

Re-structuring of a Dutch mono-industrial region; example of Twente

Table of contents of the chapter

1. Introduction
2. Geography and location of Twente
3. Industrialization of Twente and development of the Textile Industry
4. Decline of the Textile Industry
5. Restructuring Twente: arguments for a regional innovation strategy
6. Moving towards a more diversified economy
7. Stronger co-operation between governments, universities, and industries
8. The role of universities and the example of 'Kennispark Twente'
9. Further regional and international co-operation
10. Twente today

1. Introduction

Twente is a region in the Eastern part of the Netherlands, close to the German border. Since the middle ages, Twente has been a peripheral region, as it was far away from all governmental centers, and because of its geography, a rather closed society developed in the region. When in the 19th century industrialization took off, textile manufacturers were looking for the region in the country with the lowest wages, and found Twente to be an ideal candidate. Besides the low wages, there was already a quite developed home industry based textile production system. After the rapid industrial development of textile production in the large cities in Twente, mainly Enschede and Almelo, and the development of textile machinery production in the city of Hengelo, region Twente was around the turn of the 19th and 20th century the second largest textile producing region in the world. After the Second World War and the increase of welfare and consequently the rise of the wages in The



Figure 1: Flag of Twente

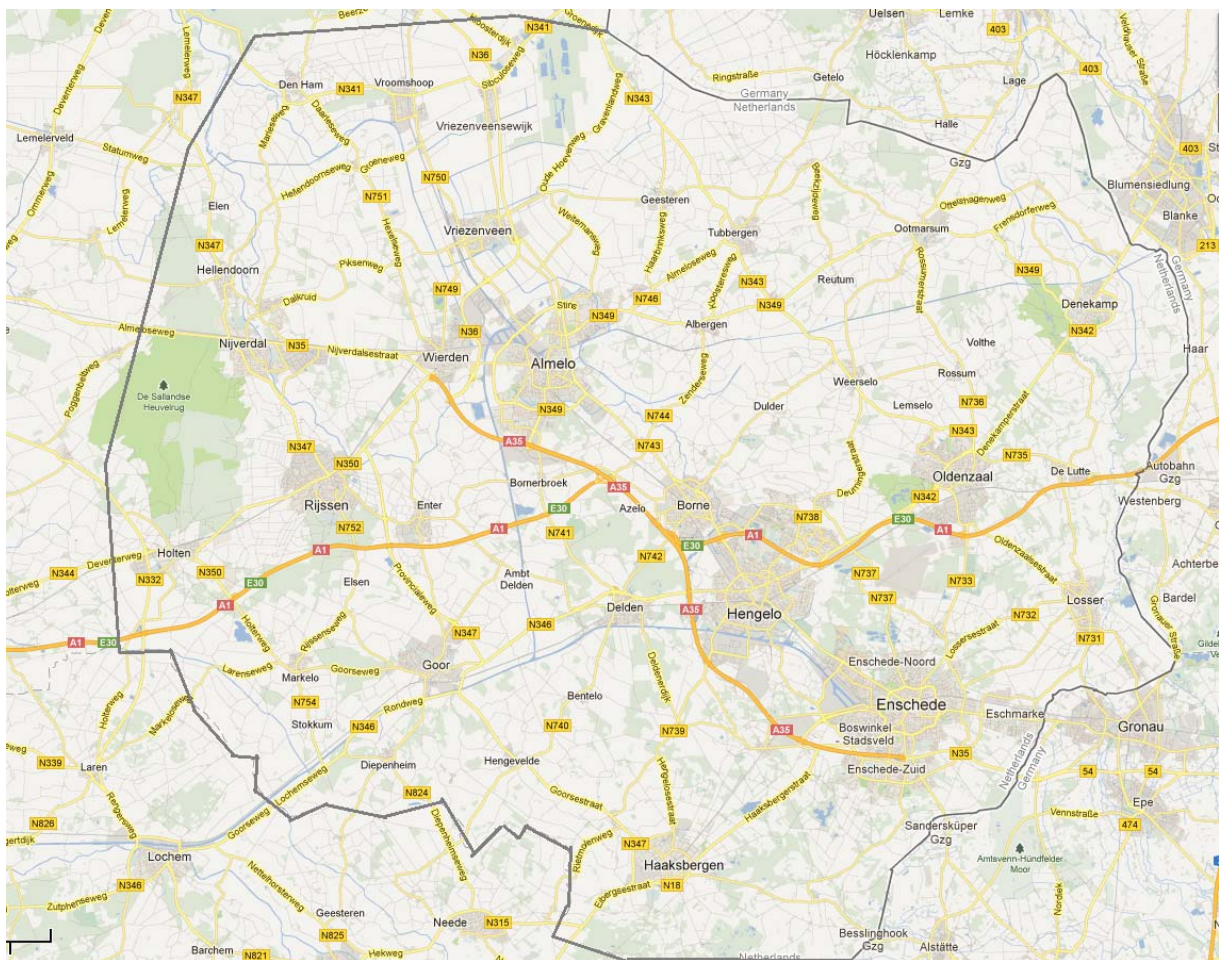


Figure 2: Map of Region Twente

Source: Downloaded from Google Maps, 2012

Netherlands in general and Twente as well, the textile industry went into decline. The development of the European Economic Community with its free trade was the final blow for the textile industry in Twente and within ten years, virtually all production disappeared, leaving the region with unemployment levels of over 20 percent. Government policy was aimed at investing in education to improve the long-term competitiveness of the region. The technical university of Twente was created in Enschede and later developments also included the development of Kennispark, the Business & Science park next to the Twente University. Twente still has a lower than average income when compared to the Netherlands, and still lags behind in productivity, but major changes in the economic structure have been taking place, and compared to twenty years ago the situation is undoubtedly a lot better, with less unemployment and a more diversified economy. In this chapter the development, decline and rebirth of the Twente economy is explained in more detail and an attempt is being made to understand and explain the processes which are driving the development.

2. Geography and location of Twente

The region Twente is located in the Eastern part of the Netherlands, and belongs administratively to the province of Overijssel. In table 1 some basic statistical data of the region is presented, which gives an overview of the size of the region and the population. The landscape of the region Twente has been shaped mainly during the before last and last Ice Age, the Saalien and Weichselien. In the Saalien Ice Age, Twente has been covered by the ends of the glaciers, which formed north-south morene hills in the western part and eastern part of the region. The highest elevation of these hills is 74 meter above the sea level, which is not very high, but the hills functioned as reservoirs for groundwater, which came out from the sides of the hills, which combined with the existence of poor water permeable glacial boulder clay near to the surface, created swampy conditions around the glacial hills. These swamps created a barrier for



Figure 3: Location of region Twente in The Netherlands

interaction between people in Twente and the rest of the country, trade relations were slow to develop, and farmers in Twente were only slow to get connected to the emerging market economy of the Netherlands in the Early Modern period. As a remote border region, Twente was in many instances more under influence of the Bishopric of Münster than under the influence of government in The Hague, the capital of the Dutch Republic of the 7 united provinces at that time. However, the border between Germany and the Netherlands has not changed since the early 17th century. The border depicted on figures 3 and 4 is very stable and remained in the same place for over 400 years.

Twente was until 1800 largely a rural society, with only seven small cities, of which Oldenzaal, an old Hanseatic town, was the largest in number of population, and functioned as the commercial and religious center for the region. Life conditions in rural Twente were generally harsh, the soil of the areas that were not swamps consisted of sand which was not very fertile, and needed extra fertilizing to sustain the production of food crops. Fertilizing the land was done by collecting manure of sheep that were grazing on the barren lands of the region. Besides manure, sheep also produced wool, which was used to produce clothes. To earn a bit of extra income, farmers started spinning and weaving wool and linen. Most farms had a special room with a spinning wheel and a loom, and traders collected the products to sell them off in either what is now Germany or in the western part of the Netherlands. An exception to this was the village of Vriezenveen in North Twente, which specialized in trade with St.Petersburg (Kokhuis, 2012, p. 153). Since the 18th century, with the introduction of cotton on the textile market, the importance of the textile traders became even larger, as all cotton had to be imported. It is these trading families which became the founders of the industrial textile production in Twente in later ages. In the 18th century better agricultural techniques led to a food surplus, which in turn allowed the population to grow from 17000 in 1675 to 51000 in 1750. Since there

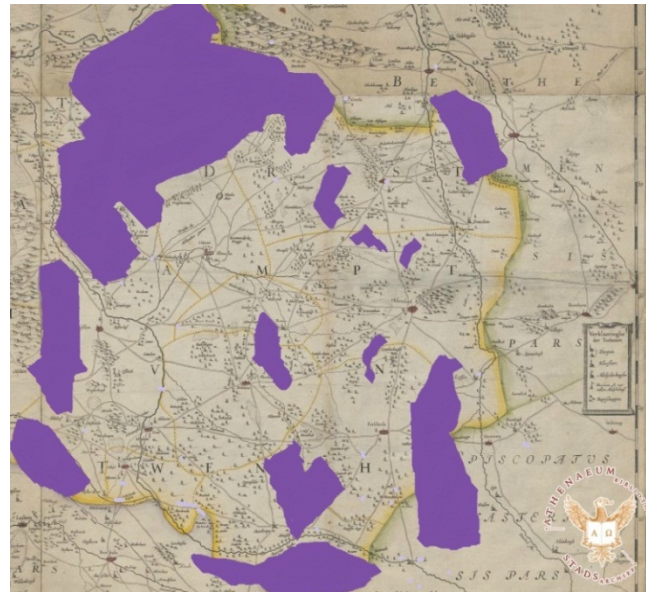


Figure 4: Areas with peaty soils (swamps) in purple in Twente
Source: Map Overijssel province, Nicolaas ten Have, 1652

and traders collected the products to sell them off in either what is now Germany or in the western part of the Netherlands. An exception to this was the village of Vriezenveen in North Twente, which specialized in trade with St.Petersburg (Kokhuis, 2012, p. 153). Since the 18th century, with the introduction of cotton on the textile market, the importance of the textile traders became even larger, as all cotton had to be imported. It is these trading families which became the founders of the industrial textile production in Twente in later ages. In the 18th century better agricultural techniques led to a food surplus, which in turn allowed the population to grow from 17000 in 1675 to 51000 in 1750. Since there

Table 1: Statistical comparison of Twente and Netherlands		
2011	Twente	Netherlands
Total surface	1503 km2	41542 km2
Land surface	1489 km2	33719 km2
Population	626 586	16 730 348
Population density	421 persons per km2	496 persons per km2
Population growth	1162 (0.19%)	70 103 (0.42%)
Birth rate	10.5 ‰	10.7 ‰
Death rate	8.6 ‰	8.1 ‰
Net Migration	-37	+26 171
Unemployment %	5.3%	5.4%
Gross Regional Product/GNP per capita	€ 30 452	€ 35 189

Source: CBS (Central Bureau for Statistics), 2012

was no freely available agricultural land in the region Twente, most of the people tried to find work in the cities Almelo and Enschede, where the textile trade was developed and they could work as weavers. Most of these people worked in their homes in the city, but had delivery contracts to the textile traders, who supplied them with raw materials, and who by now de facto had become their employers.

3. Industrialization of Twente and development of the textile industry

From the start of the 19th century, the textile production in Twente started to industrialize. In 1810, two large family businesses, Blijdenstein in Enschede and Hofkes in Almelo were active, employing hundreds of weavers and spinners. However, these companies were not factories in the modern sense of the word, the employees worked from home, on simple hand-operated looms and spinning wheels (Willink, 2010, p.21). The first attempt on establishing a steam powered spinning industry in Twente was done by the Hofkes firm from the city of Almelo in 1830 (Kokhuis, 2012, p.197). At that time, The Netherlands, Belgium and Luxemburg formed one country, the so-called “United Kingdom of the Netherlands”, which was established at the congress of Vienna in 1815 after the defeat of Napoleon Bonaparte. The policy of the government of the United Kingdom of the Netherlands was to let Ghent, in what is now Belgium, be the center of textile production of the country. The Dutch East Indies, now Indonesia, at that time a colony, was an important market for the textiles produced in the United Kingdom of the Netherlands. The United Kingdom of the Netherlands fell apart, only 15 years after its formation, in 1830. For the textile industry of Ghent, this was a disaster, as the large market of The Northern part of the Kingdom (The current country The Netherlands) and the colonies (among others Indonesia) were closed for exporting (Witte, 2006, p.127). The government of The Netherlands invited many specialists and entrepreneurs from Brussels and Ghent to The Netherlands, to help build up the industry there. The region Twente, far enough away from the new Belgian border, with its low wages and experience in textile home-industry, turned out to be the ideal candidate for developing the new textile industry of the truncated northern part

of the Netherlands. It is interesting to note that the development of the textile industry in Twente was an early form of government planning; the idea was that Twente should produce textiles from cotton, these textiles would be shipped to Indonesia, where the local industry would paint them and process them further into clothes. One of the reasons why he also advised the government to choose for Twente to develop the

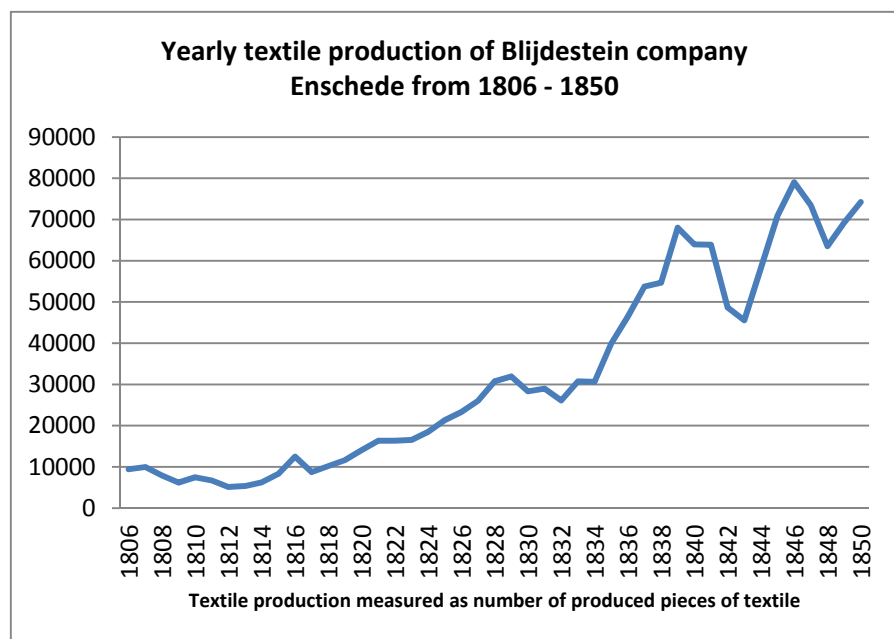


Figure 5: Textile production data of Blijdenstein company, one of the largest textile producers from Twente. Source: National Dutch Accounts

industry, was that in case the industrialization policy would fail, the workers in the cities of Twente would still have (unlike these from the western parts of the country) vegetable gardens to survive on (Willink 2010, p.22). The Netherlands Trading Society, a semi-public trade development organization and one of the predecessors of the current ABN AMRO bank, gave large subsidies to support the production of textiles in Twente. Figure 5 is an overview of the production data from the archives of the Blijdenstein company in Enschede, which shows clearly the trend upwards in the production, especially in the years after 1830. It is a period, which marks both the introduction of steam power and the independence of Belgium and the subsequent subsidizing of the textile industry in Twente.

Parallel to the growth of the textile industry in Twente was establishment of the machine construction and repair industry, set up by the industrial pioneer Charles T. Stork, who started his business in 1868 in the town of Hengelo (Stork, 2012). Stork initially grew his company by repairing steam engines for the textile industry and building new engines for them. However, Stork found the textile industry too conservative and started to develop products for other markets, as he understood that Twente in itself would be a too small market. Stork Company became a successful exporting business, and supplied steam pumps, cranes, industrial fans and generators all over the world. The success of this company is the most important economical reason for Hengelo to develop itself into the town that it is now (Historisch Archief Overijssel, 2007). Even today, long after the collapse of both the textile production and the heavy machinery production, there is still a difference in education level of the population between Enschede and Hengelo. The latter being a city with more educated people, since the nature of the metal business required higher educated people than the textile industry (see also figure 12).

Table 2: Population development in Twente						
	1795	1849	1889	1950	2000	October 2012
Twente region - total population	55 580	83 871	120 963	377 286	611 797	626 591
Almelo - city	2162	3448	8269	41 528	71 026	72 795
Almelo - rural area	2383	3180	5038			
Enschede - city	1835	3778	7180	106 882	151 346	158 371
Enschede - rural area (+ Lonneker)	4838	8000	15 533			
Hengelo - town	678	1844	4539	48 547	80 910	80 909
Hengelo - rural area	1989	1794	5724			
Oldenzaal	2087	2913	4346	12 930	31 180	32 166
Other settlements	39 608	58 914	70 334	167 399	277 335	282 350
The Netherlands - total population	1 880 463	3 056 879	4 511 415	10 026 773	15 863 950	16 655 799
Population of region Twente as % of population of The Netherlands	2.96	2.74	2.68	3.76	3.86	3.76
Source: Central Bureau for Statistics and Volkstellingen (Census data)						

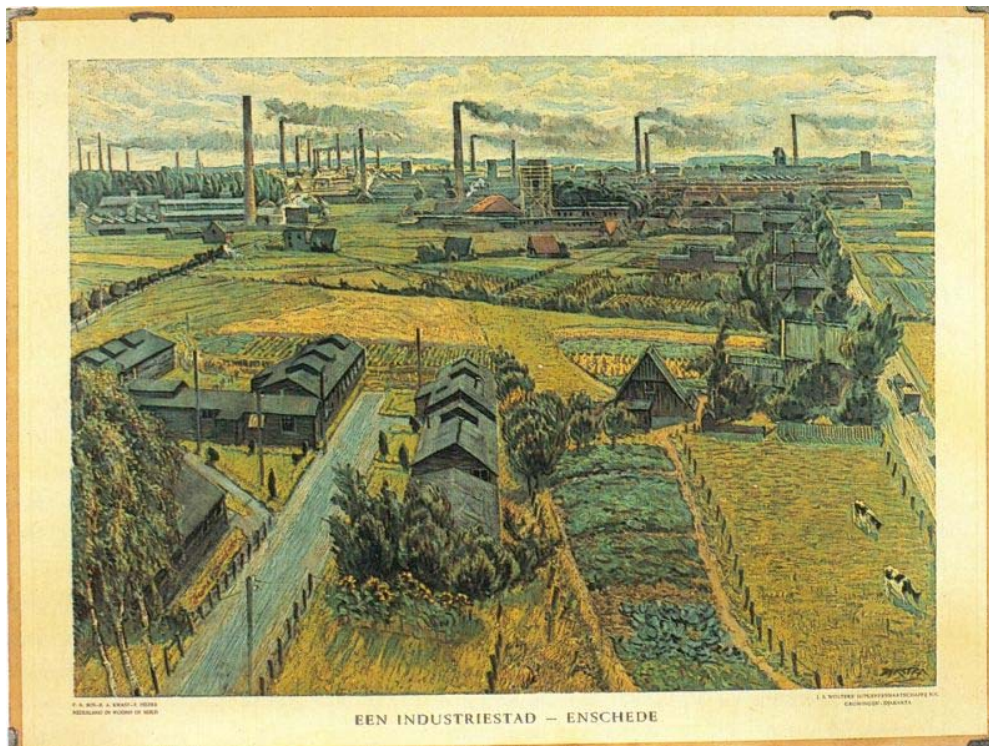


Figure 6: Example of an industrial city – Enschede (for use in schools)
Painted by: Johan Dijkstra, 1924



Figure 7: The industrial city Enschede (for use in schools)
Painted by: J.C.H. Heijenbrock, 1916

Many see the period between approximately 1860 and 1930 as the golden age of the region Twente (Willink, 2010; Municipality Enschede, 2011). It is the period in which the currently existing spatial structure of Twente has been formed, not in the last place because of the construction of the railway and in which the city of Enschede clearly developed hegemony over the other cities in the region. From geographical point of view, the city of Almelo was much more likely to develop into the central city of the region, as it was located close to rivers and canals, and more close to the major markets in the most developed Western part of the Netherlands (Willink, 2010). To explain the development of Enschede, it is necessary to look at local reasons. The development of the city took off with a tragedy: the entire city burned down in 1862. This tragic event however, lead to new possibilities for the industry, suddenly a lot of land was available to build new factories and modernize everything. It was the extraordinary entrepreneurial effort of the families who owned the textile factories (the most important one being the Van Heek family) that the reconstruction and the development of the industry in Enschede could prosper (Willink, 2010, p. 49; Kokhuis, 2012, p. 221; Schelven, 2012).



Figuur 8: Destruction & reconstruction works on the Old Market of Enschede after the destructive city fire of 1862.
Source: Municipality Enschede, 1862

Despite the growing importance and prosperity of the textile producing families in Twente (most of which were leading a very simple private life), conditions for the workers in the textile factories were very poor: filthy, noisy and dangerous. Housing conditions for the workers were even more appalling, in all cities in Twente, residential quarters close to the textile factories were built, in most cases without sewage and running water. The most notorious worker quarter in Twente was the neighborhood Krim (Crimea), named after the Crimean war in the middle of the 19th century (see figure 9). The changing circumstances in society lead to social tensions between the textile families, the employers and the workers in the factories. Strikes for higher wages or better working conditions started to occur over and over again after the first serious strikes in Almelo in 1888 and Enschede in 1889 (Kokhuis, 2012, p.231), the factory owners developed a method to break the strikes, by means of a coordinated lock-out. Since the textile manufacturers were only a handful of families, they could easily work together. The system was that when there would be a strike in one of the factories, all others would cease operation as well, without payment to the workers, so that it was not



Figure 9: Crimea & Sevastopol, Enschede housing quarter built in the 19th century for the textile factory workers. (named after the Crimean war)
Source: Municipality Enschede, 1910

possible for the workers to support each other. With this system of lockouts, the factory owners defeated all strikes well into the 1930s (Willink, 2010, p.111).

The situation in the metal producing industry in Hengelo was quite different, already in the 19th century the wages for workers were a lot higher. The network of textile producing families did not have to worry too much about this situation, since the workers in the metal industry needed more schooling and textile workers did not have possibilities to develop themselves, so there was no risk for difficulties in hiring enough workers (Willink, 2010, p. 112). This situation would change only from the 1950s onwards.

4. Decline of the textile industry in Twente

The first major crisis for the textile industry in Twente appeared in the 1920s. The neutrality of The Netherlands in the First World War meant no loss of production capacity or lives because of the war, and in the first years after the war a massive demand of textiles from abroad caused a rise in profits, which were partly given to the workers in higher wages. Unfortunately, the situation did not last and the 1920s were characterized by increasing competition from abroad to which the factory owners decided to lower the wages again. This led to months of strikes and lockouts in the whole region of Twente, and led to a loss of international & internal market share for the textile factories from Twente (Alberts, 1982). The matter of prestige and winning the fight with the workers was most important for the factory owners in this matter.

The textile industry was barely recovered from the social problems in the 1920s, when the severe worldwide crisis of 1929 and the 1930s also hit The Netherlands and Twente. Especially the export of textile suffered in this period, as the Dutch government refused to devaluate the Dutch currency. After the currency was finally devaluated, the situation improved a bit, but unmistakably the first signs of the decline of the industry could be seen. The textile producing families united with each other into cartels, which made agreements about prices, which was probably good for the producers in the short term, but bad in the long term, as it undermined the necessity to be innovative. The main problem was that wage levels were already too high, compared to some of the then low wage countries. Especially the emerging competition from Japan was fierce in the Dutch East Indies colonies, traditionally an important export market of the Twente textile industry (Willink, 2010, p 56).

Enschede in 1986 (by Willem Wilmink)

It is the endpoint of the train,
deserted like an empty plain
almost none goes all the way:
to Enschede.

The castles of the industry
are still there, scattered
like caves, hollow and worn out,
where just the wind whistles round aloud.

Textile barons of the past,
their hunting domains didn't last.
Were they leaving not a single sign,
Van Heek, Ter Kuile, Blijdenstein¹⁾?

Have they had some children here,
Are there some descendants near,
or did they find a better way,
than to stay in Enschede?

Krim, Berkenkamp, Sevastopol²⁾,
it's over now, for once, for all
Hardly anyone still knows
your suffering , your sorrows.

Across the half deserted heart
now runs the barren boulevard³⁾
with stores empty and grey.
Oh, Enschede, Enschede.

¹⁾ Van Heek, Ter Kuile and Blijdenstein were three important Textile producing families.

²⁾ Krim, Berkenkamp and Sevastopol were slums for textile workers in Enschede

³⁾ Boulevard 1940 – 1945, is one of the main streets in Enschede, a large avenue built to make the city centre better accessible for cars.

After the Second World War, there was one last period when all seemed to go well with the textile industry, and a quick recovery of the industry occurred. Because of the strong demand for textiles in the end of the 1940s and early 1950s, the factories made large profits, but had many difficulties in attracting workers. There was enough choice of available work and the unpopular textile manufacturers, people had not forgotten about the way they were

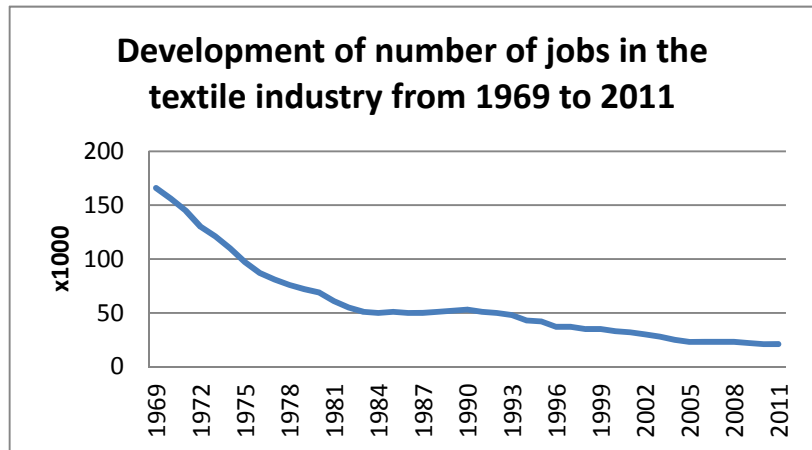


Figure 10: Decline of the textile industry in the Netherlands.
Source: CBS, 2012

treated by them before the war, had a hard time to convince people to work for them. The irony of the situation even was that the government fined several textile manufacturers because they paid more than the maximum allowed wage for textile workers, a situation which was necessary because otherwise almost nobody would be interested to work there (Kokhuis, 2012, p. 336). Still there were not enough workers and workers from abroad had to be found, from Spain, Italy, Yugoslavia and Turkey, to fill in the empty places (Kokhuis, 2012, p. 341; Willink, 2010, p. 70).

In 1957, the European Economic Community (EEC) came into existence with the treaty of Rome. For Western Europe, it meant that a new free trade zone was established and new markets could be found for the textile industry in Twente. On the other hand, it meant that textile companies from other European countries could also operate on the Dutch market. There was a structural overproduction in Europe and with the loss of traditional markets in the colonies in this period of decolonization, the situation for the textile industry of Twente was at best uncertain. In Belgium and Germany, governments gave more state support to their own industry, while the Netherlands chose for a free trade policy (Willink, 2010, p.67-70). All textile factories felt the increasing competition and from 1960 onwards, many of the factories started to decline and think about mergers to create economies of scale and cost-savings. Within a couple of years, two giant conglomerates were formed, the KNTU in 1962, a combination of no less than 12 factories. In 1964 the Van Heek group was formed out of five large companies, an unsuccessful merger, already a few years later, in 1968 the conglomerate was forced to cease operations (Griffiths, 1987, p. 85; Kokhuis, 2012, p. 339). The same happened in 1973 to the KNTU when it went bankrupt (Willink, 2010, p. 68). In Enschede alone, more than 10 000 workplaces disappeared within a timeframe of ten years, in the entire region Twente around 41 000 in the same period (Kokhuis, 2012, p.344).

Besides the changing market circumstances, also the family business structure of the textile producing companies has been blamed for the disappearance of the industry in Twente. When the mergers were taking place in the 1960s, the families were not able to share power and to work together. Instead, they largely tried to do things the old way, which destroyed their companies in the end. However, there are a

few examples of successful reorganizations of old textile firms who are working either in niche markets or became innovators.

Successful restructuring of a Textile Company – Case study of Royal Ten Cate NV

The most successful surviving textile company in Twente is Ten Cate in Nijverdal, who specialized in high tech textiles, and other composite materials, for example artificial grass and the carbon fiber materials which are used in the Airbus A380 (Ten Cate, 2012). The case of the Ten Cate company is interesting, the company was formed in 1957 as result of a merger between two traditional textile factories, Ten Cate Textile Factory in Almelo and the Royal Steam Weaving Mill in Nijverdal (Ten Cate, 2012). It was the first of the mergers that took place in the period of the decline of the textile industry in Twente. The families who owned the businesses had the vision that with the current trends and developments there would be no future if there would not be major changes in the company strategy. The family members decided to withdraw from the board of the new company, to avoid the problem of creating separate “blood groups” in the company and appointed an expert board to lead the new company. Of course the families, especially the Ten Cate family remained shareholder and the huge family capital was brought in the new company, which enabled the company in later years to develop a new strategy and orientation of the factory (Willink, 2010, p. 129; Hesselink, 2010, p. 239). In the first years after the merger, the new Ten Cate company tried to be a universal textile company with a wide portfolio of products and a growth strategy which was aimed at acquiring new companies. After some years, because of the changing market conditions and the too high prices of the Dutch products, Ten Cate had to change its business strategy drastically. In 1971 a shrinkage strategy for the company was adopted to avoid bankruptcy. In the course of the 1970s, Ten Cate restructured its operations, it stopped all its activities leading to the production of clothes, as there were not enough possibilities to make a profit with it, because of the structural overcapacity on the world market and consequently low prices, high interest and high wages in The Netherlands. While shrinking these traditional activities to save on costs, Ten Cate chose to invest in just a few high end textile products and plastics. New markets and technologies had to be found, to grow Ten Cate company in these new directions, in other words Ten Cate opted for a growth strategy in specialization and diversification (Hesselink, 2010, p. 431). Ten Cate acquired many smaller companies specialized in the production of plastics, and started to produce among other things windsurfing boards, protective clothing, shielded vests, canvas for tents and sails and artificial grass (Hesselink, 2010, p. 446). From a regional player, with export all over the world, Ten Cate has become a truly internationally producing and exporting company with less than half of its employees in Twente (Hesselink, 2010, p. 448).

Ten Cate received in 2007 the Erasmus innovation award with the comment “Most innovative company of the Netherlands”. Several international excellence awards have been won in the last couple of years as well (Ten Cate, 2012).

The story of Ten Cate shows that even in a market in crisis, strong management and entrepreneurship can help companies to survive and to create their own rebirth. It shows that a crisis is not simply the fate of a company, but that it can actively change itself and create better circumstances.

Twente was hit even further at the end of the 1970s and beginning of the 1980s, when the heavy machinery construction facilities of Stork in Hengelo were closed down. Stork Company had to reorganize and shift its focus from constructing heavy machinery and installations to constructing specific types of machinery for the lighter types of industry. In particular, Stork built textile print machines, poultry slaughter machines and parts for airplanes, as well as doing the maintenance for these types of machinery. At the moment of writing, most of the parts of Stork have been sold off and the truncated remainder of Stork focuses on airplane parts and machinery maintenance. For the town of Hengelo the disappearance of Stork meant a large increase in unemployment (Kokhuis 2012, p. 345).

Another possible cause for the enormous problems that rose after the disappearance of the textile industry was the ineffective government policy to tackle the problems, at least in the first decades after the 1960s. Twente has been a functional and cultural region, but it was – at least for the last 1000 years – never a territorial unity. Most representatives of the municipalities were only fighting for their own municipality, not for the region in general (Kokhuis, 2012). The pleas for help that came to the national government in The Hague were fragmented and contradictory. Plans of the national government to create a province of Twente and to separate it from Overijssel province, failed because of the mistrust of the representatives of the municipalities and the fight over which city should be the capital (Kokhuis, 2012). Only since the 1990s, the situation of regional cooperation between the different municipalities improved somewhat.

The decline of the textile industry in Twente is an extreme example of the wider restructuring of all western European societies, which have become more and more service oriented societies, and in which in general a large percentage of industrial jobs were lost, except for products in highly specialized niche markets or highly innovative products.

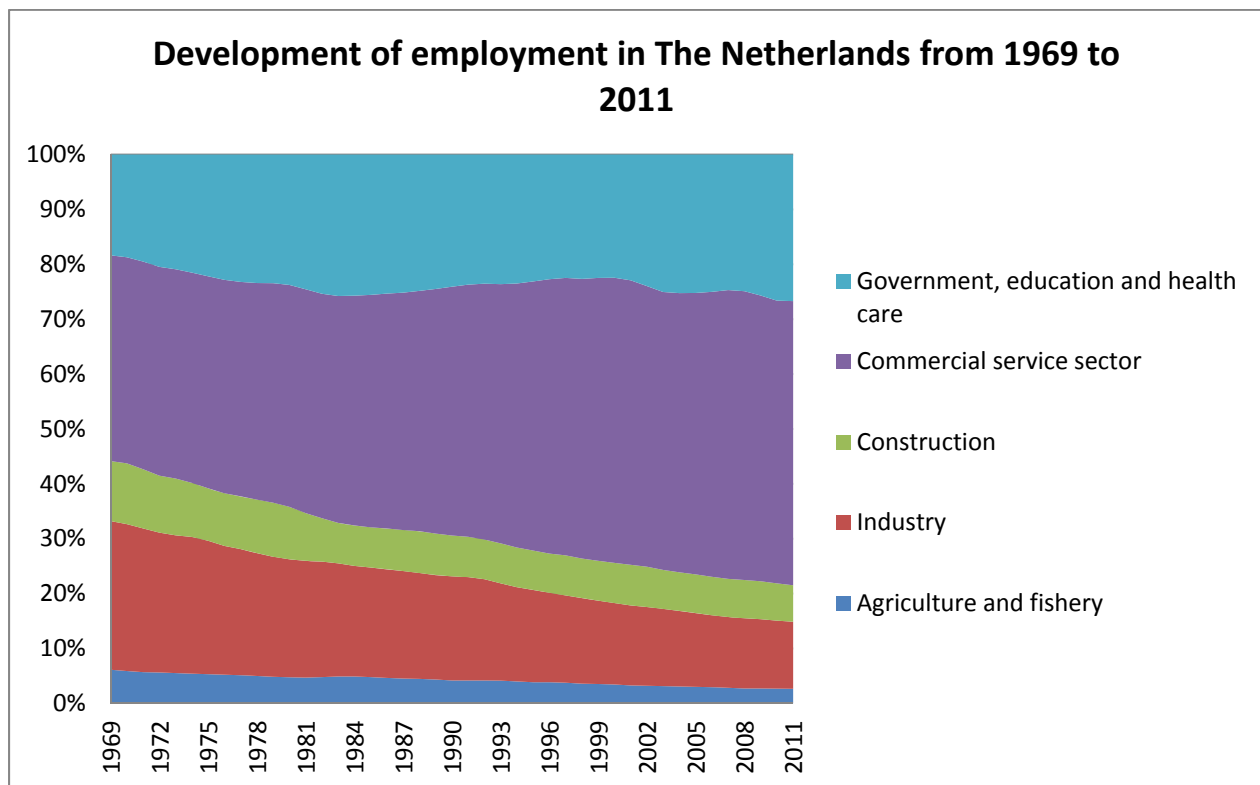


Figure 11: Development of employment in the Netherlands, 1969 – 2011
Source: CBS, 2012

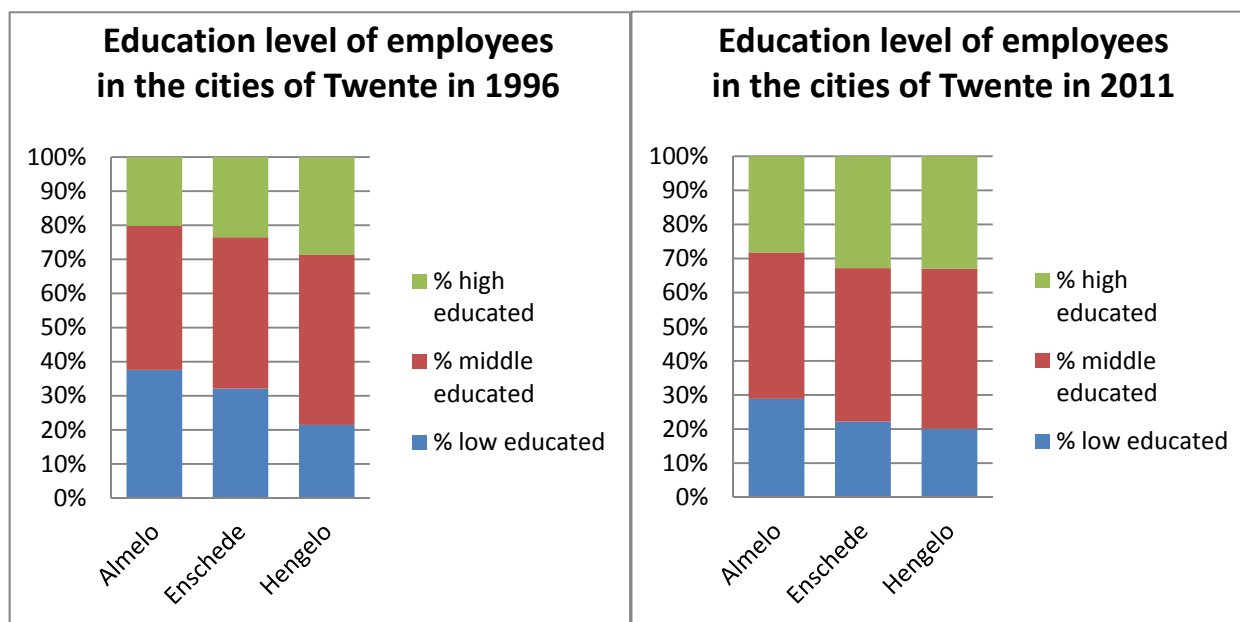


Figure 12: Development of the education level in the three cities in Twente
Source: CBS, 2012

5. Restructuring Twente: arguments for a regional innovation strategy

Since the collapse of the textile industries the region of Twente has developed a new economic strategy that was based on diversification of economic sectors, labor market development, raising the quality of life, and the encouragement of innovation and entrepreneurship. It is especially in the last area that the region has acquired nation and international recognition. This paragraph deals with some theoretic arguments for cities and regions to focus on an innovation strategy.

The key to prosperity is to increase productivity. Productivity growth is the basis for rising real wages for workers, increasing returns to shareholders, and increasing per capita income for the city and the region. The basis for increasing productivity is innovation. In the long term, both advanced and emerging economies cannot compete by just lowering costs or increasing inputs. The only way to compete and raise the standard of living and quality of life is to find new and better ways to use natural, human, and capital resources to increase productivity. Innovation is more than ideas and inventions. According to Pontin is innovation putting invention to work in the business (Pontin, 2008). Innovation can lead to a series of incremental improvements, and it can also lead to breakthrough change.

Drucker maintained that innovation and entrepreneurship go together. Entrepreneurs innovate, and innovation is the specific instrument of entrepreneurship. "The entrepreneur always searches for change, responds to it and exploits it as an opportunity." Economist Joseph Schumpeter, like Drucker, saw innovation and entrepreneurship as the engines of change in the economy. Moreover, he spoke of the process of "creative destruction" as entrepreneurship and innovation gradually (or quickly) replace less competitive economic activity:

...New technologies set off a burst of innovation. Innovation, however, is not evenly distributed through time; it appears in groups or bunches. Entrepreneurs financed by credit make investments in the new technologies. If these innovation investments are successful, imitators follow and the economy embarks on an upward surge: prosperity. Then, an avalanche of goods falls on the market and dampens prices, rising costs squeeze profit margins, and the economy contracts: recession. Recessions are the normal process of adapting to the bunching of innovations during the preceding prosperity. (Schumpeter, 1934)...

An innovative economy is at the core of regional vitality and quality of life. Without an innovative economy, any gains in social inclusion, livable community, and collaborative governance are short-lived. An innovative economy is the engine that produces economic opportunity and community revenues.

Dr. William F. Miller of Stanford University has outlined a new world business paradigm, which he calls 'new globalism' (Miller, 2004) According to him 'old globalism' was based on the search for low factor costs where international businesses invested in regions with low-cost land and labor to serve as export platforms to produce high-volume commodity products. 'New globalism' is however based on the search for the best locations to host high-value, specialized, and innovation-related activities where businesses invest in regions to gain access to specialized workforces, research and development and commercialization capacity, innovation networks, and unique business infrastructure. Developing a regional innovation is the means for communities to meet this new global challenge. The world's top competitors are not states, or countries, but regions. Economic regions are defined not by political boundaries, but economic resources such as industry concentrations, labor markets, and common infrastructure.

Innovation is viewed upon as the key to economic and community success. Regions must now compete on the basis of increasing productivity, not simply costs. While each region has a different set of industries and must compete globally in its own way, every region and industry needs to become more innovative based on increasing productivity. This is true for agriculture and manufacturing as well as professional services, tourism, health care as well as so called "high tech" industries such as information and biotechnology. In fact, there is no such thing as a "high tech or low tech" industry anymore, only innovative and non-innovative. To achieve economic and community success, regions must understand the evolving nature of innovation and define a strategy based on their skills and strengths.

Important for understanding the Twente strategy is that companies and entrepreneurs function most effectively when they are clustered geographically in a region. Geographic clustering of people, companies, and institutions is a powerful mechanism for transferring and augmenting personal knowledge quickly. Sharing knowledge, skills, and experience is simply easier when the necessary elements of the learning network are in the same place. The most innovative work occurs primarily in face-to-face exchange within teams where people work in close proximity to each other. The most rapid advances take place through personal information exchange. Face-to-face interaction remains important in the Internet age. Especially mono-industrial cities and peripheral regions have to invest heavily in developing and maintaining these types of networks, which normally tend to concentrate in large metropolitan cities.

6. Moving towards a more diversified economy

The regional lobby of Twente succeeded, in 1961 the Dutch National government decided to give a new impulse to the regional economy, by establishing a Technical University in Twente (Hospers, 2004, p 11). The plans were realized and in 1964 the University of Twente (UT) was opened as a campus university of technology offering degrees in mechanical, electronic and chemical engineering as well as applied physics and mathematics. The region's strong industrial heritage and the technological university were seen as an ideal combination to build a modern technology-based regional economy. During the 1970s, it was clear, however, that the region could not grow on the basis of technology alone. Unemployment was still high, and a development of the service sector was needed. To diversify the economic structure, investments were made in new growth sectors. The UT set up degrees in social sciences such as management studies, public administration and educational sciences. Meanwhile, other regional higher education institutes were gradually merging into one University of applied science, Saxion. Backed with European funds in the 1980s and 1990s Twente could gradually recover. Manufacturing maintained important in the regional economy, mainly in the sectors of food, chemicals, metal/electronics, defense industry, transport and construction. Consumer and business services (e.g. finance and communication), which have been at the top of the Twente planners' lists since decades, have been growing rapidly only since the 1990s. Especially transport, communications, financial services and business services have been on the rise, realizing a growth that was in 1990s higher than in the rest of the Netherlands. The same is true for public services, especially medical services. In terms of high-tech clustering, the region now has a worldwide reputation for its performance in medical devices, smart materials, telematics, security & defense, and nanotechnology.

7. Stronger co-operation between governments, universities, and industries

Henry Etzkowitz was the first to come up with the 'triple helix' symbol to describe the co-operation between government, universities and industry to enhance social-economic development (Etzkowitz, 2000) Co-operation between municipalities started early. Twente has a historical record of forty years of inter-municipal cooperation. In all post-war national plans for regional administrative reform, Twente has been designated as one of the areas where such reform should take place. In varying combinations the cities, towns and villages in Twente have tried to join forces since 1966 and work together more closely for the benefit of overall regional development. Plans for a District or Province of Twente failed because of internal conflicts or due to opposition from the national government. Over the years, the close inter-municipal deliberations, consultations and cooperation initiatives still led to progress. After many negotiations Twente has been able to establish a Network City and a Regional cooperation network of municipalities, called "Region Twente" (see figure 13). Both bodies are platforms for strategic cooperation between municipalities in the region, and presently serve to jointly invest in large infrastructural projects and to facilitate co-operation with universities and industries.

Triple helix cooperation was firstly encouraged by the regional development policies and funding programs of the European Union. The Twente region is a former EU Regional Development Objective 2 region (which is a funding program for regions in the process of industrial restructuring) and since 2000 Twente has been in the so-called phasing-out phase, because of its relative economic success. Till 2004

there were financial means to stimulate sustainable projects in the regions under the Innovative Action Program (IAP)^{viii}. One of the action lines in this program is support technology startups. In other action lines of this program, cooperation between (higher) education and companies (industry) was stimulated and financially supported.

Figure 13: Region Twente & Network City Twente

food, and innovation in the construction sector. After an evaluation report in 2011 it was decided to focus on the high tech systems & materials industries to promote new high tech applications for health, security and sustainability. Leaders from government, universities, and business have now decided to work on a joint policy, establishing an Innovation Strategy Board and Regional Economic Council. This does however require business leaders that do not only serve their personal and company interests, but also want to take corporate responsibility for the development of the region.

8. The role of universities and the example of 'Kennispark Twente'

The University of Twente was in 1980 the first university in the Netherlands and one of the first in Europe to embrace the concept of the 'entrepreneurial university'. Universities have a longstanding tradition as a knowledge creator, but not as a wealth creator. However, nowadays as wealth creators universities are often involved in contract-research commissioned by the business sector, in collaborative research projects with business partners, and in the creation of spin-off firms aiming to use new knowledge owned by the university in a commercial setting. The phenomenon of wealth creation has now fully entered the research policy of most modern universities as the 'third mission' often denoted as 'knowledge valorization'. Consequently, university policy is nowadays full of tasks concerning invention disclosures, venturing, collaboration, patenting and licensing. Knowledge valorization is a process in which value is added to new knowledge in order to transform it into a new (improved) product, process or service in the market (PriceWaterhouseCooper, 2007). Conceived in this way, knowledge valorization is a broader concept than innovation because the latter only refers to a successful introduction into the market. By contrast, knowledge valorization also includes the often long lasting chain of processes that starts with first thoughts about market introduction and about the research/development steps needed to reach this goal.

To facilitate the valorization process the University of Twente, the Province of Overijssel, and the city of Enschede have created the organization 'Kennispark Twente'. In 2011 also Saxion University of applied sciences joined Kennispark. Kennispark Twente both implements a regional program for innovation and supporting entrepreneurship, and the development of the Kennispark area around the University of Twente. Kennispark Twente aims to connect, optimize and complete the facilities for high tech entrepreneurs. This includes offering an inspiring business location, services for successful entrepreneurship and disclosing top-level knowledge to businesses. The target group for stimulating entrepreneurship are students and researchers of both universities.

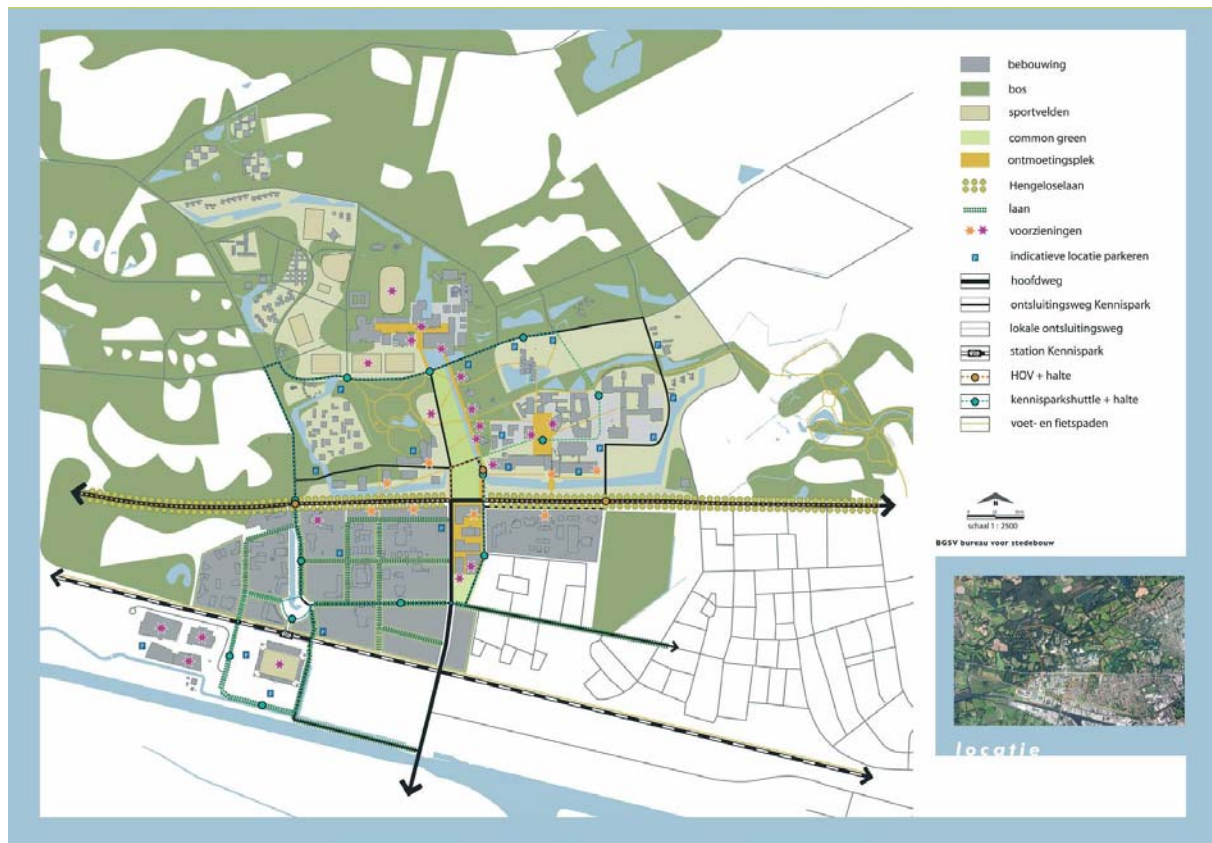


Figure 14. Master development plan area Kennispark Twente

The physical development of Kennispark Twente involves the development of the University of Twente campus and surroundings into a Research & Development business park with all the necessary amenities and the creation and expansion of knowledge networks and innovative production, with the physical meeting place being the area on and around the university campus. Kennispark Twente is also a meeting place where facilities are shared, with few barriers stopping people looking at other people's operations, and where innovation is the order of the day. For this purpose Kennispark is organizing meetings between knowledge institutes and business and industry, between disciplines that would not usually work together.

Kennispark was not set up with the aim to attract foreign companies, but there has been some foreign direct investment. There have interesting and successful examples of the development of joint research and development facilities, including the universities, multinationals, and local companies. Examples are the medical imaging center with Siemens, and a smart materials center with Boeing. The experience has shown, that it is not possible just to plan and construct a science park. It is essential that the area development is supported by valorization activities of universities and/or large companies. All aspects from basic research to bringing products successful to the market have to be incorporated in the science park infrastructure. These include many behavioral, cultural, and financial elements, that are even more important than the built environment. A successful science park is an additional entrepreneurial system, that supports both the activities of the university and contributes to the urban and regional economy.

To describe this entrepreneurial system, the term ecosystem is often used, a term borrowed from biology, describing a stable natural system which is dependent on the different components, each contributing to the system and all components together make the system stable. This is also the case in the successful Science Parks. Recently a report was published by Buck Consultants (BCI-International, 2012) on the development of science parks in the Netherlands. The report was ordered by the Dutch Ministry of Economic Affairs. Based on the number of companies and employees, Kennispark is considered as one of most successful in the Netherlands. It took more than 30 years to reach this position. It remains however a challenge to incorporate not only multinationals and university spin offs, but also regional Small and Medium Enterprises (SMEs) in the innovation ecosystem.

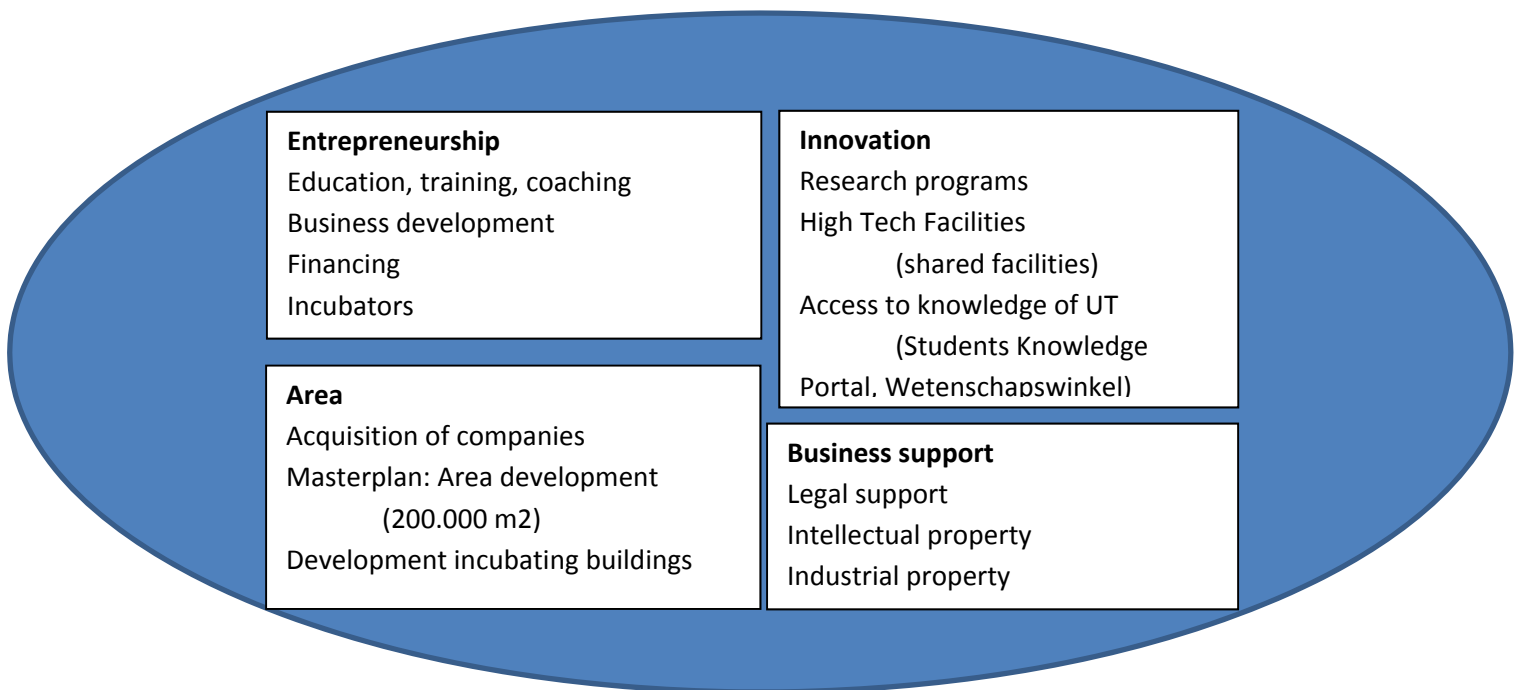


Figure 15. Components of the “ecosystem” Kennispark Twente

9. Further regional and international co-operation

Most communities by themselves stand little chance of competing with the leading economic regions in the global economy. This is especially the case for communities in remoter regions of former mono industrial regions. However, clusters of communities acting as regions are large enough to achieve a critical mass of companies, institutions, infrastructure, and talent—yet small enough to allow for the close interactions among people, firms, and organizations required to innovate and ultimately compete in the global economy. While important partners, federal and state governments are no substitute for regional economic resources, knowledge and networks. Local and regional innovation is the means, then, for communities to meet the new global challenge. An innovative economy helps create the conditions for a healthy community.

One of the most important issues of the government policy is the establishment of networks and supporting the internationalization of the region. The relative location of the region Twente, albeit peripheral in The Netherlands, is rather strong on a European scale. The region is located on one of the most important transport axis from The Netherlands (Port of Rotterdam) towards the northern part of Germany and Eastern Europe (see figure 16). Twente can more than it does now profit from its location, as it has a sufficiently big population base to be an attractive labor market for (foreign) companies.



10. Twente today

Twente has come a long way from the mono industrial textile period, with large numbers of low educated workers, many of which became unemployed in the period of 1962 to 1982. Restructuring of the economy of the region has led to a more diverse economy and better possibilities for people to build their life. On many important economic indicators, Twente has not quite caught up with the rest of The

Netherlands, although significant progress has been made. Regional economic growth will probably turn out to be a little higher than average in the country (figure 17), but average income per capita is still clearly below the average of the Netherlands (figure 18).

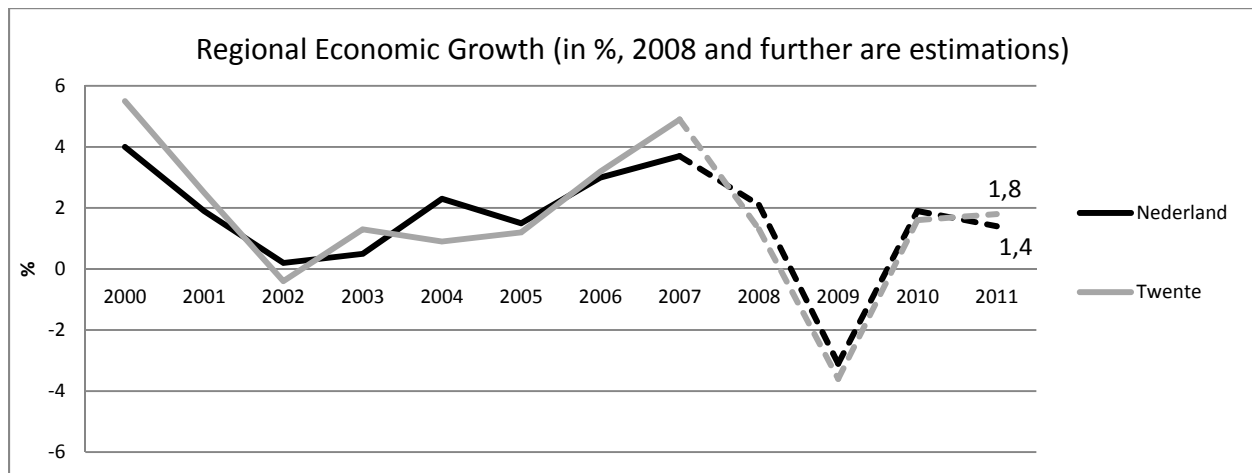


Figure 17: Economic growth in Twente and The Netherlands
Source: CBS, 2012

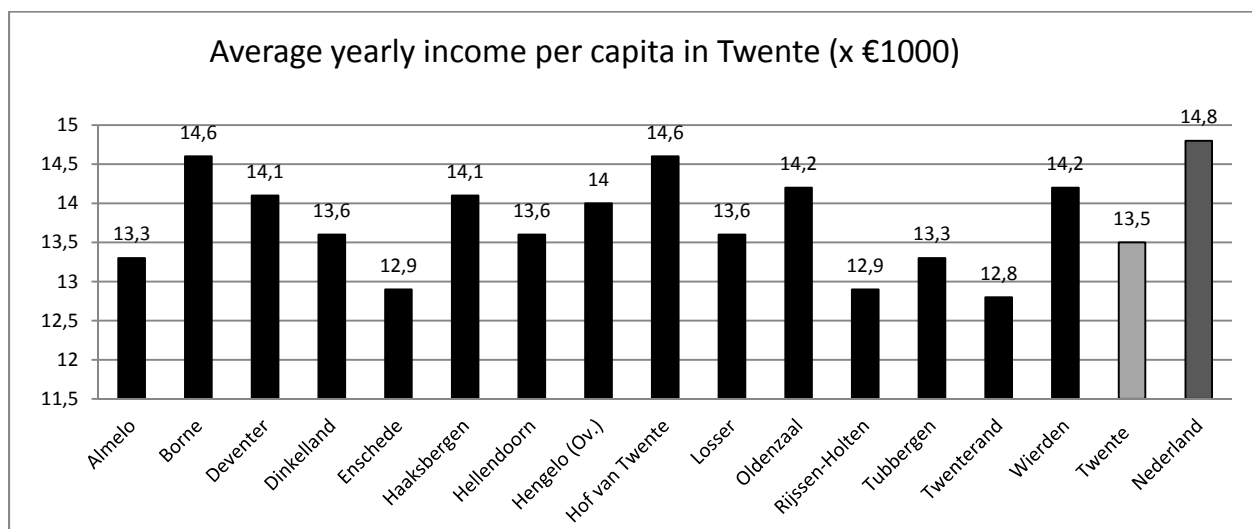


Figure 18: Yearly income per capita in Twente
Source: CBS, 2012

In terms of unemployment percentage, Twente is slightly below average of the Netherlands, which is a good score (figure 19). In terms of labor productivity, Twente scores significantly lower than average in The Netherlands, however it seems that the region is catching up slightly, and the gap between the region and the Netherlands in general is closing (figure 20).

Twente today is a region that has been restructuring since no less than 50 years, and according to the data and most of the measured indicators (Twente Index, 2012), the region finally seems to move back on track and moving towards scoring average on most of the indicators in the Netherlands. For the

government of the municipalities and the network city, plans have been made for the future, to create a truly innovative and fore running region out of Twente. If these plans will be successful, only time will tell, but if present trends continue, it might just be the case.

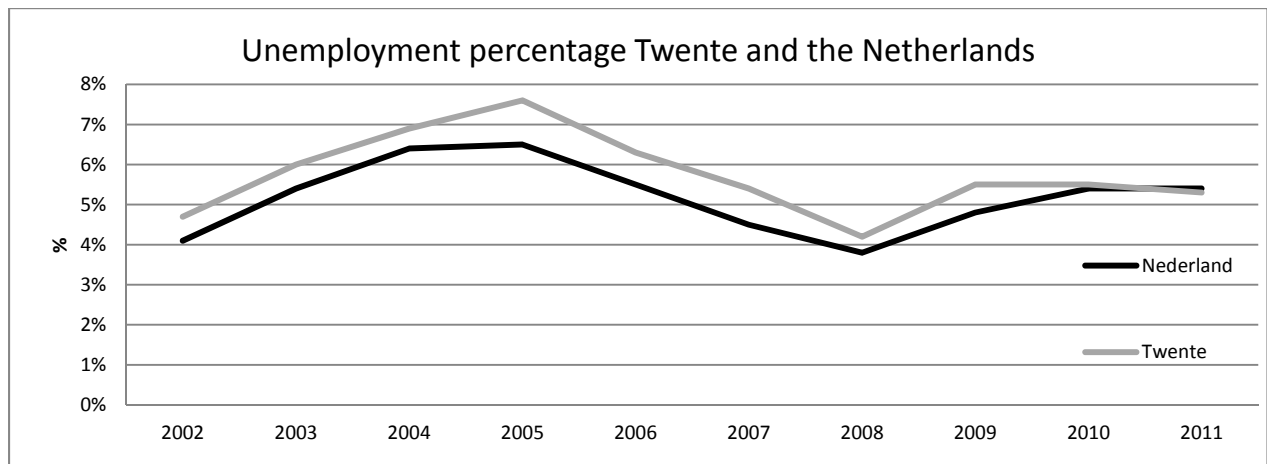


Figure 19: Unemployment percentage in Twente and The Netherlands
Source: CBS, 2012

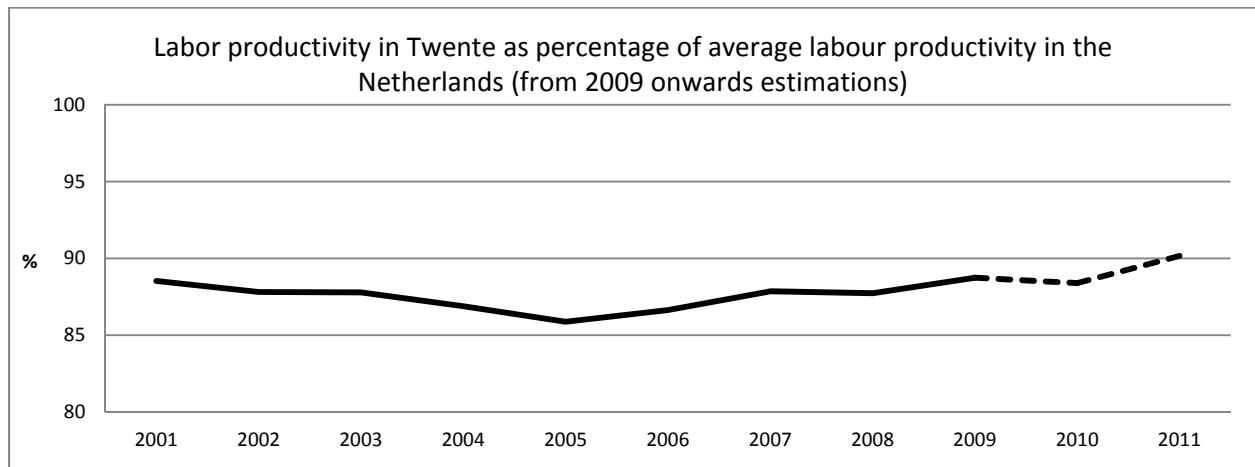


Figure 20: Labor productivity in Twente as percentage of average labor productivity in the Netherlands
Source: CBS, 2012

References

Literature:

Alberts, W.H.M.E. (1982), *Marges van de vakbeweging : een analyse aan de hand van de Twentse katoenstakingen in 1923-1924 en 1931-1932*. Amsterdam: Martinus Nijhof

Griffiths, R.T. (1987), Bedrijfsgeschiedenis of textielgeschiedenis? Nieuwe literatuur over de Twentse textielindustrie, in: *Textiel Historische Bijdragen*, vol. 27 (1987), pp. 31-52.

Hesselink, H.J. (2010), *Strategische besluitvorming in een neergaande bedrijfstak*, Zutphen: Eburon

Hospers, G.J. (2004), *Twente: een regio tussen trend en traditie*, Lelystad: AO

Kokhuis, G.J.I. (2012), *De geschiedenis van Twente*, Enschede: Van de Berg

Willink, B. (2010), *De Textielbaronnen: Twents-Gelders familisme en de eerste grootindustrie van Nederland 1800-1980*. Zutphen: Walburg Pers.

Witte, E. (2006), *De constructie van België*, Tiel: Lannoo

Internet:

CBS (2012), *Regional statistics*, downloaded from: www.cbs.nl/Statline

Historisch Archief Overijssel (2007), *De geschiedenis van Stork in beeld*, downloaded from: www.historischcentrumoverijssel.nl

Municipality Enschede (2011), *Geschiedenis van Enschede*, downloaded from: www.enschede-stad.nl/geschiedenis.htm

National Dutch Accounts 19th century, downloaded from: <http://nationalaccounts.niwi.knaw.nl>

Schelven, A.L. van (2012), *Heek, Gerrit Jan van (1837-1915)*, in *Biografisch Woordenboek van Nederland*. Downloaded from: www.historici.nl/Onderzoek/Projecten/BWN/lemmata/bwn1/hoek

Stork (2012), History of Stork company, downloaded from: <http://www.storktechnicalservices.com/stork-bv/about-stork>

Ten Cate (2012), Company History, downloaded from: <http://www.tencate.com/nl/duurzaamheid/geschiedenis/default.aspx>

Twente Index (2012), *Twente Index 2012: Twente in Beeld*, Enschede: Stichting Twente Index, downloaded from: <http://www.twenteindex.nl>

Volkstellingen, *Census data for the Netherlands (1795, 1849, 1889)*. Downloaded from: <http://www.volkstellingen.nl>