Twente; Twente region

Map 14: Detail vision Green Twente wijk Stroom Esch Borne

Map 15: Detail vision Green Twente South-East Hengelo

The main focus of this vision is to create a liveable environment with a lot of nature values, parks and recreational options. It will be a future where local residents can recreate in the region and a lot of touristic activities will take place. The urban areas will become more integrated in the rural area because of the city borders. The agriculture will maintain the landscape in the rural region and can provide recreational options. The landscape in the region has a lot of values, there are many estates and forested areas. These landscapes can attract a lot of tourism and the region should make use of this tourism. Because the Twente region does not have enough means to compete with the more economic developed areas in the Netherlands, this focus on recreation and tourism is a big opportunity for the region. The Regional Urban Network in 2030 will be much better integrated in the landscape. The cities will be famous for their green image, there will be more parks and trees in the city centres and surrounding areas. The transition from the urban to the rural area will be more gradual. The city borders play an important role in this transition, in these borders there will be more room for recreational green areas. (Rijk de andHogenboom, 2007)

Recreation

Twente in 2030 will exist out of the Regional Urban Network with city borders which



consist of a lot of recreational possibilities. These recreational opportunities will consist of route-bound and place-bound recreation. Both will be present in the city, city borders and in the rural areas.

Figure 16: Impression (Broeke, 2009)

The recreational routes will connect these three areas, also they will be connected with the recreational routes on a national level.

The Twente Airport will become a recreational airport for gliders and small and private owned airplanes. The city borders should have a multifunctional recreational character. This means that the city borders will be integrated with several recreational functions, such as campsites, walking and cycle routes. Giving several recreational possibilities for every group of people. This will create new ways people will experience the landscape and there will be business possibilities with the recreation as well.

Agriculture

The recreation in the Twente region will have several forms, e.g. single day, and the agricultural sector will play an important role in this sector. The trend of the agricultural sector is that the sector is declining in size. Many farmers will be forced to widen their activities to maintain a proper income level. In the Twente region several farmers will be able to apply scale enlargement or intensify their agricultural activities – this will be done in the outer laying rural areas – but most of the farmers will have to broaden their activities. This broadening will consist mainly out of recreational activities, such as campsites, health farms and fairs. In the city borders these broadened forms of agriculture will form the bulk of the city borders and will connect the urban areas with the rural areas in quite a direct way. These farms form a barrier for the urban expansions and thus should be maintained. They offer recreational options in the city borders and they maintain the landscape.

Nature

The Ecological Main Structure will be enhanced in the Twente region. Three corridors will be created or strengthened through the Regional Urban Network. The corridors will lie between Almelo and Borne, Hengelo and Enschede and Oldenzaal and Hengelo. These corridors will enhance the city borders, because nature will be located in the vicinity of the urban areas. The corridors can be used as walking zones in the city borders, there will not be a lot of activities going on in these areas besides walking. They will also prevent that the cities will grow to become one big city. The forest areas surrounding the Twente Airport will prove to be an important nature area and it will not be disturbed by the recreational function of the airport. Nature will in some areas of the city borders function as a barrier between cities, for example the cities of Enschede and Hengelo will remain two separate cities, instead of one. (Vanhouwre, 2006)

Industry

The industry in the Twente region will lose much of its competitive position. Many industrial companies will be forced to relocate their activities to other areas. Such as the Rotterdam or Delfzijl harbours. Some industrial activities however will be able to stay, because these activities are regionally bound – such as the salt production. These abounded industrial areas can be developed for the city borders. Connecting the residential areas directly with the rural areas through the city borders. The shrinking of the industrial areas will give more space for recreational and nature possibilities. Thus meaning the city borders will be more green and accessible for the inhabitants of the cities of Twente.

Commerce

The commercial areas that now lay in the outer urban areas at the junctions of the highways will move to the city centres. This because this sector will rely more on the movement of people, than on the movement of capital and goods. ICT and banking will become the most dominant sectors in the Twente region.

The commercial areas that will remain at the city borders will become more green, this to create a better connection between urban and rural areas. But also to take down the barrier for people to go out and visit the rural area. People do not want to go through a commercial area to be able to recreate in the rural areas. Making new business parks more green and environmental friendly will ensure that there are

more access points with the city borders and thus ensuring a better connection with the residential areas. (OSA-Power, 19-1-2010) (VROM, 2008)



Infrastructure

The highways, A1 and A35 shall be expanded and also become more important in the regional connectivity. Traffic between the cities will take place on these highways. The highways will have several adjustments to decrease the pollutions, for example noise barriers. When all the traffic in the region uses these highways it will have a positive effect on nature. (Mullin et al., December

2007)

Figure 17: Impression (MJPO, 2004)

Because the provincial roads will be used less and thus will be less of a barrier for animals and this will effectively enlarge their habitat. Some provincial roads or parts of roads will be downgraded and adjusted so there will be no unwanted traffic. There will be more room for nature and recreation, this can be realized through the upgrades of the highways. With the downgrading of several roads in the area the city borders and the rural areas will be less fragmented. This will mean fewer barriers for animals and recreants. Each of the cities in the Regional Urban Network will have its own bypass. With these bypasses the inhabitants will have a faster connection with the highways. Because several roads in the rural area are downgraded the connectivity with the highways should be improved.

City Borders

The borders of each city are to be filled in by the municipality who controls the area and should be integrated in the landscape. The borders need to respond to the characteristics of the area, so not all city borders become the same. This way the



landscape gets a dynamical stature through the city borders. In the borders recreation routes for all kind of activities will be present. These routes will lead the users through the rural areas with all its opportunities. The Twente region will be well known with the Dutch people as a place to go on a holiday or for weekend recreation. (Gemeente-Geldrop-Mierlo, 2009)

Figure 18: Impression(Ronde, 2008)

SWOT stands for Strength, Weakness, Opportunities & Threats. It is an analysis of how the desirable futures relate to the present situation – in strengths and weaknesses- and how the external scenarios and the desirable futures - in opportunities and threats - relate to each other. These are primarily spatial relations and will therefore be presented with visual materials. The opportunities and threats are important issues when we want to derive our desirable futures.

10. SWOT-analysis

The SWOT analysis consists of two steps. One is to overlap the present situation with the desirable futures. This will reveal the strengths and weaknesses of the desirable futures in comparison of the present situation. The second step is to compare the desirable futures with the external scenarios. This will reveal the opportunities and threats of the desirable futures in comparison to the revealed trends in the external scenarios. This eventually leads to four SWOT analyses. The next scheme is an overview of the analysis.

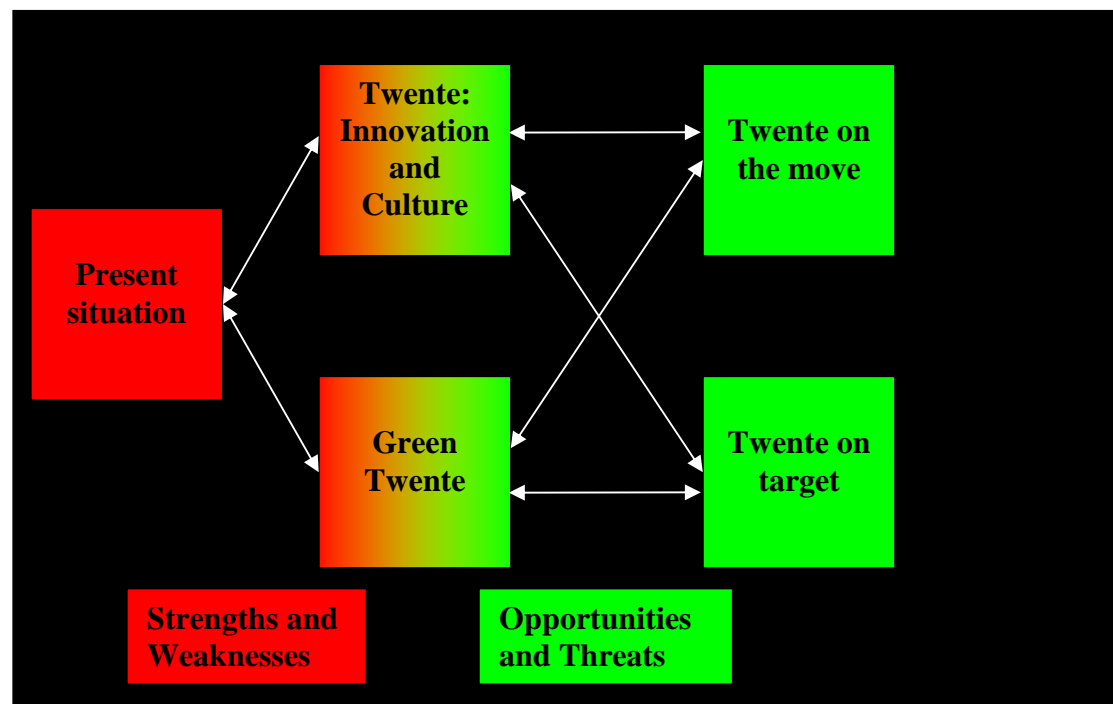


Figure 19: SWOT analysis

10.1 SWOT: Present situation and ‘Twente: Innovation and Culture’

Map 16: SWOT-analysis Vision TINC & Low Low scenario

Map 17: SWOT-analysis Vision TINC & high high scenario

The Twente region

By comparing the present situation and the vision innovation and culture the strengths and weaknesses of the current situation are revealed, in light of the desirable future. This will show where the focus should be in order to achieve the desirable future.

Strengths

- The lateral moraine in the east of the Twente region: because of the safety of the high position and the by most people appreciated view at the lateral moraine and the view of the lateral moraine itself.
- The cultural heritage which is present in the whole region: because the visions main focus is on culture and the strengthening of it, the current cultural heritage is a strong point. Current cultural heritage elements for example are: open-air theatre and estates.
- Recreation routes: it is a positive point that there are already several walking and cycling routes across the area, because these routes provides opportunities and possibilities to visit and experience the region and the city borders.
- Recreational attractions and facilities: in the area there are currently a lot of camping's, bungalows, marinas and group accommodations, which is a strength of the region. These facilities make the landscape more attractive to visit for holiday resort and these kinds of accommodations will also attract tourists to the region.
There are also some recreational attractions, which make the area more attractive for the inhabitants and tourists as well.
- Water (for recreation and transport) : the current water has a positive effect on the experience of the landscape. Furthermore, water can have a recreational function and therefore make the area more attractive for the inhabitants and the tourists.
On the other hand there are the canals, which are used for transportation. This is a strong point as well.
- University of Twente: this university creates opportunities for innovation, an important aspect in this vision culture and innovation.
- National Landscape: this is a by law protected area, which is considered as valuable because of the occurring nature and cultural heritage; important aspects in the vision as well.
- Farms and farmers: these are of high value for this vision, because they shape the landscape and in that way actually created the landscape. And they can sell regional products. Both are important aspects of the cultural heritage.
- Currently existing nature: in the vision culture and innovation will be intertwined with recreation and nature, in order to achieve a landscape of high quality, which is considered as very attractive by the inhabitants, as well as tourists.

- Occurring of different landscape types: because of the fact that there are a lot of different landscape types present in the Twente region, the area is very dynamic and diverse.

Weaknesses

- The airport which is out of order: right now this is a relatively useless object in the area.
- Industry: at the moment the industrial areas are a barrier between the city and the city borders and surrounding area.

The detail area: Wijk Stroom-Esch Borne:

In the detailed map there are the same strengths and weaknesses as mentioned for the Twente region.

10.2 SWOT: Twente on target and Twente: Innovation and Culture

Map 18: SWOT-analysis Vision TINC & Low Low scenario

The Twente region:

By comparing the scenario with low economical growth and low technological development and the vision innovation and culture the opportunities and threats will be identified.

Several positive aspects, the opportunities, and negative aspects, the threats, will become clear.

Opportunities

- Green corridor between Borne and Almelo: in the low- low scenario nothing will happen with the green corridor between Borne and Almelo. This can be seen as an opportunity, because this gives opportunities to give this area the function which is desired according to the vision, which is in this case a green corridor.
- City borders: in the city borders nothing happens in the low-low scenario, because of a lack of technological and economical development, so it is an opportunity for the vision for the same reason as mentioned above with the green corridor. If the development of these areas is managed well, these areas have a great opportunity to become more attractive.

Threats

- Scale-enlarging of farms within the city borders: according to the vision, no scale-enlargement of farms in the city borders is allowed because it has to be an attractive and small-scale landscape. So this is a threat for the vision.
- Neglected industry: according to the scenario a lot of industrial areas will be abandoned, which will lead to neglected industrial areas. This is a threat for the vision with culture and innovation as the two main aspects, because neglected industry will lead to regression instead of innovation.
- The airport out of order: in the scenario the airport of Twente will not function as an airport. This is a threat for the vision, for the same reason as

mentioned by the neglected industry; this will lead to regression instead of innovation.

- No technological development: because there is no technological development it will be difficult to achieve the desired future with innovation as one of the main aspects.
- No economical development: because of the fact that there is no economical development it will be difficult to achieve the desired future with innovation as one of the main aspects.

The detailed area: Wijk Stroom-Esch Borne:

Map 19: SWOT-analysis Vision TINC & detail low low scenario

In the detailed there are the same opportunities and threats as mentioned for the Twente region.

10.3 SWOT: Twente on the move and Twente: Innovation and Culture

Map 20: SWOT-analysis Vision TINC & high high scenario

The Twente region:

By comparing the scenario with high economical growth and high technological development and the vision innovation and culture the opportunities and threats will be identified.

Several positive aspects, the opportunities, and negative aspects, the threats, will become clear.

Opportunities

- Green corridors: according to the scenario, several green corridors will be developed. That is an opportunity for the vision, because in the vision a lot of green space is needed as well in order to make the landscape more attractive.
- “Green” business parks: right now the industry and business areas are a threat for the vision, because they are seen as a barrier between the inhabitants and the city borders and surrounding area. When they change into “green” business parks, with more attention for a green and clean environment and less energy use and emissions, they are actually an opportunity to improve the quality of the environment.
- Profitable airport with “green” business parks: this is in line with the vision culture and innovation.
- Improvement of the quality of the city borders: in this scenario the quality of the city borders will increase, this is in line with the desired future for the city borders in the region.
- Sunken location of the road between Hengelo and Enschede: this way the road will be less of a barrier in the landscape and because of the sunken location the nuisance of noise and the countenance of the road will decrease.
- Diversified agriculture: diversified agriculture will strengthen the cultural heritage of the region and is for that reason an opportunity to achieve the desired future.

Threats

- Scale-enlarging of farms within the city borders: according to the vision, no scale-enlargement of farms in the city borders is allowed. Because it has to be an attractive and small-scale landscape. So this is a threat for the vision.
- New business parks in the city borders: according to the vision, business parks are barriers between the inhabitants and the city borders and the surrounding area. So it is necessary that the current business parks will change into more “green” business parks and it is certainly not allowed to build new business parks in the city borders of the Twente region.
- New bus lane: this can be seen as a threat for the vision, because this will increase the traffic in the city borders, which is regarded as negative. On the other hand, the area has to be accessible for the inhabitants and tourists, so it depends on the way of implementation of this new lane in the landscape whether it is a threat or an opportunity.

The detailed area: Wijk Stroom-Esch Borne:

Map 21: SWOT-analysis Vision TINC & detail high high scenario

Opportunities

- According to the scenario solar panels will be placed near Borne. Because the vision is about culture and innovation, this is a positive development.
- The development of new camp sites within the city border of Borne is a positive aspect as well, because it is a goal to make the city borders and the surrounding area more attractive and accessible for the inhabitants of the region and tourists.
- The same holds for the new walking routes which will be implemented according to the scenario. These are also great opportunities to make the region more attractive.

10.4 SWOT: Present situation and Green Twente

Map 22: SWOT analysis Vision Green Twente & low low scenario

Map 23: SWOT-analysis Vision Green Twente & high high scenario

The Twente region

By comparing the present situation and the vision Green Twente the strengths and weaknesses of the current situation are revealed, in light of the desirable future, this will show where the focus should be in order to achieve the desirable future.

Strengths

A big strength of the present situation for the vision is the presence of National Landscape Noord-Oost Twente. This ensures that the areas in the National Landscape are protected and the landscape must stay the same. So, the green areas in the landscape will stay and this is an important part of the desirable future. Furthermore, the forested areas outside the National Landscape are strengths, because they are desired in the vision. The only disadvantage is that these spots are not as protected as the National Landscape. Other strengths are the recreational places, like camping's, bungalows and group accommodations. These are also an important issue of the desirable future.

Weaknesses

All business parks and industrial areas are weaknesses for Green Twente. These areas are not attractive for recreation and are very hard to turn into green places. Provincial roads and highways are weaknesses for the vision, because they form barriers in the rural areas. They also influence the surrounding nature areas in a negative way, like sound and smell nuisance. The same goes for the railways in the region.

The Detailed area: Wijk Stroom-Esch Borne

Map 24: SWOT-analysis Vision Green Twente & detail high high scenario

Strengths

The detailed area 'wijk Stroom Esch' Borne is located at the border of the town. The urban area is surrounded by the rural area. In this rural area nature values are present, such as the streams and the hedgerows. There are some farms orchards and the identity of the landscape is small-scaled agriculture. The nature features in the area are the most important strengths. The theatre near the village of Hertme is a strong item in the landscape.

Hertme itself as a small village is a strong element in the small scale landscape preferred by the 'Green Twente' vision.

Weaknesses

There is a business park located in the detailed area which can be seen as a weakness. This area is a barrier for the local residents to cross and go out in the rural area. The big farms in the rural parts are weaknesses because they can be seen as skyline pollution. The provincial road is a big barrier in the landscape for recreational and

ecological possibilities. The smaller roads scattering forests can also be seen as weaknesses.

10.5 SWOT: Twente on target and Green Twente

Map 25: SWOT analysis Vision Green Twente & Low Low scenario

The Twente region

By comparing the scenario with high economical growth and high technological development and the Vision Green Twente the opportunities and threats will be identified.

Several positive aspects, the opportunities, and negative aspects, the threats, will become clear.

Opportunities

In this scenario there are no changes, therefore are a lot of opportunities for nature development and the Ecological Main Structure are present. The EMS can be developed and strengthened in the area around the airport.

The areas which contain business parks are areas with good opportunities to stimulate nature development. The business buildings can be demolished or pioneer vegetation can start to grow on the sites.

The stagnation of changes in the urban areas is a good opportunity to develop a city border. This border can stop the cluttering of the city outlines. In this way the transition of the urban area with the rural area will be a lot better.

There are opportunities for the farmers to start with large-scale farm sides in the rural areas far from the cities. In this way the sector stays vital and the people who recreate close by the cities have no annoyance of the farm sides.

Threats

The business parks can be a handicap to go out and recreate in the areas behind these parks. This handicap can grow when the sides are abandoned and dirty. This problem also occurs within the industrial areas near the canal and harbours.

Farmers who want to start large-scale farms close to the cities form a threat for the city borders. The large-scale farms damage the cultural landscape, hedgerows will disappear and the pollution increases. All these aspects have a negative influence on the recreational possibilities in the region and thus the city borders.

The development of houses outside the city borders e.g. in the old farmhouses, is a threat for the rural areas. In this way the traffic will increase and the downgraded roads will be overloaded. The agricultural nature conservation will decrease with the lose of farmers. This will harm the rural areas and nature values will decrease.

Detailed area: Wijk Stroom-Esch Borne

Map 26: SWOT-analysis Vision Green Twente & detail low low scenario

Opportunities

The business park in Borne can become greener when some buildings are abandoned. The barrier towards the rural area can become less of an issue when this business site has more contains more nature. The small developments of nature in the rural area are opportunities. The stream can be strengthened or some

hedgerows can be developed. Because the priority in this scenario is focused more on the people and economics than on nature development, there will not be that many opportunities to realize the vision ‘Green Twente’.

Threats

The threats in this detailed area are all formed by the agricultural sector. There is a threat of losing the small-scaled landscape because of expansions of farms. Scale-enlargement is a preferred option in the ‘Twente on target’ scenario, this forms a threat for realizing our green vision. The landscape will have fewer hedgerows and loses its identity. The possibility of housing in the rural area is also a threat. This means the area has more traffic to handle and the landscape becomes more scattered than before.

10.6 SWOT: Twente on the move and Green Twente

Map 27: SWOT-analysis Vision Green Twente & high high scenario

The Twente region

By comparing the scenario with high economical growth and high technological development and the Vision Green Twente the opportunities and threats will be identified.

Several positive aspects, the opportunities, and negative aspects, the threats, will become clear.

Opportunities

The different green corridors off the scenario are opportunities when confronted with this desirable future. The corridors ensure green ways to get out of the cities and also improve the already present Ecological Main Structure.

Camping’s in the region are an opportunity, because farmers will have to look for secondary activities next to farming. Farming only will not be profitable enough to make a living.

For this reason, scaling up is also an opportunity. However, this is only an opportunity further away from the cities. Closer to the cities, scaling up damages the small scaled landscape.

The railway from Haaksbergen to Enschede is an opportunity, because it can be very useful in a scenario with high economic growth.

City borders in the scenario form opportunities, they prevent the cities from expanding too much. This prevention is established in a green way, so the cities are almost invisible when seen from the rural areas.

Threats

Closer to cities, scaling up is a threat; it threatens the characteristic small scale landscape.

In places around cities where this kind of city borders are not present in the scenario, these “missing” city borders are threats for the obvious same reasons.

Expansions of business parks in the cities, which are present in the scenario, are threats to the desirable future. They are threats to the green image of the desirable future and are dangerous for the natural areas outside the cities.

Where roads in the scenario are upgraded or get an extra bus lane and where roads in the desirable future are downgraded, threats arise. Up- and downgrading of these roads collides.

Detailed area: Wijk Stroom-Esch Borne

Map 28: SWOT-analysis Vision Green Twente & detail high high scenario

Opportunities

The greening of the city border is an issue that came up in both the scenario and desired future and is therefore an opportunity. This means: more trees, hedges and other green places in the border. Some farms will get the opportunity to develop side activities (camping, health farm). The creek going through the area will be developed in a green way. Natural farming and a walking route are great opportunities to get a way out of town. This fits with the wish to get green corridors out of town towards the rural area. The short walking route is also an opportunity to create educational routes through the area. In combination with an animal farm especially for kids and passing a health farm makes this area also interesting for side activities and educational points.

Threats

The scaling up of farms predicted to happen in the scenario is a real threat towards the small scale landscape we would like to maintain in the Green Twente vision. Also the development of the new neighbourhood of Borne, ‘Bornse Maten’, is not foreseen in the Green Twente vision, whilst the economical positive scenario does face an expansion of the city areas. The scaling up of the farms gives room to develop more houses in the rural area. Expansion of the amount of households and no reduction of the rural area are threats towards the small scale area, worried about the size of all the different plots. Some roads will be removed in order to get little larger areas and make the area less scattered.

A policy scenario contains measures that need to be executed and strategies needed to follow in order to realize the desirable future or vision in light of a certain external scenario. Thus the starting point is a specific external scenario. Then this scenario is compared with the desirable future. For the differences that will occur policies need to be made in order to realize the future vision.

11. Policy strategies

In our research we have made two external scenarios and two future visions. The scenario 'Twente on the move' is made out of the assumption of high economical growth and high technological developments. This scenario shows a lot of changes compared to the present situation. This means we need to produce policies and strategies for many developments.

The scenario 'Twente on target' is based upon low economical and technological developments and therefore fewer changes are foreseen. Since we have shown how to deal with the several developments in the 'Twente on the move' scenario we will not do this for the small amount of developments in the scenario 'Twente on target'; we think that describing and showing one of them as an example will show our method well enough.

11.1 TINC & Twente on the move

Measures region Twente

Map 29: TINC Strategy Map; Twente region

1. Opening of Twente Airport with green business park

According to the vision, the Airport of Twente, which is out of use at the moment, has to be opened again. A "green"- business park can be developed as well nearby this airport, but with restriction on the expansion of this business area, because it is close by the city borders and the protected "Nationaal Landschap Overijssel"

2. Upgrading of the Weerseloseweg and lower this road in the landscape

Due to the extra traffic generated by the opening of the airport, the Weerseloseweg has to be upgraded. This will also lead to a reduction of the traffic through Hengelo. To reduce pollutions, to prevent dangerous traffic situations and to make sure the Weerseloseweg will not become a barrier in the landscape, the road will be lowered in the landscape.

3. Construction of bus lanes to improve public transport

To create a fast connection between the cities Oldenzaal, Almelo, Hengelo, Enschede, Borne and the airport, a bus lane will be introduced. This is a new bus only lane. The option of moving around the area using public transport will become attractive, fast and cheap.

4. Loading point for electric cars (and bicycles):

Since the fossil fuels will be depleted soon, other options are being explored at the moment. Twente can be the innovative leader at this aspect by introducing and promoting loading points for electric cars and bicycles. Trends show us that people are making more and more use of these ways of transportation. At the moment the facilities in the region are not sufficient.

5. Measures against expansion of the highway network near Enschede towards Germany, more research is needed

According to the scenario the highway A35 near Enschede will be expanded towards Germany. This will lead to more traffic, more pollution and more barriers in the area. In order to prevent this development measures should be taken. Thorough research towards these possible measures is needed, to come up with the most efficient solution.

6. Low rise building expansion in between Hengelo and Borne. This in order to keep the 'Groene Poort' open

Since the "Groene Poort", the area between Hengelo and Borne, must remain a green and 'open' area, the city Borne is not allowed to expand in the northwest direction. Instead, Borne can expand towards the city of Hengelo, since the remaining area in between those two cities is relatively difficult to use for other functions, like nature. Moreover, Borne and Hengelo are already 'touching' each other and by building with a low density, the illusion of two separate cities will be created and the area will get a relatively open image.

7. Keep the green corridor (Groene Poort) between Almelo and Borne open and improve wildlife opportunities (more research needs to be done here)

At the moment the cities Almelo, Borne, Hengelo and Enschede already form a kind of city belt in the landscape. To make sure that these cities will not become a real belt and barrier in the landscape, it is necessary to keep the area between Borne and Hengelo 'open' and green. Although measure 6 is already a measure to reduce the risk of buildings in this area, more measures have to be taken to make sure that this area will remain a green and relatively 'open' area.

8. Construction of educational routes through the area (for example a route passing different estates)

One way to strengthen the current cultural heritage is to develop a cycling- and walking route between attractions with a high cultural value, for example a route between the estates. By placing information signs along this route, this route will have a recreational function, as well as an educational function.

9. Measures against scale enlargement for the agricultural sector within the city borders. Parcelling is a good alternative to keep the competitive position of the area on the same level, but more research is needed

In order to maintain the current small-scale rural landscape, scale enlargement of farms within the city borders is not allowed. This measure may increase the risk of bankruptcy of farms, to prevent this negative development measures should be taken. One possible solution is parcelling, to make the farms more efficient and profitable.

	Strengths	Weaknesses	Opportunities	Threats
1	Airstrips already available	Out of order at this very moment	A lot of green surroundings for green business park	Nearby 'National Landscape Overijssel'
2	-	-	Enough room for broadening the road	-
3	Routes already existing	Lack of space, congestion	-	-
4	-	-	Leading position in electric car development	-
5	-	Poor connection between Enschede and Germany	Connection Oldenzaal-Germany	-
6	Construction of business parks and houses in this area has already started	-	Spare other (more) green areas in the region	-
7	Project the "Groene Poort"	Several barriers in this area: A35, N743 and the railroad	Development of an 'ecoduct'	Possible expansion of the cities
8	Current recreation routes	-	Lot of cultural heritage at the moment in a diverse landscape	-
9	Small-scale landscape	-	Broadening of secondary activities	No company continuation Scale-enlargement

Table 12: Policy scenario for the Twente Region; Twente on the Move and Vision TINC

Measures detail area Borne

Map 30: TINC Strategy map; Detail area 'Stroom Esch' Borne

1. Construction of green hedgerows to reduce visibility of buildings:

By strategically placing hedgerows and trees, the illusion of being away from the city will be created. This will make recreation in the city borders more attractive.

2. Developing business parks into more green business parks:

Right now, there is a large business park situated next to the city border. Since the city borders have to be attractive for people to visit, it is recommended to develop this business park into a 'green' business park.

3. Solar panel use in the area:

As mentioned before, energy resources are running out and for that reason it is necessary to search for new renewable energy sources. An example of such a renewable energy source is solar energy. The municipality has to stimulate the use of this, for example by subsidizing the placement of solar panels on roofs.

4. Stimulating agricultural nature conservation close to the stream:

To create an attractive landscape and to make sure its nature values will develop in a positive way, the "groen-blauw regeling" (green-blue regulation) can be applied. Farmers will receive compensation for their services to develop and maintain natural values around the stream, visitors will benefit from these measures and will enjoy the landscape. This could be a positive impulse for the tourism in the area.

5. Farm camp sites in the surroundings of Borne:

To attract more visitors to this area, farmers can broaden their secondary activities by, for example, starting a camp site. This measure can also be a positive impulse for the tourism in the area as well as the awareness of the natural and cultural values in the area. Subsidies must be given to compensate farmers for their building and maintenance costs; it must become attractive to start a small farm camp site.

6. Recharge stations of electric cars and bicycles near roundabout Borne:

The Twente Region has the possibility to profile herself as innovative leader of electric cars and bicycles. Borne can provide facilities to meet these needs by placing loading points for these forms of transport.

7. Bus lane:

The bus lane, which will be implemented in the whole region of Twente, as mentioned earlier, will also cross this area, to improve the connection between Borne and the surrounding cities.

8. Educational routes:

The same applies for this measure: the educational routes which will be developed in the whole region, will also cross this area. These kinds of routes will improve the quality of the area. To create successful educational routes between the places of high cultural value, it is necessary for Borne to inventory these attraction and places.

9. Educative playgrounds:

By developing educative playgrounds children can learn and play at the same time and are stimulated to think, explore and invent. This contributes to the future leading position Twente will possess on the knowledge market.

10. Ateliers in the rural areas:

Another way for strengthening the cultural heritage and make the area more attractive to visit, is the placement of ateliers in the rural area. In this way the area will not only be more attractive to enjoy, but the artists will be able as well to present their work to the audience.

	Strengths	Weaknesses	Opportunities	Threats
1	Already existing hedgerows.	-	-	-
2	-	Lack of space in the business parks.	-	-
3	Roofs are already there	Dependant on peoples willingness	Solar panels on roofs.	Landscape pollution
4	-	-	Improving nature values, subsidies for side activity	Change in business approach
5	Attractive landscape	-	Strengthening the recreational sector, small scale landscape	-
6	-	Electric cars are not common sight yet	No innovative leader yet	Concept of electric car might fail
7	Technique is working and accepted	Infrastructure is not there yet, lack of space in some places	-	-
8	Infrastructure already exists	Educational information not shown yet, no connections yet between different sites	Existence of educative cultural sights	-
9	-	No educative playgrounds in the area	-	-
10	-	-	Possible conversion of (future) empty farms	-

Table 13: Policy scenario for the detail area; Twente on the Move and Vision TINC

Time span

TINC & Twente on the move

To implement these measures, make use of the strengths and opportunities in the area and find solutions for the weaknesses and threats, the following time scheme is made as a guide line for the process. This time scheme is only worked out for the region Twente. In imitation of the region, municipalities and cities can develop their own working schedule in line with the overall implementation of the measures.

0 – 2 year measures:

- (1a.) Start with delinquent maintenance and (1b.) start with the transformation from the current airport to a public airport. (1c.) Develop a plan for the green business parks. Take the National Landscape and the natural values into account.
- (2a.) Make a traffic plan for detouring the traffic and sparing the inhabitants at the same time. (2b.) Start with preparations of the work and (2c.) start with the project.
- (3a.) Assign a work group to research possibilities of whereabouts of the bus lanes in the region Twente. Each municipality has to be represented in the work group.
- (4a.) Assign places for charging points, (4b.) start developing these sites and (4c.) launch a campaign to stimulate the use of electric cars and bicycles.
- (5a.) Research towards possible solutions.
- (6a.) Exploring the different possibilities of expanding and (6b.) start making a draft plan for the area in between Borne and Hengelo.
- (7a.) Take measures to protect 'de Groene Poort' through policy and (7b.) start researching the possibilities to reduce the effects of the barriers running through this area (highway, national road and railway).
- (8a.) Inventory of cultural and educational places in the area and (8b.) write an educational program for and about these places.
- (9a.) Research the possibilities of parcelling in the city borders and (9b.) involve farmers and stakeholders by stimulating them to help find a solution.

2 – 4 year measures:

- (1d.) Continue with the transformation from the current airport to a public airport and (1e.) start attracting companies and businesses to settle in the new green business park.
- (2d.) Continue the work and (2e.) keep in touch with all the stakeholders and residents to keep them informed about the progress.
- (3b.) Start with sketching a plan about sites for the bus lanes and (3c.) prepare to start the work (2a, 2b).
- (4d.) Organize a grand opening of the electric charging stations and (4e.) encourage people to use the possibilities Twente has to offer on the innovative field of electric transportation, give discounts or other stimulations.
- (5b.) Start with preparations to implement the best possible solution the work group has come up with and (5c.) start working on it.
- (6c.) Attract possible investors for the area and (6d.) negotiate about their demands before (6e.) starting with construction.
- (7c.) Implement policy into legislation and (7d.) start working on the solutions to overcome the barriers.
- (8c.) Start with the construction of the educational routes throughout the area.

(9c.) If research has showed parcelling will be a good solution for the competitive position of the farmers, start parcelling. If not, (9d.) start implementing other solutions the research group or farmers have come up with.

4 – 10 year measures:

(1f.) Finish the transformation from the current airport to a public airport and finish the development of the green business park and open the airport.

(2f.) Finish the upgrading and lowering of this road.

(3d.) First, work on the connection between Enschede, Hengelo and the airport, so these relatively big cities, which are close by the airport, are immediately connected with the airport after the opening.

(6e.) Finish the construction of the low rise and low density buildings.

(7e.) Keep the ‘Groene Poort’ open with the developed solutions.

10 – 20 year measures:

(3e.) Complete the bus lane constructions between the other cities as well.

It is important to evaluate all the implemented measures during the process and afterwards. Keep in mind that the implementation of these measures is a cyclic process, so if necessary, make changes during the process to keep the measures flexible in order to increase the chance of success.

11.2 Green Twente & Twente on the move

Measures region Twente

Map 31: Green Twente Strategy map; Twente region

1. Upgrading the highways:

In the vision of Green Twente, most of the traffic between the cities in the urban regional network will make use of the highways. The intensity of the highways will increase, therefore these roads need to be upgraded. Although the highways form a barrier in the landscape for the Ecological Main Structure and nuisance for the local inhabitants will increase, upgrading of the highways is necessary.

2. Building urban ring roads:

When all traffic is focused on the highways, the digestion towards these highways should be optimal. That is why urban ring roads in the cities of Almelo, Hengelo, Borne and Enschede should be constructed. The function of these roads is to create good access with the exits of the highways and the city centres. In the scenario is stated that there will be bus lanes throughout the region, these lanes can make use of the city rings and highways.

3. Building a railroad between Enschede-Hengelo and Haaksbergen:

This railroad will connect the city of Haaksbergen with the urban regional network. This means some traffic by car will disappear and the realization of downgrading several roads in the rural area becomes more acceptable. The accessibility via public transport possibilities will increase for the people in Haaksbergen. The business parks next to the railroad can make use of this connection.

4. Downgrading of several provincial roads:

In the interest of recreation and the EMS, several roads in the rural region will be downgraded. This means that, due to restrictions, cars are no longer allowed to drive faster than sixty km/h in this region. The airport, that might be developed, will be harmed by this downgrading. This could become a problem to realize the downgrading in that region. However, by opening the airport for recreational purposes only makes it a small problem.

5. Enhancing and expanding the nature areas surrounding the cities:

The nature areas close to the cities will be improved and/or expanded. These landscapes are an important facet for recreational possibilities nearby the cities and city borders. To improve the city borders, the nature areas surrounding the cities are important to integrate in this process. The awareness of people for nature values can provide a stimulus to continue these plans. The expected expansion of businesses and houses could become a threat for the realization of these plans. However, expanding on a small scale and a land bound expansion is the way of weaving nature and urban areas together.

6. Making ecological corridors (in line with the EMS policy):

The EMS in the region is not at its optimum, nature areas are scattered across the region. A lot of barriers run through the region, this is why the EMS needs to be

improved. In collaboration with the recreation and tourism the EMS improvements will be less hard to finalize. The businesses in the region can provide several corridors when the parks undergo a metamorphose and become 'green' business parks. The land use of the areas that will be changed need to cooperate in this process.

7. Diversified agriculture:

This way of agriculture gives a boost to the recreational image of the region. The possibilities for recreants increase, since there are more alternatives to choose from. To protect the people who visit the rural area for leisure activities, the scale enlargement of farms need to be at a minimum. The small-scaled landscape that identifies the region needs to be safeguarded. Ensuring a broadened agriculture should be the priority.

8. Creation of 'green' business parks:

The business parks that are maintained will become greener. This way they can be integrated in the rural areas. Most of these business parks are situated at the borders of cities, close to the rural areas, and form a barrier for recreants to pass. When these business parks become greener, it will be easier for recreants to pass these locations. The parks can work together with the EMS to create corridors that run through the businesses. The problem for realization of 'green' business is that there might be little room to create natural aspects on the sites and the willingness of companies to cooperate. Subsidizing these developments should make this feasible.

9. Shrinking of the industrial areas:

The industries located at the harbours in the region are unwanted for recreational options and the total image of the region. In the vision the industry is undesired and only the region bound industry will be maintained. The prospect of this sector in the scenario is that it will increase slightly. This becomes a problem to realize green corridors for recreational purposes. These corridors are needed for citizens to get to the rural area, without going through too much build up areas, businesses and industries. To overcome this problem, the focus should be to make sure the empty industrial plots remain empty and will be transformed into nature in the long run.

10. Scale enlargement in the agriculture further from the cities:

Scale enlargement close to the cities is undesired but further away from the cities there are possibilities for farmers to expand their farms. The problem for this scale enlargement is that it can be situated in a National Landscape. The small-scaled landscaped will be harmed by this transition and that could be a threat for the recreational image. The scenario states that the scale enlargement will take place and that it will have a positive effect on the economic situation of the region. Therefore, local solutions should be investigated to keep the agriculture economically possible in the region.

11. Opening of the airport for recreational purposes:

The airport will be opened and used again as a recreational airport. The airport has a good connection with recreational routes and the landscape surrounding the airport

has a lot of natural values. When the business sector in the future increases, possibilities for a 'green' business park surrounding the airport occur. This may form a threat for the image of the airport and its surroundings, but ensuring that the airport will be used for recreational purposes will secure the low level of urban interference in the area.

	<i>Strengths</i>	<i>Weaknesses</i>	<i>Opportunities</i>	<i>Threats</i>
1.	-	Barrier in the landscape	-	Nuisance for nature and recreants
2.	Roads are present	-	Bus lane options	-
3.	Part of the railroad is present	Barrier in the landscape	Railroad next to industrial area	-
4.	Some roads are located in a National Landscape	-	-	Important locations, e.g. airport, are harder to reach
5.	Existing nature and streams	Collides with other land uses, e.g. farming	More awareness of natural values, green corridors and EMS	Expansion of businesses and building of new houses
6.	Existing nature and protected areas	Barriers in the landscape	Green corridors with business	Expansion of 'non green' businesses and residential area, reopening airport
7.	Locations are available	-	Recreational routes	Scale enlargement of farms
8.	-	Little room in the business parks	Green corridors and construction of new business parks	-
9.	Empty industrial buildings	-	Green corridors for recreation purposes	Expansion of industrial areas
10.	Possibilities are available	National Landscape	Economic growth for agricultural sector	Small-scaled landscape loses its identity
11.	Airport has connection with recreational	-	Opening of the airport, good accessibility	Business park surrounding the airport and roads

	routes, the surrounding landscape			towards the airport
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Table 14: Policy scenario for the Twente Region; Twente on the Move and Vision Green Twente

Measures detail area Borne

Map 32: Green Twente Strategy map; Detail area 'Stroom Esch' Borne

1. *Turn some croplands into orchards:*

In the detail area, it is desired to create some more orchards. These orchards invite recreants to go walking or cycling in the rural area, especially in spring when lots of trees bloom. Croplands are suitable lands to turn into orchards for several reasons. They have a soil which is fertile for fruit trees. Furthermore, for recreants they are not as nice as orchards to look at or walk through. When croplands are turned into orchards, farmers can still maintain their income.

2. *Upgrade Oonksweg and Prins Bernhardlaan:*

To create a better accessibility of the business park in the west of Borne and the highway, it is necessary to upgrade the roads. These roads are Oonksweg and a small part of Prins Bernhardlaan. However, the bus lane predicted in the detailed scenario on the N743 is a threat for this measure.

3. *Downgrade N743:*

To encourage people to make more use of the highways A1 and A35, a part of the N743 will be downgraded. In this way, people cannot drive as fast as they are used to do and they will be attracted by the highways. This measure probably leads to fewer cars through Borne, which increases the safety in this town. The expected bus lane on the N743 could be a problem, because it would not make sense to downgrade a road which a bus lane has recently been added to. An option could be that the busses are directed over the upgraded roads mentioned above and over a part of the highway towards Almelo.

4. *Remove Hertmerweg and Zwartkotteweg:*

Small parts of the Hertmerweg and the Zwartkotteweg will be removed. These parts are located in a small forested area. These parts of the roads do not have a real important function, they only scatter the forest. An opportunity for the removal is the awareness of the natural environment, people want to see non-cut natural areas. An extension of the Hoge Dijk will ensure that the areas around these roads are still accessible. There might occur a problem for recreants, because the forest accessibility by car will decrease a bit.

5. *Develop nature around streams:*

Nature development around streams, especially around the Oude Bornsche Beek, is desired in the vision. There are opportunities for recreational routes. It is attractive for recreants to recreate in natural areas and around streams of other water bodies. Also, the planned agricultural nature development could ensure the maintenance of the area around the stream. A big part of the stream is located in the rural area, which only increases the chances for agricultural nature development. The only

disadvantage is that a small part of the stream is situated in residential areas, where nature is hard to realize.

6. Develop hedgerows:

Hedgerows around Borne can create a kind of invisibility of the city, seen from the rural area. These hedgerows can be connected with existing hedgerows, to create a bigger network that could be implemented in the Ecological Main Structure. This could also be important for small animals and birds. The hedges increase the attractiveness of the landscape and recreational routes. However, the attitude of farmers could form an obstacle. If they do not want hedgerows on their lands, it could be hard to realize the hedges in the rural areas. Subsidies might be a solution for this problem.

7. Recreational routes; walking, cycling:

The Twente Region wants to attract a lot of tourism, therefore new recreational routes need to be developed. These routes will lead the recreants through the rural area and the attractions the region has to offer. For the Borne area this means that around the stream, the forested areas and attractions new routes will be created. These routes are part of the city borders project and lead further into the rural area. The idea is to have one big recreational network throughout the region, Borne is part of this network.

8. Nature development around urban border:

The nature that exists around the urban areas in the city border will be strengthened. If necessary, some nature will be developed. This nature is needed to give the city border a better image. Some parts of the city border will be experienced as 'wild' nature. Trees and bushes can grow there without restrictions, there will be no park image.

9. Diversified Agriculture; health, child zoo, campsite:

In the rural part of Borne some farms will broaden their activities. The farmers that are on the border of bankruptcy can develop new ways to generate income. This new way of income will be stimulated with subsidy. There is room for a child zoo, health farm or campsite. This way the rural area has more to offer for the people in the region and the tourists.

10. Conversion of the business park towards a 'green' business park:

The existing business park at the border of Borne will become greener. This way the business park can be integrated in the rural area. When this park becomes greener it will be easier for recreants to pass this location. The problem for realization of the 'green' business is that there might be little room to create natural aspects on the site.

	Strengths	Weaknesses	Opportunities	Threats
1.	Suitable soil	-	-	-
2.	Close to the business park	-	-	Bus lane on N743

3.	-	-	-	Bus lane on N743
4.	-	Good usable roads need to be removed	Decreasing of farmers, more awareness of the environment	Accessibility forested area decreases
5.	Most part of the stream is located in rural area	Little part of the stream is located in urban area	Recreational routes, agricultural nature conservation	-
6.	Connection with existing hedgerows	Present on farmlands and the attitude farmers	Recreational routes, attractiveness of the landscape	-
7.	Natural and cultural heritage, road presence	-	Nature development rural area, recreational options	Bus lane
8.	Meadows	Croplands/arable lands and attitude farmers	Nature development around stream, recreational routes, hedgerows	New houses
9.	Locations are available	-	Vacancy of farms	New houses

Table 15: Policy scenario for the detail area; Twente on the Move and Vision Green Twente

Time span

Green Twente & Twente on the move

To implement these measures, make use of the strengths and opportunities in the area and find solutions for the weaknesses and threats, the following time scheme is made as a guide line for the process. This time scheme is only worked out for the region Twente. In imitation of the region, municipalities and cities can develop their own working schedule in line with the overall implementation of the measures.

0 – 2 year measures:

(1a.) Start with decision making for upgrading the highway , including Environmental Impact Assessment and (1b.) doing research on the possibilities to limit the negative effects of upgrading the highways on nature and recreation.

(2a.) Start with decision making for realizing urban ring roads in combination with bus lanes, including Environmental Impact Assessment.

(3a.) Start with decision making about the realization of a railroad between Enschede-Hengelo and Haaksbergen, including Environmental Impact Assessment and (3b.) doing research on the possibilities to limit the negative effects of the rail road (e.g. the barrier-effect and noise nuisance).
(5a&6a.) Take measures to protect ‘existing nature’ by protecting it through policy and (5b&6b.) start with decision making for enhancing existing nature, developing new nature areas and creating green corridors and (6c) conducting research on the possibilities to reduce the effects of barriers in the landscape.
(7&10a.) Conduct a research about the developments in the agricultural sector and study the wishes and attitudes of the farmers and (7&10b.) start with developing an agriculture plan together with the farmers for the whole region. This is in order to allocate areas for scale enlargement and areas with opportunities for diversified agriculture, taking into account the developing of new nature (see 5 and 6).
(8&9a.) Conduct research on the possibilities to change existing business parks into green business parks, study suitable locations to expand business parks and doing research on possible measures to reach the shrinking of industrial areas, taking into account the development of green corridors (see 6).
(11a.) Start with decision making to change the existing airport into a recreational airport, including Environmental Impact Assessment. (11b.) Capture in policy documents that the airport really has to remain a recreational airport. This in order to prevent that it will grow towards a transport airport, which could also result in an undesired business park around the airport.

2 – 4 year measures:

(1c.) Continue with the decision making for upgrading the highways.
(2b.) Continue with the decision making for the urban ring roads in combination with bus lanes and (2c.) develop a time planning for the execution of the project, taking into account that at the same time upgrading the highways can cause problems with the flow of traffic.
(3c.) Continue with the decision making for the rail road.
(5c.&6d) Implement policy into legislation and (5d.&6e.) continue with the decision making for new nature areas and (5e.&6f.) realizing the enhancement of existing nature. (7&10c.) Continue with developing the agricultural plan, taking into account the developing of new nature (see 5 and 6).
(8&9b.) Start decision making about transforming existing business parks, about launching the shrinking of industrial areas and about the development of new business parks, including Environmental Impact Assessment.
(11c.) Start with changing the existing airport into a recreational airport.

4 – 10 year measures

(1d.) Finish the decision making and (1e.) realize the project, including the acquiring of land.
(2d.) Start with realizing the urban ring roads and bus lanes.
(3d.) Finish the decision making for the rail road.
(5f.& 6g.) Start with the realizing of new nature areas, including the acquiring of land
(7&10d) Start with implementing the agricultural plan, including for example exchange of land (parcelling).

(8&9c.) Continue with decision making transforming existing business parks, shrinking of industrial areas and the development of new business parks and (8&9d.) start with transforming existing business park into green business parks, reaching shrinkage of industrial areas and developing new business parks, including the acquiring of land.

(11d.) Continue with the development of the recreational airport.

10 – 20 year measures

(2e.) Finish the urban ring roads and bus lanes.

(3e.) Realize the rail road, including the acquiring of land.

(4a.) Doing research to get insight in the use of the road and possible consequences of downgrading the roads. (4b.) Execute the decision making about downgrading several roads (4c.). Realize the downgrading of several provincial roads.

(5g&6h.) Continue with the development of new nature areas.

(7&10e) Continue with implementing the agricultural plan.

(8&9e.) Continue with transforming existing business park into green business parks, shrinking of industrial areas and developing new business parks, including the acquiring of land.

It is important to evaluate all the implemented measures during the process and afterwards. Keep in mind that the implementation of these measures is a cyclic process. So, if necessary, make changes during the process to keep the measures flexible in order to increase the chance of success.

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Out of the different policy strategies, one master strategy can be derived. This master strategy contains the overlap between the two policy strategies – measures which are common in both policy scenarios.

12. Master strategy

Map 33: Master Strategy Twente region

For the master strategy we tried to find as many similarities between the two policy strategies developed in the previous steps. Usually, it is recommended to get a master strategy for each vision, and try to find the similarities between the low/low and the high/high scenario. In this way, it is easier to anticipate on the future in case of a certain vision chosen, whatever the scenario or ‘real world’ will bring. Since we decided in previous steps not to continue with the low/low scenario because of the less interesting changes it would bring to the area, we can now only work on the high/high scenario. This means the master strategy below explains the measures to be taken in case of a high/high scenario (in our case this is called the scenario ‘Twente on the move’), no matter what vision Twente as a region prefers.

Overall Twente area

Opening of Twente Airport

In each of the two visions it is necessary to find an investor for the airport. Different investors are requested for each vision though, since the airport will get different roles and functions in each vision. To continue the development, it is recommended keeping good contact with the ‘Overijssels Landschap’. Businesses will come to the airport anyway, although there is a big difference in both scale and type of business between a commercial and a recreational used airport.

Measures against expansion of the highway network towards Germany

Both visions do not want to upgrade the N35 near Enschede up to a highway. Instead of increasing the network try to connect the network better, possibly even upgrade the current highway network and add an extra lane. Furthermore it is relevant to think about the downgrading of provincial roads. This influences regional networks of recreation and nature development in a positive way.

Expand EMS network through the area, especially between Almelo and Borne

The current ‘Groene Poort’ project must continue growing. To both visions it is very important to keep the area between Almelo and Borne open and increase natural values in the area. Building pressure on the west side of Borne can be held off by building in the east side between Hengelo and Borne. This area is already developing towards a multi-used area with business and residential areas. To strengthen ecological values in the whole region, especially within city borders it is interesting to convert business parks into green business parks and provide both nature and business a better life.

Construction of educational routes through the area

Both visions emphasize on more recreational routes through the area. These can be both educational as well as purely recreational for the short and long distance. These

routes are supposed to show the cultural heritage and beautiful landscape of Twente.

Measures against scale enlargement

In order to keep the area close to the city small scaled, scale enlargement preventions are needed. It is desired to maintain the small scaled area close to the city, in order to keep and expand the existing hedgerows. In this way it is able to 'hide' the city behind a beautiful landscape. This collides with the need from farmers to make money, therefore more research towards parcelling is recommended. Scale enlargement further away from the city is not a problem.

Time span: Twente area

To implement these measures, make use of the strengths and opportunities in the area and find solutions for the weaknesses and threats, the following time scheme is made as a guide line for the process. We have decided to work out this time schedule only for the region Twente. In imitation of the region, municipalities and cities can develop their own working schedule in line with the overall implementation of the measures.

0 – 2 year measures:

- (1a.) Decide on whether to create an airport for recreational or commercial purposes.
- (1b.) Depending on the decision made in (1a.) find an investor.
- (2a.) Research towards possible solutions.
- (3a.) Take measures to protect 'existing nature' by protecting it through policy and
- (3b.) start with decision making for enhancing existing nature, developing new nature areas and creating green corridors (3c) conducting research on the possibilities to reduce the effects of barriers in the landscape.
- (4a.) Inventory of cultural and educational places in the area and (4b.) write an educational program for and about these places.
- (5a.) Research towards the possibilities of parcelling in the city borders and (5b.) involve farmers and stakeholders by stimulating them to help find a solution.

2 – 4 year measures:

- If not found yet continue with (1b.). (1c.) Start making transformation plans to get the airport ready for its future purposes.
- (2b.) Start with preparations to implement the best possible solution the work group has come up with and (2c.) start working on it.
- (3d.) Implement policy into legislation and (3e.) continue with the decision making for new nature areas and (3f.) realizing the enhancement of existing nature.
- (4c.) Start with the construction of the educational routes throughout the area.
- (5c.) If research has showed parcelling to be a good solution for the competitive position of the farmers, start parcelling. If not, (5d.) start implementing other solutions the research group or farmers have come up with.

4 – 10 year measures:

- (1d.) Continue with the development of the airport.

- (3g.) Start with the realizing of new nature areas, including the acquiring of land.
10 – 20 year measures:
(3h.) Continue with the development of new nature areas.

It is important to evaluate all the implemented measures during the process and afterwards. Keep in mind that the implementation of these measures is a cyclic process. So, if necessary, make changes during the process to keep the measures flexible in order to increase the chance of success.

Time span: Detail area

Construction of hedgerows

Strategic placed hedgerows close to the city have the ability to hide ugly city sights from outside, and replace this by a view of some city, but a lot of green. In this way the rural area and city border will become more attractive, since the illusion of being away from the city is created. Also for farmers in the area, which do not have possibilities to implement scale enlargement, this is an opportunity. Farmers could help maintain the landscape and in exchange of this extra work will receive some subsidies.

Development of nature areas close to the streams

In the area a lot of streams are situated. These streams can form a main framework for recreational and natural values in the area. Farmers will have to shift from ordinary farming towards a more environmental friendly way of farming. It is important to keep good contact with the farmers and listen to their opinion and view about this topic. Nature development close to the streams should make the area more attractive, since opportunities for both recreation and nature will arise.

Development of farm camp sites/mini camping

To attract more visitors to this area, farmers can broaden their secondary activities by, for example, starting a camp site. This measure can also be a positive impulse for the tourism in the area as well as the awareness of the natural and cultural values in the area. Getting started with such a project can be hard, since high investment is asked from the farmer and their income can not be assured. Support from the municipality, tourist office and maybe even the region would help making these decisions and lowering thresholds.

Construction of educational routes through the area

The wish to create more routes through the area can be executed furthermore in detail here. Per detail area educational and cultural places in the area should be pointed out and, if interesting, be integrated in the route. After deciding what, how and where these routes should go, a safety check should be done to make sure no dangerous situations will arise and signs should be placed along the route.

In step 8 we switch back once more to the Strategic Choice Approach. The decision areas and the options we mentioned in step 2 will now be evaluated on their incompatibility. These incompatibilities show us the different options and they will decrease the amount of possible options to choose from. (Friend and Hickling, 2005)

13. Decision scheme

Incompatibility:

Expansion of the residential area – development of recreational nature

The choice to expand the residential area is contradicting with the choice to develop nature for recreational purpose, because by expanding the residential area, there will be less or no space for development of recreational nature.

Expansion of the residential area – development of ecological nature

If the residential area will expand, ecological nature can not be developed. This is because the residential area will have a negative effect on the ecological nature and will cause nuisance.

Expansion of the residential area – expansion of the recreational possibilities

In general, recreational possibilities are not situated in the middle of a neighbourhood. Although there are a lot of exceptions on this rule, this combination is considered as impossible, because when expansion of the housing or business area will take place within the city borders, there will be less possibilities for "point recreation" in the city borders.

Expansion of the residential area – expansion of the recreational routes

By expansion of the residential area, this area will become less attractive for recreation, since people prefer a more green and natural environment, instead of a build one to recreate in.

Development of the ecological nature – expansion of the recreational possibilities

By expanding the recreation possibilities it will be more difficult to develop ecological nature, because most of the time recreational attractions will have a negative impact on the landscape. As an example: the placement of a restaurant will disturb the wildlife which lives in the surrounding area.

Development of the ecological nature – expansion of the recreational routes

Since recreational routes have negative impacts on ecological nature, expansion of these routes is therefore not possible in combination with the development of ecological nature.

Development of the ecological nature – higher accessibility of the city borders

Higher accessibility of the city borders will lead to more roads crossing the area. This leads to more traffic and people, which all will have negative influence on the ecological nature.

Higher accessibility of the city borders – decreasing the recreational routes

This combination is impossible because a decrease of the recreational routes will lead to a lower accessibility of the city borders.

Lower accessibility of the city borders – increasing the recreational routes

Increasing the recreational roads will increase the accessibility of the city borders.

These impossible combinations and the possible combinations are made visible in the compatibility table, shown in figure 20 . A cross (X) means that the combination of

Compatibility Table

expand	EXP RES AR?		
maintain			
<input checked="" type="checkbox"/>	Develop rec LANDSCAPE?		
<input type="checkbox"/>	Maintain		
<input checked="" type="checkbox"/>	Develop cco		
<input checked="" type="checkbox"/>	expand RECR POSSI?		
<input type="checkbox"/>	maintain		
<input type="checkbox"/>	decrease		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	higher acce ACCESSIBIL?	
<input type="checkbox"/>	<input type="checkbox"/>	lower acce	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	exp#troutes RECR ROUTE?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	maint#route
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	decr#troutes

As mentioned before, this compatibility table leads to 34 remaining option schemes, in figure 21 these schemes are listed:



The next step in the process is the evaluation framework. Here we evaluate the different schemes we showed in figure 21. Not every scheme is as adjustable as the others, therefore during this step we will evaluate which scheme is most applicable. We will give weights to the different schemes and this way it will show which schemes are preferred. (Friend and Hickling, 2005)

14. Evaluation framework

The decision schemes have to be evaluated, according to the visions. Therefore several criteria are formulated. The schemes will be evaluated with the use of these criteria. The criteria are related to the vision and formulated in such a way that schemes with high scores at these criteria are also the schemes which are most consistent with the vision. In this way, schemes which are contradicting with the vision will be ranked lowest and therefore are less likely to be chosen.

The criteria on which the schemes will be evaluated are:

Living quality in the city borders:

The goal is to achieve a high living quality in the city borders, since these borders will become permanent due to the population stagnation. With a high living quality a certain amount of green, high or mediate accessibility and sufficient recreation possibilities are meant.

Attractiveness for recreation:

With this criteria the attractiveness for people, both inhabitants as people from outside the region, of the city borders will be evaluated. In both visions the wish to create attractive city borders for recreants is formulated. The attractiveness will be evaluated on the basis of the presence of recreational possibilities, the development of nature and landscape (development of recreational nature is most preferable) and the possible expansion of the residential area, which will make the city border less attractive.

Ecological value:

This criterion is used to evaluate the extent to which the city borders will be ecological valuable. This means for example whether the city borders contribute to the preservation of biodiversity. This is an especially important issue for the vision Green Twente. In evaluating the ecological value the development of ecological nature and landscape is seen as more valuable than the development of recreational nature and landscape. The ecological value will especially be evaluated on the basis of the decision area which is about the possible development of nature a landscape. Development of ecological nature and landscape is seen as highly preferable, maintenance of the nature and landscape as neutral and recreational development of nature and landscape as undesirable. Additionally expansion of the residential area is seen as very undesirable. Also the accessibility of the area is taken into account. A high accessibility in general causes that the area will be used more intensively, which will negatively influence the ecological value.

The costs:

The costs of realizing the different options are an important aspect as well. By evaluating the costs, also the feasibility will be indirectly taken into account. Because it is difficult to make a precise indication of the costs, only a rough estimation of the costs will be made. In general expansion of the residential area will generate money, and the costs of the development of nature and landscape and increasing the accessibility will be relatively high. The costs of expanding the recreational possibilities and routes will be considered as relatively low, because this largely can be realised by private organizations. In this case it is assumed that the option "maintain" will not lead to extra costs.

The possible economical consequences of the different options are not taken into account.

Of course many other criteria could be chosen to evaluate the different schemes. But in this case, the focus will be on these four criteria in order to make a first reduction of the number of schemes, so that only the schemes which are more or less consistent with the visions will remain.

As explained before, different weights are assigned to the criteria according to the visions, to address the relative importance of the criteria in case of the visions.

For both visions the living quality is seen as very important, so this criterion will get a high weight. In the case of the vision Green Twente there will be sought for a balance between possibilities for recreation and the ecological value of nature. For this reason the criteria ecological value and attractiveness for recreation get the same weight. In the vision TINC there is relatively low attention to the ecological value of nature, however recreation possibilities are of more importance.

The costs of realizing the projects will get a low weight. Of course costs can be a very important issue, however we do not know how the costs will limit the possible developments in the future. So in order to prevent that schemes will get a low score only because of high costs, this criteria has a low weight.

Based on the consideration mentioned above, the following weights to the criteria are formulated;

	Living quality	Attractiveness for recreation	Ecological value	Costs
Weight in case of Green Twente	0,4	0,25	0,25	0,1
Weight in case of TINC	0,4	0,4	0,1	0,1

Table 16: Used criteria and weight in the evaluation framework

For each decision scheme a score on each of these criteria will be assigned. The following values are used to assign the scores:

1: very bad

2: bad
3: neutral
4: good
5: very good

	Living quality	Attractiveness for recreation	Ecological value	Costs
A	3	2	1	4
B	2	2	1	5
C	1	1	1	5
D	3	1	1	4
E	2	1	1	5
F	1	1	1	5
G	5	5	1	1
H	5	4	1	1
I	4	4	2	2
J	3	3	2	2
K	5	4	1	1
L	4	4	1	1
M	3	4	2	2
N	2	2	2	2
O	3	3	1	1
P	2	2	1	1
Q	1	2	2	2
R	1	1	2	2
S	4	4	2	2
T	3	3	2	2
U	3	3	4	3
V	2	2	4	3
W	4	3	2	2
X	4	3	2	2
Y	2	3	4	3
Z	1	2	4	3
AA	3	2	2	2
AB	2	1	2	2
AC	1	1	4	3
AD	1	1	4	3
AE	3	3	5	2
AF	2	2	5	2
AG	1	2	5	2
AH	1	1	5	2

Table 17: Scores of the schemes on the different criteria

In the table below the assigned scores are multiplied with the different weights belonging to the two visions.

	Living quality		Attractiveness for recreants		Ecological value		Costs			
	score GT (0,40)	score TINC (0,40)	score GT (0,25)	score TINC (0,40)	score GT (0,25)	score TINC (0,10)	score GT (0,10)	score TINC (0,10)	Total score GT	Total score TINC
A	1.2	1.2	0.5	0.8	0.25	0.1	0.4	0.4	2.35	2.5
B	0.8	0.8	0.5	0.8	0.25	0.1	0.5	0.5	2.05	2.2
C	0.4	0.4	0.25	0.4	0.25	0.1	0.5	0.5	1.4	1.4
D	1.2	1.2	0.25	0.4	0.25	0.1	0.4	0.4	2.1	2.1
E	0.8	0.8	0.25	0.4	0.25	0.1	0.5	0.5	1.8	1.8
F	0.4	0.4	0.25	0.4	0.25	0.1	0.5	0.5	1.4	1.4
G	2	2	1.25	2	0.25	0.1	0.1	0.1	3.6	4.2
H	2	2	1	1.6	0.25	0.1	0.1	0.1	3.35	3.8
I	1.6	1.6	1	1.6	0.5	0.2	0.2	0.2	3.3	3.6
J	1.2	1.2	0.75	1.2	0.5	0.2	0.2	0.2	2.65	2.8
K	2	2	1	1.6	0.25	0.1	0.1	0.1	3.35	3.8
L	1.6	1.6	1	1.6	0.25	0.1	0.1	0.1	2.95	3.4
M	1.2	1.2	1	1.6	0.5	0.2	0.2	0.2	2.9	3.2
N	0.8	0.8	0.5	0.8	0.5	0.2	0.2	0.2	2	2
O	1.2	1.2	0.75	1.2	0.25	0.1	0.1	0.1	2.3	2.6
P	0.8	0.8	0.5	0.8	0.25	0.1	0.1	0.1	1.65	1.8
Q	0.4	0.4	0.5	0.8	0.5	0.2	0.2	0.2	1.6	1.6
R	0.4	0.4	0.25	0.4	0.5	0.2	0.2	0.2	1.35	1.2
S	1.6	1.6	1	1.6	0.5	0.2	0.2	0.2	3.3	3.6
T	1.2	1.2	0.75	1.2	0.5	0.2	0.2	0.2	2.65	2.8
U	1.2	1.2	0.75	1.2	1	0.4	0.3	0.3	3.25	3.1
V	0.8	0.8	0.5	0.8	1	0.4	0.3	0.3	2.6	2.3
W	1.6	1.6	0.75	1.2	0.5	0.2	0.2	0.2	3.05	3.2
X	1.6	1.6	0.75	1.2	0.5	0.2	0.2	0.2	3.05	3.2
Y	0.8	0.8	0.75	1.2	1	0.4	0.3	0.3	2.85	2.7
Z	0.4	0.4	0.5	0.8	1	0.4	0.3	0.3	2.2	1.9
AA	1.2	1.2	0.5	0.8	0.5	0.2	0.2	0.2	2.4	2.4
AB	0.8	0.8	0.25	0.4	0.5	0.2	0.2	0.2	1.75	1.6
AC	0.4	0.4	0.25	0.4	1	0.4	0.3	0.3	1.95	1.5
AD	0.4	0.4	0.25	0.4	1	0.4	0.3	0.3	1.95	1.5
AE	1.2	1.2	0.75	1.2	1.25	0.5	0.2	0.2	3.4	3.1
AF	0.8	0.8	0.5	0.8	1.25	0.5	0.2	0.2	2.75	2.3
AG	0.4	0.4	0.5	0.8	1.25	0.5	0.2	0.2	2.35	1.9

AH	0.4	0.4	0.25	0.4	1.25	0.5	0.2	0.2	2.1	1.5
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Table 18: The scores of the schemes multiplied with the weights of the criteria and the total score for the visions

Now the different schemes have to be ranked, in order to make clear which schemes have the highest score at the different visions and which schemes have the highest score on both the visions.

Rank	Scheme	Total score GT		Rank	Scheme	Total score TINC
1	G	3.6		1	G	4.2
2	AE	3.4		2	H	3.8
3	H	3.35		2	K	3.8
3	K	3.35		4	I	3.6
5	I	3.3		4	S	3.6
5	S	3.3		6	L	3.4
7	U	3.25		7	M	3.2
8	W	3.05		7	W	3.2
8	X	3.05		7	X	3.2
10	L	2.95		10	U	3.1
11	M	2.9		10	AE	3.1
12	Y	2.85		12	J	2.8
13	AF	2.75		12	T	2.8
14	J	2.65		14	Y	2.7
14	T	2.65		15	O	2.6
16	V	2.6		16	A	2.5
17	AA	2.4		17	AA	2.4
18	A	2.35		18	AF	2.3
18	AG	2.35		18	V	2.3
20	O	2.3		20	B	2.2
21	Z	2.2		21	D	2.1
22	D	2.1		22	N	2
22	AH	2.1		23	Z	1.9
24	B	2.05		23	AG	1.9
25	N	2		25	E	1.8
26	AC	1.95		25	P	1.8
26	AD	1.95		27	Q	1.6
28	E	1.8		27	AB	1.6
29	AB	1.75		29	AC	1.5
30	P	1.65		29	AD	1.5
31	Q	1.6		29	AH	1.5
32	C	1.4		32	C	1.4
32	F	1.4		32	F	1.4
34	R	1.35		34	R	1.2

Table 19: total score of the schemes for the vision Green Twente and the vision TINC

Striking in the table above is that scheme G in both cases gives the highest score. So, this scheme is the most consistent one with both visions. However, also schemes H, K, I and S have a high score for both visions. The same situation holds for the worst schemes. For both visions the three worst schemes are exactly the same.

Also an analysis of the ranks of the schemes at the different criteria is useful for evaluating the schemes. These ranks will be the same for the two visions. The ranks are shown in the table below.

Scheme	Rank at living quality	Rank at attractiveness for recreation	Rank at ecological value	Rank at costs
A	9	16	23	5
B	18	16	23	1
C	26	26	23	1
D	9	26	23	5
E	18	26	23	1
F	26	26	23	1
G	1	1	23	29
H	1	2	23	29
I	4	2	11	13
J	9	8	11	13
K	1	2	23	29
L	4	2	23	29
M	9	2	11	13
N	18	16	11	13
O	9	8	23	29
P	18	16	23	29
Q	26	16	11	13
R	26	26	11	13
S	4	2	11	13
T	9	8	11	13
U	9	8	5	7
V	18	16	5	7
W	4	8	11	13
X	4	8	11	13
Y	18	8	5	7
Z	26	16	5	7
AA	9	16	11	13
AB	18	26	11	13
AC	26	26	5	7
AD	26	26	5	7
AE	9	8	1	13
AF	18	16	1	13
AG	26	16	1	13
AH	26	26	1	13

Table 20: ranking of the schemes for the different criteria

Comparing these two tables shows that the schemes which have a high total score (schemes G, H, K, I, S) have a bad rank on the costs and they also do not have a very high rank on the ecological value. This is a consequence of the weights given to the different criteria. The weights for living quality and attractiveness for recreants are relatively high, so schemes which score high on these criteria will get a high total score, even though the scores on the other criteria can be relatively low. In order to hold some more possible options open for the future, some schemes with a lower total score, but a higher average ranking on the different criteria are left over as possible schemes. For this reason, scheme AE will remain, which also has a high score for the vision Green Twente. Also scheme U will be left because of the relative high ranking at all criteria. In the following table the remaining schemes are shown. .

Scheme	Residential area	Landscape	Recreational possibilities	Accessibility	Recreational routes
G	maintain	develop recreational nature	expansion	Higher	expansion
H	maintain	develop recreational nature	expansion	Higher	maintain
I	maintain	develop recreational nature	maintain	Lower	maintain
K	maintain	develop recreational nature	maintain	Higher	expansion
S	maintain	maintain	expansion	Higher	expansion
AE	maintain	Develop ecological nature	maintain	lower	maintain
U	maintain	maintain	expand	lower	maintain

Table 21: most preferable and feasible schemes

Next we will make clear the degree of impact or relevance of the different uncertainties. Reducing an uncertainty with a high impact is of more importance than the reducing of an uncertainty with a low impact. It is likely that the uncertainties are related to the driving forces. For this reason the investigated boundaries of the driving forces are useful for analyzing the uncertainties. (Friend and Hickling, 2005)

15. Responses to uncertainties

Uncertainties:

UE – uncertainties about the working environment: *"we need more information"*
UV – uncertainties about guiding values: *"we need clearer objectives"*
UR – uncertainties about related decisions: *"we need more coordination"*

Responses:

To prevent losing the overview on the uncertainties, only the uncertainties with the biggest influence in the Twente region are discussed. The most of these uncertainties are so-called hard uncertainties, which mean they are hard to reduce, or it takes lots of effort to reduce them. It is more profitable to reduce the softer, easier, uncertainties. This saves time and effort. Therefore, the uncertainties with higher importance and easier solubility were discussed. We have chosen the most important or relevant uncertainty areas to continue with the process.. We chose the uncertainty areas 3, 5, 6, 8, 9, 10, 12, 13, 14, 15 and 17. Off course, the other uncertainties most not be forgotten.

Uncertainties:

1. Population growth (UE):

Since we are talking about the future nothing can be said with 100% certainty. However, the CBS has been keeping track of birth- and mortality rates in the Netherlands for many years; predictions about birth rates have proven to be quite accurate. Migration is a bigger uncertainty. Migration rates will depend on chosen governmental policies and the developments of problem- and war areas around the world. Not only immigration, but also emigration should be taken into account since emigration rates in the Netherlands have been raising lately.

2. Amount of tourists attracted to the region (UV):

In the field of tourism, Twente has the opportunity to become one of the leading regions in our country. Tourists and their spending money have to be attracted to the region, in order to be of any importance to the local economy in the region.

3. How to invest governmental money (UV/UR):

Governmental policies change every 4 years, sometimes even faster. Since every new parliament sets its own goals and municipalities are somehow dependent of this cash flow, local courses have to be adjusted regularly.

Response: The most important advice is to make flexible plans and thereby reducing the uncertainty level. Make sure there is room for adjustments so that the plan can run with different policies it might fall under.

4.Parceling (UE):

In order for Northeast Twente to compete with other agricultural areas, both domestically as foreign, parcelling has to be considered. A solution has to be found to keep this area small scaled, but enhancing the efficiency.

5.Successors on farms (company continuation) (UE):

Farmers have to deal with fewer successors these days than they used to do in the past. This could be a dangerous development and large scale vacancies lie in prospect. Furthermore, profit margins keep lowering and only large scale farmers can make a decent living these days. Smaller companies do not have enough possibilities to grow and will disappear from the sector eventually.

Response: A national questionnaire about the animo to become a farmer in Twente, in order to intercept the loss of successors. Room is scarce in the Netherlands; (future) farmers should be won over to come to Twente with their business, take over an existing business or start a new business if possible.

6.Cooperation between the municipalities (UV):

There is uncertainty about the willingness of the municipalities in Twente to work together on the development of the region. Municipalities may tend to think only on their own particular interests. However, cooperation between municipalities is an important precondition for matching the different functions in the area well.

Response: Create a workgroup with participants from every municipality in Twente. It is important all the municipalities should broaden their horizons, think out of their boxes; have respect for each others and each others methods. Although this step can be realized easily, the success of the whole project depends on it.

7.Developments on the world food market (UE):

Developments on the world food market will have consequences on e.g. the practices of farmers in the region. It is uncertain how the prices of food products will develop in the future. Especially in the case of a free market situation, these developments will have strong effects on the possibilities for farmers to run a profitable farm.

8.Whereabouts of bus lanes in Twente (UV/UE):

In the policy scenario for the vision "Green Twente", as well as in the policy scenario for the vision "TINC", the construction of bus lanes is mentioned. However, it is still unknown what will be the best place for the bus lanes. So, where the highest need for bus lanes in the future will be and where they will be used most efficiently, in order to reach a positive effect on the accessibility of the Twente region by the construction of bus lanes..

Response: The only thing that has to be done is research about the best possible locations for the bus lane to be realized. Involve experts from different disciplines like traffic engineers, ecologists, economists, urban- and spatial planners etc.

9.Possibilities to continue the A35 into Germany (UV/UE):

It is uncertain whether and how the A35 has to be continued towards Germany. Will there really be the need for this continuation in the future? What will be the consequences of this continuation, and if the continuation is needed, how can it best be realized? These are all questions which are still unanswered.

Response: The only thing that has to be done is research about the possibility of realizing this expansion of the A35. Involve experts from different disciplines like traffic engineering, ecology, economy, urban- and spatial planning etc.

10.Possibilities to reduce the effects of barriers (UE):

Both visions contain the wish to reduce the negative effects of large barriers in the region. Hereby you can think of nuisance, effects on the possibilities of people and animals to move through the area and the negative effect on the view of the landscape. It is still uncertain how these negative effects most efficiently can be reduced.

Response: These barriers need to be reduced in order to develop the area in both a recreational way as in an ecological way. Research has to be done about the possibilities to realize ecoducts, tunnels etc.

11.The amount of available money of the European Union to develop the rural area (UV/UR):

For the period till 2013 the European Union spends a substantial amount for the strengthening of rural areas in Europe. However, it is unknown whether the European Union will go on with this subsidies in the future and whether the amount of this subsidies will stay the same.

12.Possibilities to convert existing business parks into green business parks (UV/UE):

Business parks have been pointed out to be converted into green business parks, but it is not sure if and how this can be done. Some business parks will have very little space, so it is not certain to what extent they can be turned into green business parks. Furthermore, there is a lack of clarity about subsidies for this metamorphosis.

Response: Find already existing green business parks and evaluate their designs. Implement them on the corresponding need-to-be-developed business parks in the area of Twente.

13.The intensity of the use of roads in Twente (for down- or upgrading) (UE):

Some roads could be changed in the future. However, it is still uncertain in which intensities the road network will be used in the future and if down- or upgrading is really necessary. The bus lanes could generate lower intensities and new businesses could generate higher densities. Some roads are also running next to forests or

through residential areas, so these ones probably will be hard to upgrade. Therefore, it is still uncertain what changes are needed for the road network.

Response: Doing a traffic engineering research on the road network in the Twente region.

14. Economical growth (UE):

It is very uncertain to what extent the global economy and the national and even regional economy of Twente will grow. It will be evident that this has consequences for the planned measures in the region. Higher economic growth will result in more actions and measures, simply because they can be paid. Low economic growth or economic stability asks for economic cuts, so fewer measures can be taken. On the other hand, developments like new industries and business parks could influence the local and regional economy.

Response: The scenarios "Twente on the move" and "Twente on track" represent the boundaries of the possible developments. So these scenarios can help to investigate the consequences of a particular level of economical development and to respond to this. Furthermore it can be wise to save some money in case of economic misery.

15. Technological development (UE):

Technological developments in the future are almost as uncertain as the economical growth. There are no guidelines for predicting the rate of developments, it is hard to express these developments in numbers. Technology depends partly on the economic situation, because money is needed for research and construction of new technologies.

Response: The scenarios "Twente on the move" and "Twente on track" represent the boundaries of the possible developments. So, these scenarios can help to investigate the consequences of a particular level of technological development and to respond to this.

16. Energy prices (UR/UE):

The prices of energy resources and especially fossil fuels will probably rise, but it is hard to predict to what extent they will rise. This depends mainly on the stock of oil and the development and implementation of new and cleaner energy resources as wind and solar energy. It could also become reality for people to produce their own energy via solar panels or in other ways, in this way it is even harder to predict energy prices.

17. Climate change (UR/UV/UE):

Climate is changing, that is sure. Uncertain however, is in which way climate is changing in twenty years. Temperature and rainfall will increase, but it is still uncertain how much they will increase. It is also hard to predict which effects this will have on the region. Maybe the current forms of agriculture will be impossible to practice and this could result in the disappearance of current farms. Natural flora and fauna species will also disappear and new species will rise, due to the climate changes.

Response: As soon as developments of climate become clearer, adapt the policy to this. This policy will then result in concrete measures. It is important to keep a flexible attitude regarding the subject of climate change.

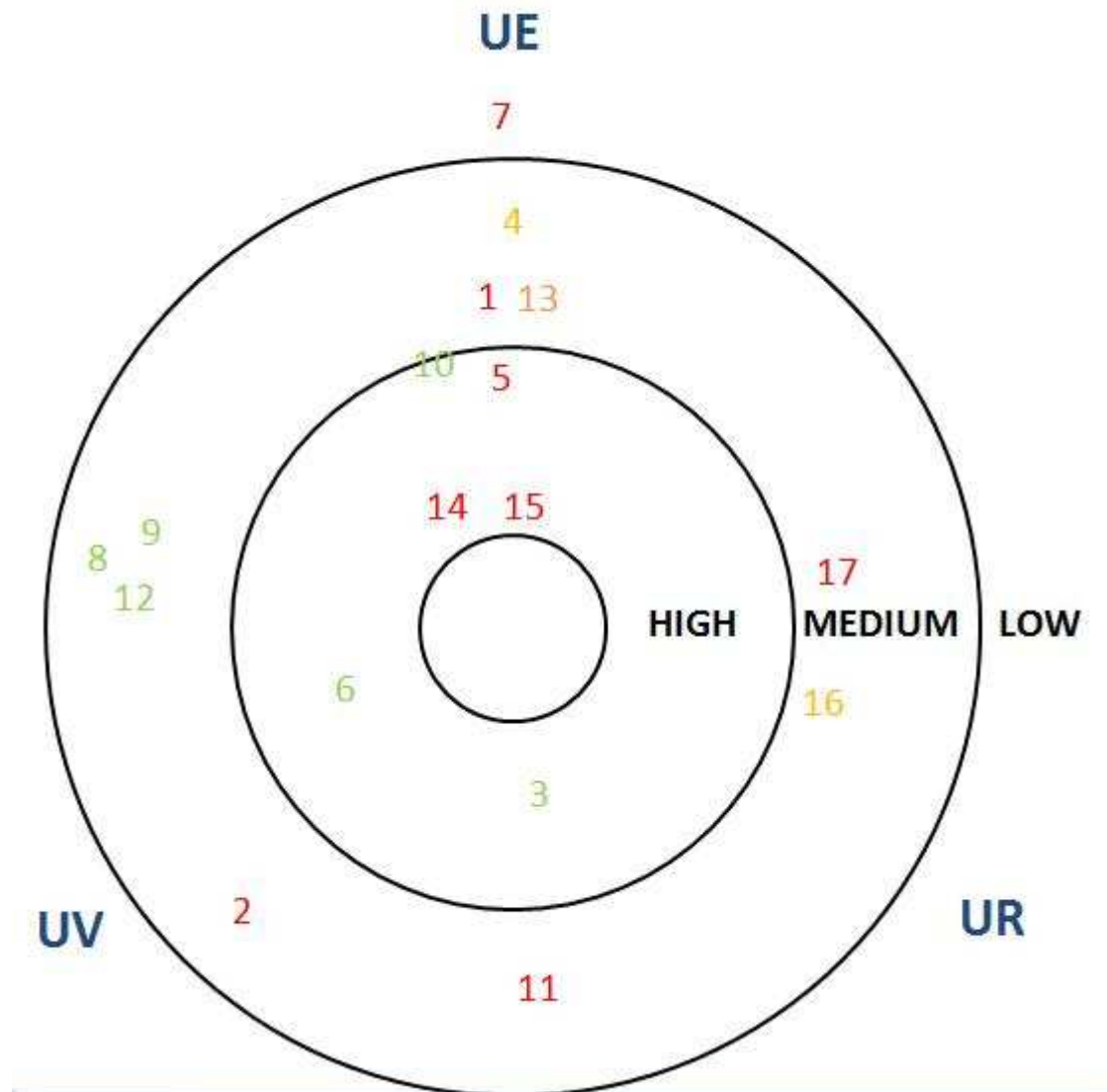


Figure 22: Uncertainty cloud

Red: Difficult to reduce uncertainty
Orange: Medium-Hard to reduce uncertainty
Green: Easy to reduce uncertainty

The last step is to make a feasible commitment package, where in the measures – organized per decision area within the problem focus – for the short-term are written down. This commitment package is related to the decision schemes, policy strategies and the master strategy. The master strategy gives us the boundaries of the future developments, below this is translated to the commitment package. This can be done by contingency planning, which uses “if-then constructions”. These constructions are used to say something about the strategies outside the overlap of the master strategy. The commitment package also contains an overview of the additional information which is needed in order to carry out the measures in practice. (Friend and Hickling, 2005)

16. Commitment package

Below we have created a commitment package, which can best be described as a combination of actions, explorations and arrangements for future choices designed as means of making progress in the planning process. The commitment package consists of immediate decisions and future decision space. The immediate decisions part is divided in actions (actions) and explorations (more research is needed before making a certain decision). Furthermore, the future decision space is divided in deferred choices (choices you can only make sufficient after more research has been done (explorations)) and contingency planning (if action does not satisfy, then...). It is important to realize that the commitment package below is more a guideline than an actual plan for now. For an actual plan it is of course needed to create a preferable vision for the city borders in the Twente region.

	Immediate decisions		Future decision space	
Decision areas	Actions	Explorations	Deferred choices	Contingency planning
Residential area	Maintain the total amount of acreage in use for residential purposes.	Need for expansion and the target group you are building for. Explore the potential infill-locations and the need for high rise building. Also find out how to prevent acreage expansions.	<i>Within 2 years:</i> Decide whether to expand or not and determine the target group. Implement measures against acreage expansions.	If there is a need for expansion of the amount of houses, then continue the explored options and choose the best of those. If there is a different target group than the current one, then make changes in the housing policy.

Landscape	Start with the strengthening/placement of hedgerows. ¹	Explore the needs and desires according to the vision of the region Twente and explore the possibilities to subsidize as many (qualitatively valuable) projects as possible.	<i>Within 1 year:</i> Which type of nature to develop in the area and where to do this?	If research shows a need for recreational nature, then start developing recreational nature. If research shows a need for ecological nature, then start developing ecological nature.
Recreational possibilities (fixed recreation)	At least maintain the current level of possibilities.	Need for expansion of the fixed recreation possibilities and ways to do so if needed.	<i>Within 2 years:</i> Is expansion of these facilities needed and where are they needed?	If there is a need to expand the fixed recreation network, then develop this new network within 10 years.
Accessibility	Increase the accessibility between residential areas, city borders and the surrounding area ² .	Explore ways to realize these improvements on the network and where to adjust the network.	<i>Within 4 years:</i> Decide where and how to improve the network.	-
Recreational routes (line recreation)	At least maintain the amount of recreational routes.	Explore the need of expansion for the recreational routes and the possibilities to do so.	<i>Within 2 years:</i> In case of a need to expand the network, where to expand and how to do this?	If expansion of the routes is needed and the exploring phase of where and how to realize this expansion is done, then do this within 20 years from now.

Table 22: Commitment package

If certain driving force developments will occur, for example high economic growth, keep in mind that the scenarios are there to help decide on possible options for different issues. Maps can be used to show the spatial chances which are present in the area where an issue occurs.

¹ Although some schemes show the option 'maintain' in the remaining options of the Evaluation Framework, we think it is better to develop hrows in the city borders, in order to strengthen the ecological values in the area as well as the experience values in the area.

² Although both the options 'higher accessibility' as 'lower accessibility' are shown in the final schemes of the Evaluation Framework, the recommendation to increase the accessibility might seem odd. We think that increasing the accessibility between urban and rural area will be a positive development for the residents in that area, and this can be done in an ecologically friendly way, so nature will not suffer from it.

17. Final word

After eight weeks of analyzing and research, we have come up with two different visions as mentioned in the report: Green Twente and TINC. These visions are desirable futures for the long term and could be a goal to work towards to. Furthermore, we have come up with a set of schemes which show feasible and preferable options, and we have also developed a corresponding commitment package which includes short term measures and starting points to work towards the visions.

The products we have developed in the past two months can lead to different solutions for the city-border-issue. Our products can be seen as a start to generate discussion which will lead to the development of an own vision for the city borders in the Twente region.

The steps in our report can be used as stepping stones. By following these stepping stones, and use the report as a red thread, a vision can be developed step by step. Eventually, this can lead to a city-border-vision.

Finally, it is possible to choose one of the visions we have developed during the last eight weeks, and follow the corresponding commitment package.

This last option is not recommended by us. We feel our report should be seen as an example on how to come to a vision, not as an end product. Decent research is almost impossible to perform in eight weeks so we strongly advice the “Groene Kennis Poort Twente” to execute their own – thorough – research, involving experts, stakeholders and interested citizens of the region, to come to a comprehensive plan for the future.

It is up to the “Groene Kennis Poort Twente” to decide in which way they want to use this report. For now we hope that this report will generate new insights and that it will provide a useful tool to lead to a successful transformation of the city borders.

Yours sincerely,

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