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Innovation driven regional development *Case study region Twente, Eastern Netherlands*

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Part I – What history teaches us about economic development (Case study, Twente)

Part II – What could be done to achieve economic development

Part III – Conclusion

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The innovation journey

Golden rules of successful innovation:
(According to Microsoft)

- 1. It is something new.
- 2. I want to have it!
- 3. Why didn't I think about it?



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PART I What history teaches us

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Regional Development

"You have to know the past to understand the present." – Carl Sagan (astronomer)

Every time period adds its own building blocks



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Region Twente Eastern Part of The Netherlands



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)

Kom verder  **Region Twente - Middle Ages**

The region was physically very isolated from the rest of The Netherlands

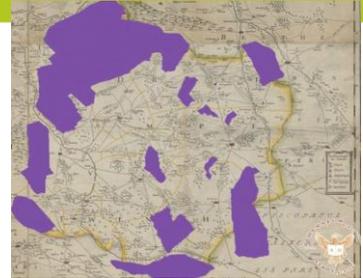


Figure 4: Areas with peaty soils (swamps) in purple in Twente
Source: Map Overijssel province, Nicolaas ten Have, 1652

 **Region Twente - Land use**



In the Middle Ages and Early Modern period:
Isolated region with mostly marginal land use:
Subsistence farming and ranching (sheep and horses)

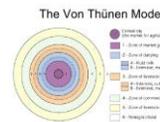


Kom verder  **Region Twente - Land use**



JOHANN HEINRICH VON THÜNEN
1783-1850

In the Middle Ages and Early Modern period:
Isolated region with mostly marginal land use:
Subsistence farming and ranching (sheep and horses)



Kom verder  **Region Twente - Industry**

Poverty led to the development of home industry: Farmers earning some extra household income → Flax production and textile production.



Kom verder  **Wandering traders - "Tödden"**

Travelling merchants transported different goods to the urban markets.



Kom verder  Industrialization of Twente

First half of the 19th century:
Development of industrial textile production

Why then?

Why in Twente?

Kom verder  Industrialization of Twente

- More and more cotton imported from colonies / America
- Home industry too small → emergence of factories → economies of scale



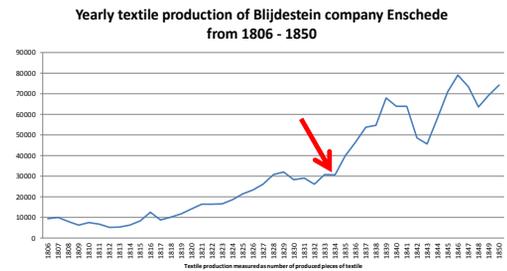
Kom verder  Industrialization of Twente

Location theories of industry:
Alfred Weber "Standort der Industrien"

- Minimum cost location (low wages in Twente)



Kom verder  Industrialization of Twente



Kom verder  Just economic reasons?

- Ghent (now Belgium) used to be the main center for textile production in United Kingdom of The Netherlands (before 1830)
- Textile industry was the "high-tech" industry of the early 19th century



Kom verder  Just economic reasons?

- Belgian independence in 1830 led to strong government funded development of the textile industry in Twente.
- The King wanted to have his own Textile industry
- Twente was far enough away from the new Belgian border → underdeveloped, low wages, but experienced craftsmen.

Kom verder  Industry pioneers Twente

Entrepreneurial innovators:

- C.T. Stork
- Thomas Ainsworth
- Charles de Maere
- Willem de Clercq



Kom verder  Golden Age of Twente

The largest steam driven textile factory was operated by the Van Heek family. Largest industrial firm of the Netherlands in 1910.



Kom verder  Golden Age of Twente

Enschede, a boom town... Early 20th century



Kom verder  A Wealthy city

On average Enschede was one of the most wealthy cities in The Netherlands in the early 20th century.



Kom verder  But a big division between rich and poor



Kom verder  The downfall of the textile industry

After the second world war, Van Heek and the other textile factories were considered giants: Too big to fail...



Kom verder  But they still failed...

The question is why?



Kom verder  Why the textile industry failed

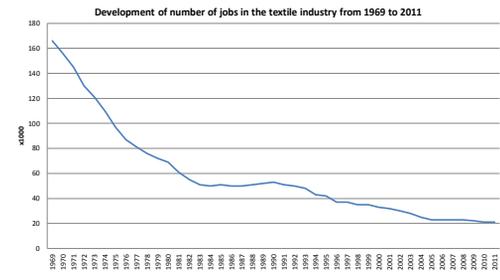
- Direct reason: Too high wages. Due to globalization, too strong competition
- But there is more: Technical development: High tech had become low tech...
- The second and third generation of factory owners lost the entrepreneurial spirit → fortresses of conservatism
- Too little innovation → result: Failure

Kom verder  Notable exception

One textile factory succeeded in turning the tide and become innovative & world leading: Ten Cate in Nijverdal.



Kom verder  Employment in the textile industry



Kom verder  Disappearance of the textile industry



"Innovation comes with creative destruction", Josef Schumpeter

What/who doesn't innovate becomes obsolete! → New replaces old



Kom verder  Polaroid Enschede, Efficient... but not effective!



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Hengelo

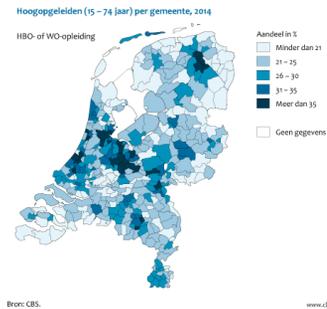
- Hengelo fared a little better than Enschede and Almelo
- Reason: Hengelo was mainly focused on machine building. More innovative and more highly educated workforce.



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Higher education in NL



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How to deal with such a crisis?

- When a region is so much in crisis like Twente...
- Can you do something?
- If so...who should do something... and what... which measures work to improve the situation?
- And what if you do nothing?

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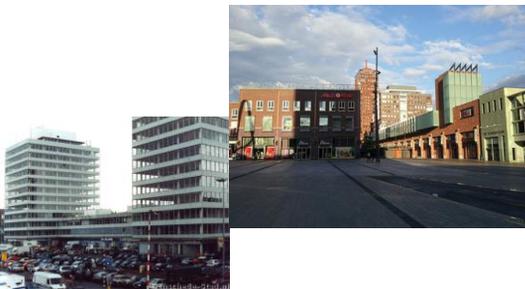
Enschede city center



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Enschede city center



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The problem: The vicious circle

- Less jobs means less opportunities
- Less opportunities mean people will move out
- If people move out... then companies and services have less customers and potential employees...
- There is a chance more companies move out or get bankrupted...
- Go to the first bullet on top of this page...

Kom verder  **The vicious circle**

Example: Detroit
 Once the pride of America's car industry...
 Population fell by 25% between 2000 and 2010



Kom verder  **The virtuous circle**

Example: San Francisco Bay Area
 Communities in the Bay Area grow very fast because of the technology boom.



Kom verder  **Theories about development**

Richard Florida: The creative class causes economic growth
 The more you can attract them the better

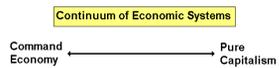
Kom verder  **PART II**

What could be done?

Kom verder  **Regional Development**

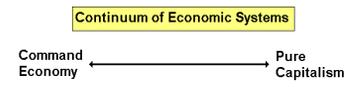
What is the role of the government and the market in developing regions?

- Somewhere along the continuum:
- Planned economy, government decides what will be where (North Korea).
 - Laissez-faire economy, government lets market forces decide what will be where (USA).



Kom verder  **How did the Dutch government act?**

"Middle position" on the continuum, moving towards direction of capitalism throughout the decades.





Regional policy in Twente

- Phase 4 (2000s, 2010s): Focus on the economic structure region itself.
- Supporting entrepreneurship as driving force for development
- Attention for the creative sector (based on ideas of Florida)
- Difference: Focus on developing the strengths of the regions, not solving the weaknesses

Regional policy in Twente

- Since 2011: NO national regional development policy anymore in The Netherlands.
- Since 2014: Sectoral development policy, so called "Topsector" policy, in order to develop the strengths of economic sectors and support specialization.
- Regions have to develop their own strategies, and will receive support from the national government for development projects.

Regional policy in Twente

Of three policy measures implemented in Twente we are pretty sure that they are working in terms of developing the region:

1. Investment in Human Capital (Higher Education)
2. Supporting Entrepreneurship
3. International cooperation

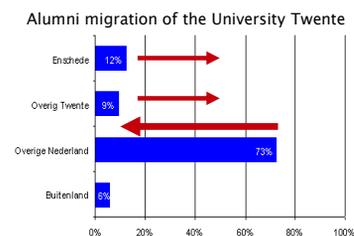
Investment in Human Capital

- Dutch National government expected since the early 1960s the downfall of the textile industry
- And decided to invest in technical higher education, to keep the region attractive: Building the University of Twente, est. 1962



Investment in Human Capital

University of Twente functioned as a magnet for Enschede for young people, but the challenge was to let them stay



Kom verder  **Investment in Human Capital**

The idea of the Entrepreneurial University, for example developed at Stanford University offered some ideas about retaining graduates



Kom verder  **Investment in Human Capital**

University of Twente adopted very early on the policy of becoming Entrepreneurial university



Rector Van den Kroonenberg



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UNIVERSITEIT TWENTE MEEST ONDERNEMENDE UNIVERSITEIT
EERSTE PLEK IN ELSEVIER / SCIENCEWORKS VALORISATIE RANKING 2013

Kom verder  **High Tech campus development**



MESA+
Institute for Nanotechnology

Kennispark Twente
Innovate & Accelerate



Kom verder  **Shifts in government policy**

Earlier phases:

- Attracting large investment projects
- Attention for building infrastructure
- General idea: Creation of any jobs is good

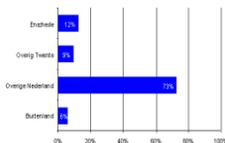
Later phases:

- Attracting smaller firms
- Attention for local talent: stimulating entrepreneurship
- More attention for creative & high-tech jobs

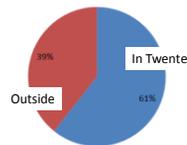
Kom verder  **Does it work?**

Graduates who are entrepreneurs are more often staying in the region, more than the average graduates.

Alumni migration of the University Twente



Saxion start-up locations



International cooperation

Twente region is cooperating with the region Osnabrück and Münster for a long time.



The regions created a new cooperation platform called EUREgio in 1958. The first of its kind.

Now, almost 100 Euroregions

Research into International cooperation

- Positive correlation between innovation and internationalisation in enterprises
- New enterprises that export are an important factor for regional economic growth
- International start-ups are more ambitious than non international start-ups
- Positive correlation between internationalisation and succesful entrepreneurs

Innovation driven regional development

The ideas about and the current government policy of innovation driven regional development is going back to Josef Schumpeter: *“Technological progress is the only real source of economic growth”.*



Innovation driven regional development

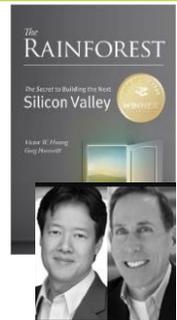
What does it require of the society within regions?

- Trust
- Highly educated people
- Entrepreneurial spirit
- Cooperation between institutions (Triple Helix)
- Business clusters (even better: Rainforest ecosystem)



How to support innovation and entrepreneurship?

- Scouting & fostering talent and stimulating them to start their own business
- Coaching & Mentoring nascent entrepreneurs
- Research budgets
- Supporting the development of clusters / building a rainforest innovation ecosystem (Hwang & Horowitz)



Entrepreneurship ecosystem

Entrepreneurship Education, training, coaching Business development Financing Incubators	Innovation Research programs High Tech Facilities (shared facilities) Access to knowledge of UT (Students Knowledge Portal, Wetenschapswinkel)
Area Acquisition of companies Masterplan: Area development (200.000 m2) Development Langezijds building Contact with talent	General support Legal support Intellectual property Industrial property

Business & Science park Twente (Kennispark)



Kom verder  **Business & Science park Twente (Kennispark)**



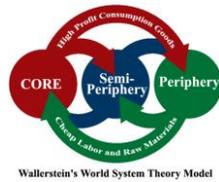
Kom verder  **The question: Was it successful?**

Why is it so hard to substantially improve the economic situation in regions?

"For whoever has, will be given more and they will have an abundance. Whoever does not have, even what they have will be taken from them" – Jesus Christ.

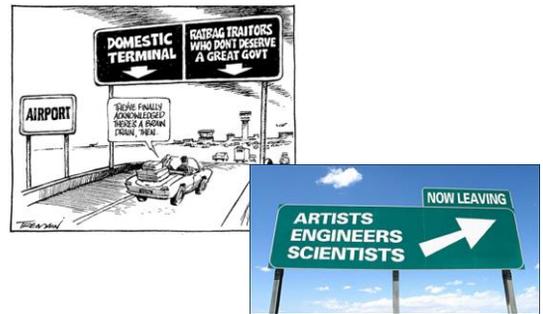
Kom verder  **Self sustaining system**

Emmanuel Wallerstein's world economic system model



Wallerstein's idea: Unequal exchange between developed and underdeveloped countries

Kom verder  **Self sustaining system: Results**



Kom verder  **The clustering force**

Richard Florida: Talent and development is more and more clustered in a smaller number of so called megaregions.



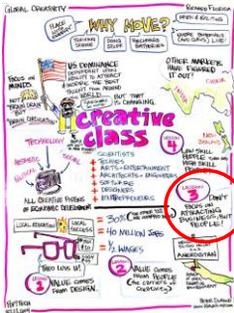
Kom verder  **Internationally competitive clusters**





Attractive living environment theory

According to Richard Florida, attractive cities and regions are able to attract creative talents who are the agents of economic development.



Question is: Is Twente an attractive living environment?



Attractive living environment theory

What makes a region or city to be an attractive living environment?



Enschede

How do you rate Enschede?



Attractive living environment theory

According to Florida what really matters for the creative class is:

- Vibrant community
- International / diverse atmosphere
- Chances for a good job and career
- Historical buildings / preferable disused factories
- Availability of Nature / walking or bike routes

What doesn't matter is:

- "High Culture" (philharmonic orchestra / theaters)
- Professional sports stadium



Attractive employers?

How does Twente score on having attractive employers in the region?

Enough creative jobs to attract and retain talent?

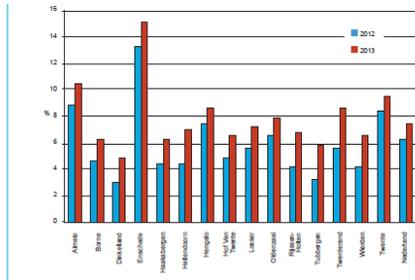


Measuring regional data of Twente

- Attractive living environment? (How to measure)
- Innovative businesses
- Entrepreneurship/spin offs
- Attractive employers? (How to measure)

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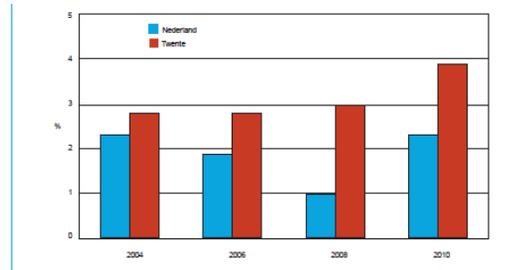
Unemployment percentage per municipality



Bron: LMW WERKbedrijf

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R&D workers as % of total workforce



Bron: CBS/CIS 2004 en 2006 en CIS 2004, 2006, 2008, 2010.

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And what if people leave? Are they "lost" for the region?



- Migrants may become ambassadors for their region
- In many fast developing regions, reverse brain drain occurs: *brain circulation*
- Required: good and stable institutions

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PART III Conclusion

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Development of Twente Strengths of the region

- Stable population
- Lower labour productivity → more labour intensive work
- Unemployment higher than average, large differences in the region
- Potential strong innovative region → relatively large investments in R&D
- Education level is increasing → If relevant at all...relatively mild brain drain
- Strong High Tech Systems and Materials cluster
- Entrepreneurship level average → however failure to retain growing successful businesses, Twente as "incubator region"

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Challenges for the region

- Attracting and retaining young talents
- International orientation of the people → "Getting fuel in Gronau", but no further.
- Low ethnic diversity
- Dealing with empty derelict buildings in the cities
- Finding jobs for lower educated people
- Finding more attractive employers → retaining growing start-ups in the region