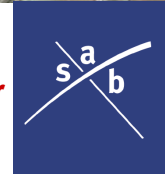


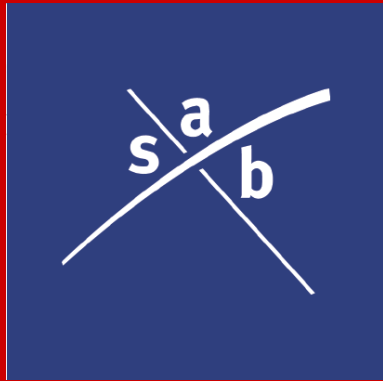


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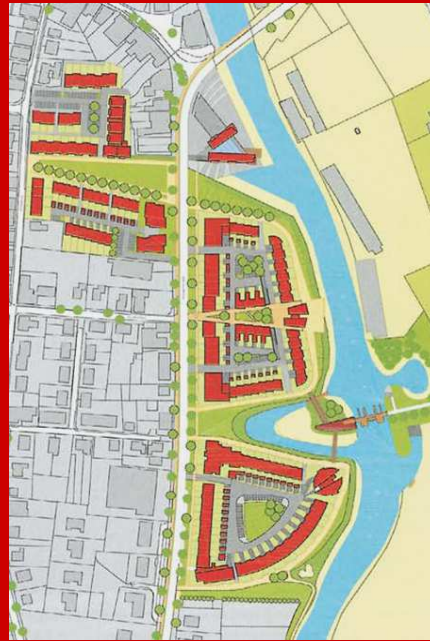


# INTRODUCTION



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planning, urban  
design, landscape  
and ecology

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AMSTERDAM  
EINDHOVEN



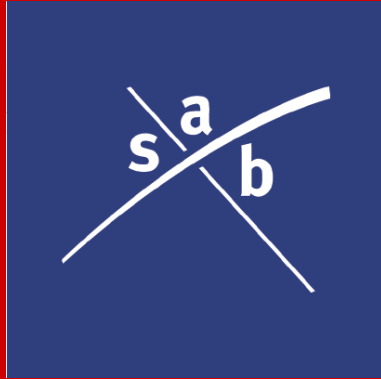
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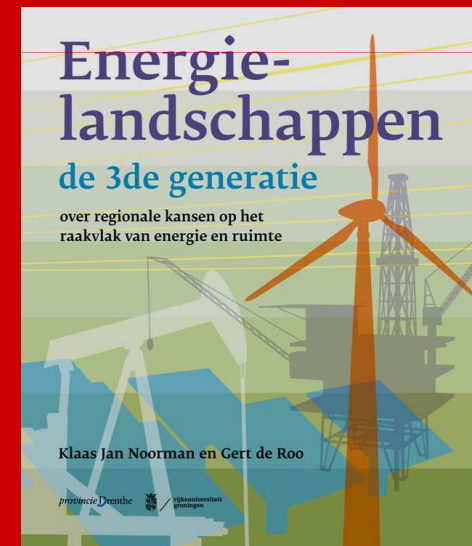
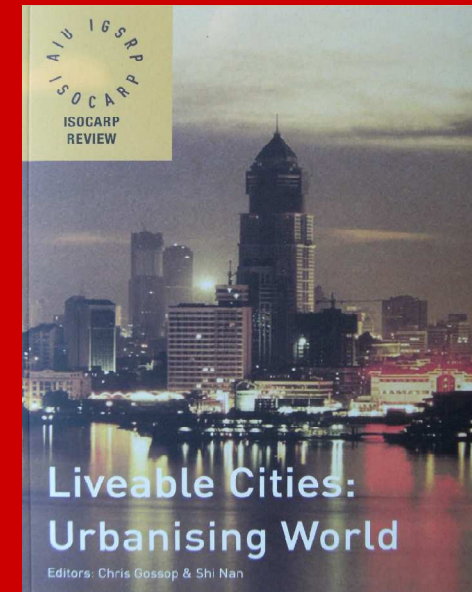
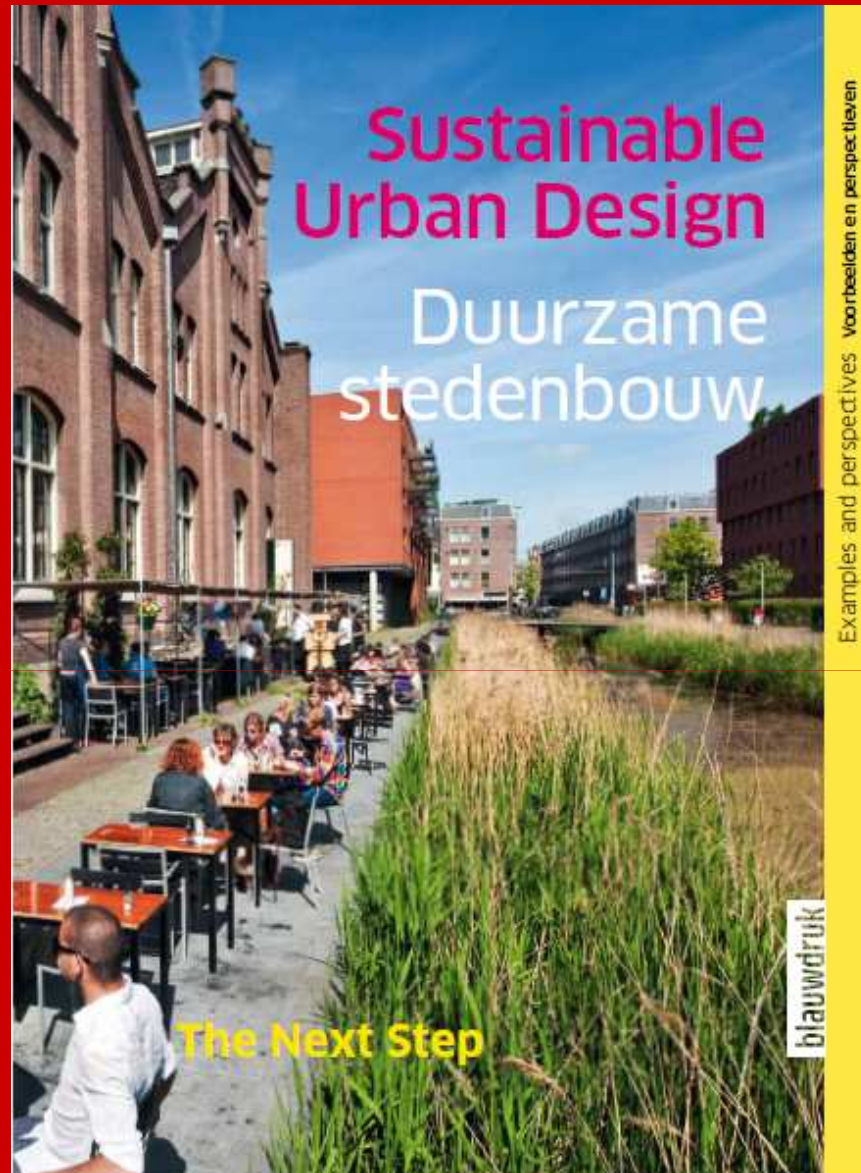
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CORP**

# INTRODUCTION



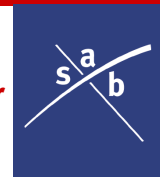
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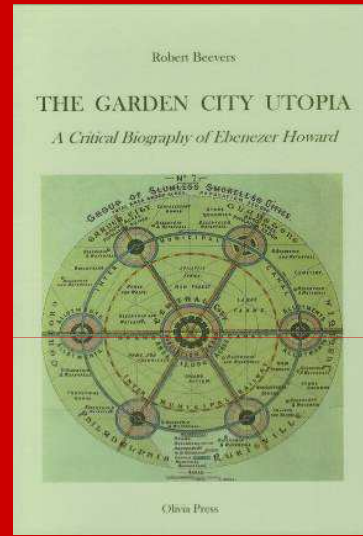
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# CENTURIES OF EXPERIENCE

Designing and constructing livable and sustainable cities and city concepts is not new

- Jaipur (1731)
- Barcelona (1859)
- Garden City Movement (1898)
- Cité Industrielle (1918)
- Chandigarh (1953)
- Louvain-la-Neuve (1968)
- ...



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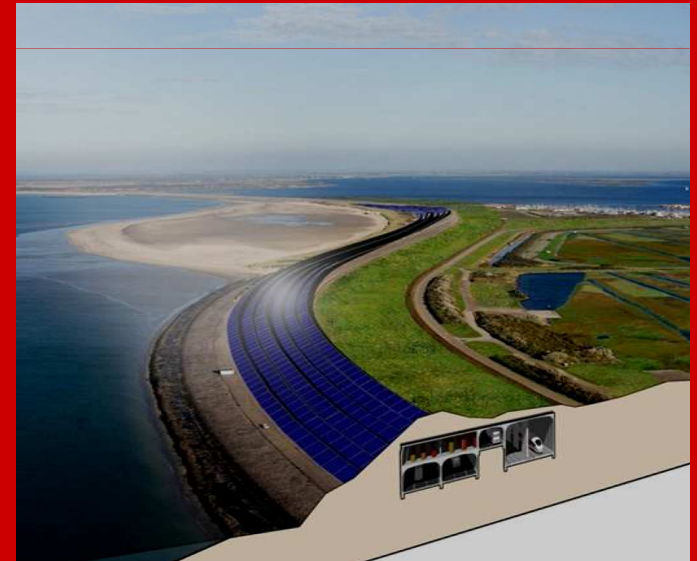


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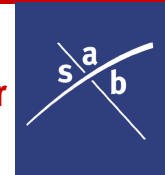
We have centuries of experience in making energy landscapes

Beemster polder



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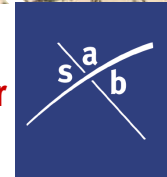
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(Amsterdam)



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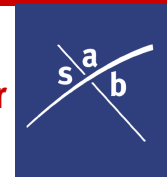
We have centuries of experience in making energy landscapes

Goliath



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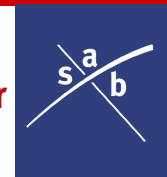
## IN SHORT, MY EXPERIENCES AND IDEAS

- The infrastructure and ICT in houses, residential areas and cities are old fashioned
- Innovation in bicycles goes faster and deeper than in the build environment
- A cruise ship is technically much more sophisticated than a residential area
- We have to switch from energy saving buildings to energy producing cities
- Going energy of climate neutral (and monitoring it) is quite demanding



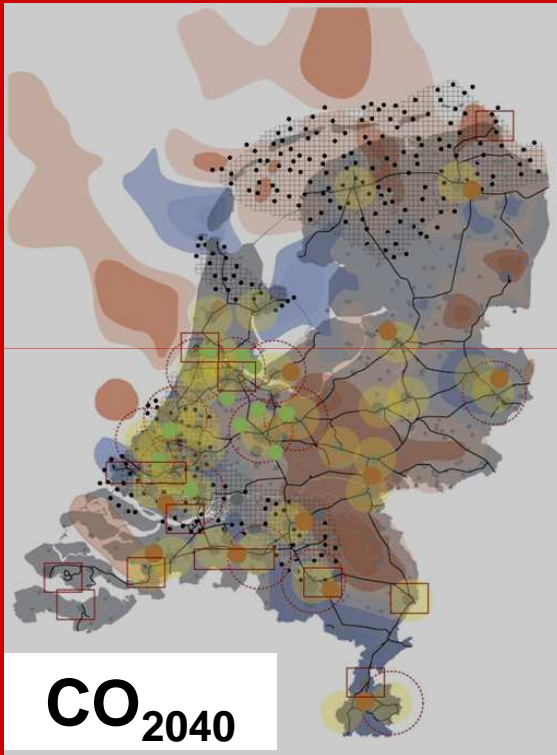
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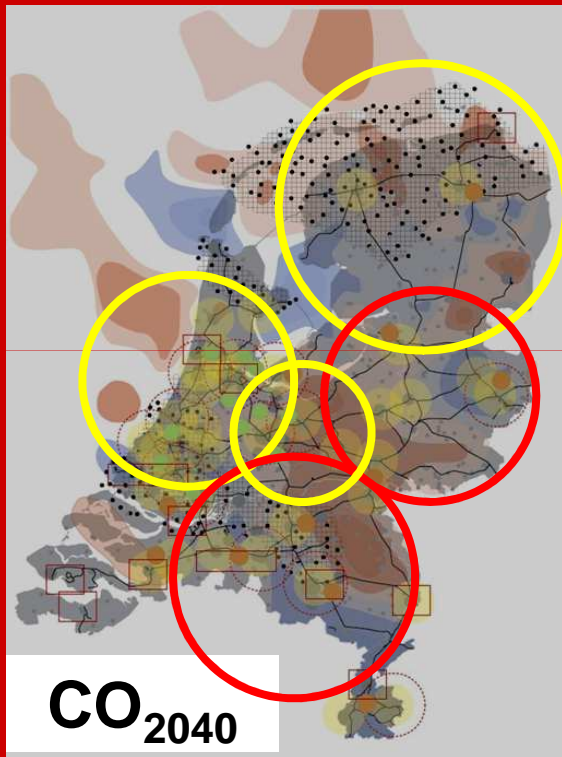


# HOW TO BECOME A CARBON NEUTRAL COUNTRY IN 2040 ?



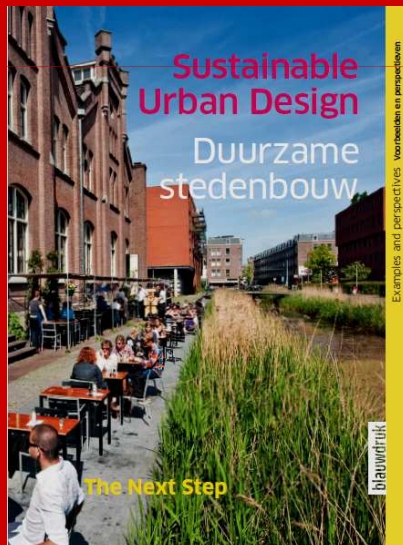
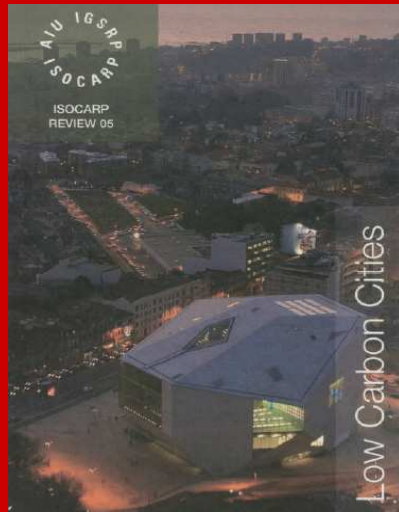
- Better dissemination of information
- Bridging the enormous gap between policies and practice
- It needs a complete different mindset of the inhabitants
- Revolution in public transport
- Rebuilding (not retrofitting) 80% of the built environment
- Combination of wind energy, geothermal energy, connecting networks to store and exchange energy
- Large scale investments in infrastructure and planning
- Towards 'plug, play and deliver' energy infrastructure

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- **Analyses of five regions in The Netherlands**

# AMSTERDAM, THE HAGUE, ROTTERDAM

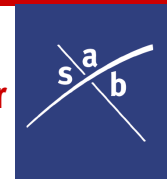


- ‘Smart City Amsterdam’: new housing projects climate neutral in 2015
- ‘World Capital’ The Hague: climate neutral city in 2050
- ‘Energy Port’ Rotterdam: built environment climate neutral in 2025
- Different ambitions, horizons, methodology, definitions
- International focus and situated in an international network of cities
- Hardly any fundamental choices or strategies
- Hardly any spatial translation towards city planning and infrastructure
- Hardly any cooperation with planners, urban designers or landscape architects or even between the cities



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# SERIOUS BUSINESS OR WINDOW DRESSING ?

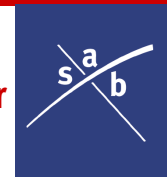
Rotterdam  
August 2009

Bavaria City Racing



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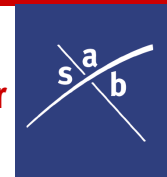
Rotterdam  
August 2009

Urban Heath Island



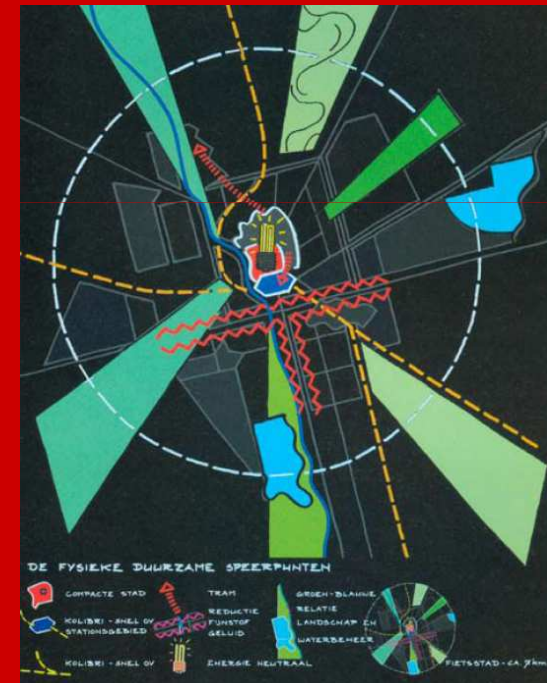
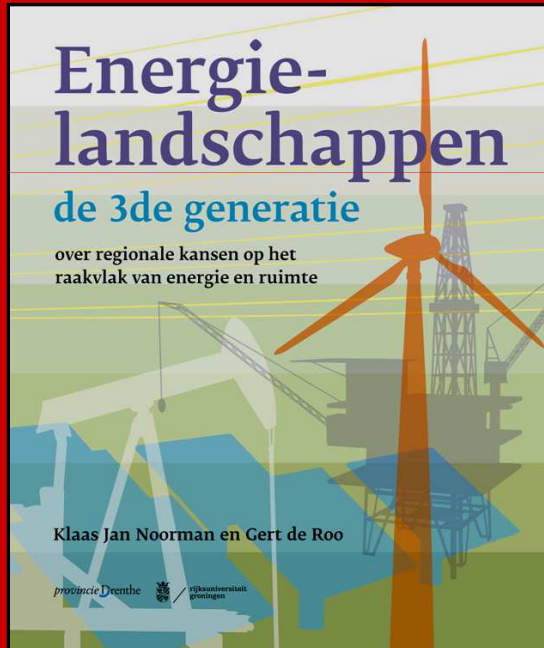
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# 3<sup>RD</sup> GENERATION ENERGY LANDSCAPES



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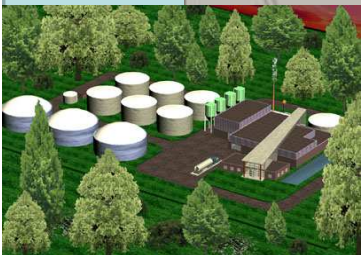
### Biomassa 1



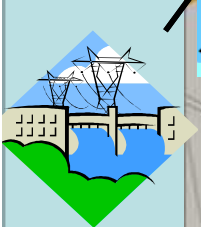
### Biomassa 2



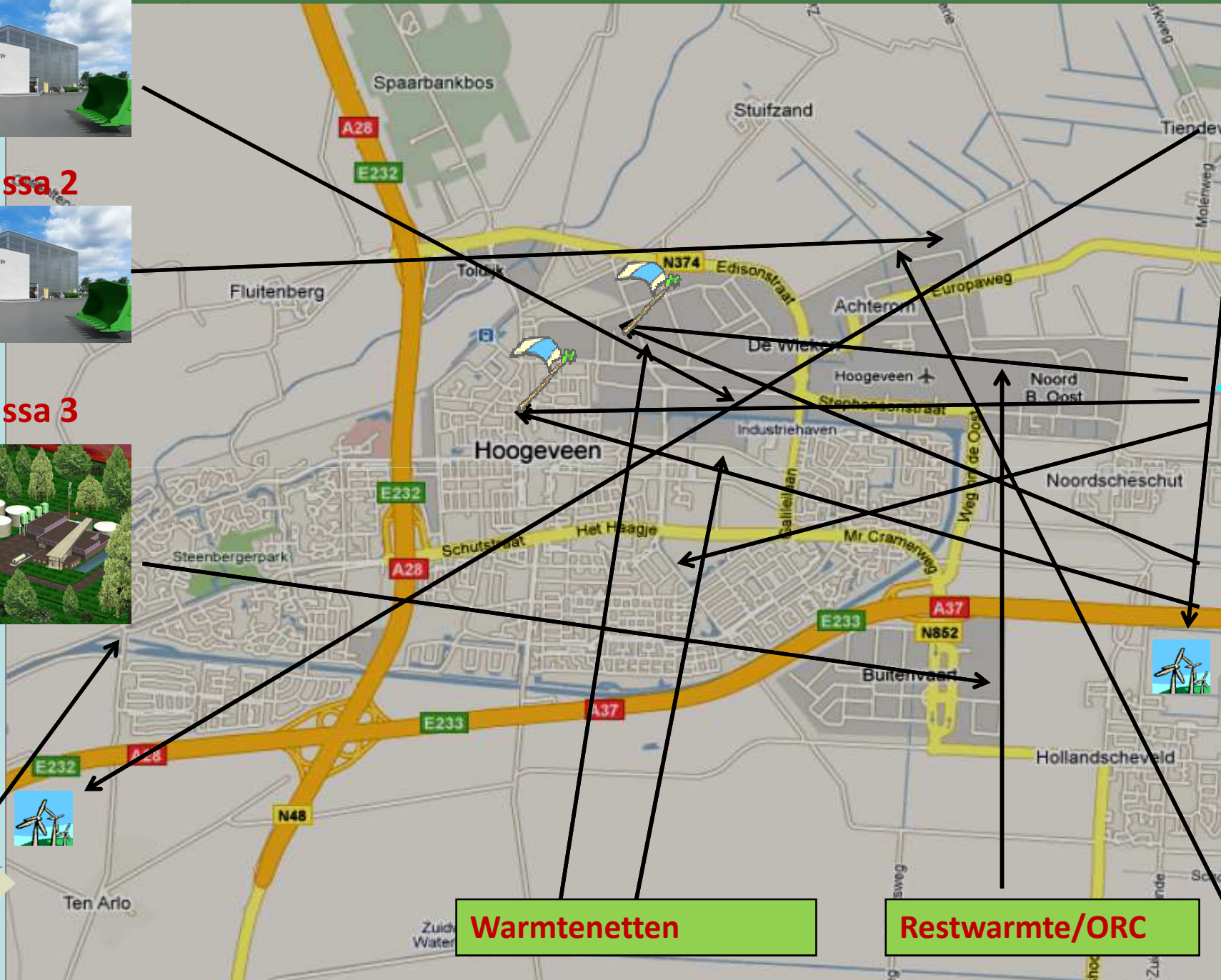
### Biomassa 3



### Water



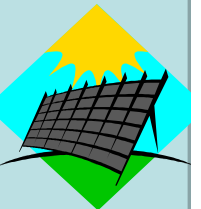
## Mogelijke Duurzaamheidskaart Hoogeveen; diverse projectmogelijkheden!



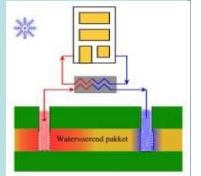
### Wind



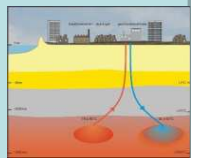
### Zon



### WKO



### Geo-thermie



### Warmtenetten

### Restwarmte/ORC

## Wind in stad en regio

- 28 windmolens binnen de stadsgrenzen en in regio (70 MW) die 40.000 huishoudens van elektriciteit kunnen voorzien

## Bedrijventerrein

- Voorzien van windmolens en zonnepanelen
- Aangesloten aan warmtenet voor levering of vraag.

## Restwarmte

- Restwarmte van UMCG, Suikerunie en andere locaties
- 24.000 huishoudens worden voorzien van restwarmte in plaats van gas voor verwarming

## Aardwarmte

- Meerdere bronnen geven warmte voor bedrijven en huishoudens.
- Genoeg voor 47.000 huishoudens
- Voeding voor het warmtenet

## Zon in de stad

- Groningen heeft 150 mW aan zonnepanelen, goed voor 38.000 huishoudens

## Ringleiding

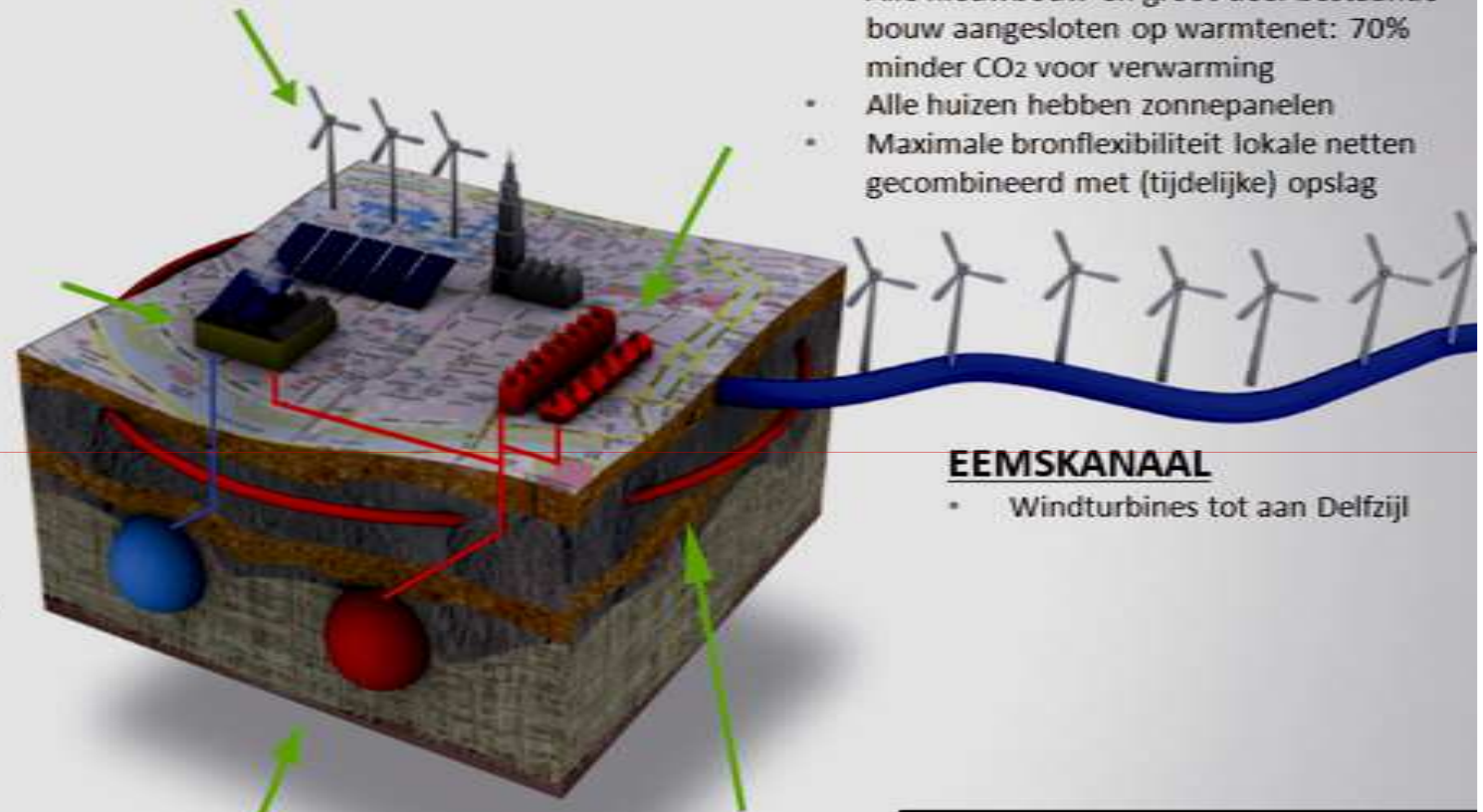
- Gevoed door aardwarmte, restwarmte en bio WKK en afnemers.
- Nieuwe warmtebronnen kunnen worden toegevoegd

## DUURZAME WIJK

- Bouwverordening: Energieneutrale huizen
- Alle nieuwbouw en groot deel bestaande bouw aangesloten op warmtenet: 70% minder CO<sub>2</sub> voor verwarming
- Alle huizen hebben zonnepanelen
- Maximale bronflexibiliteit lokale netten gecombineerd met (tijdelijke) opslag

## EEMSKANAAL

- Windturbines tot aan Delfzijl

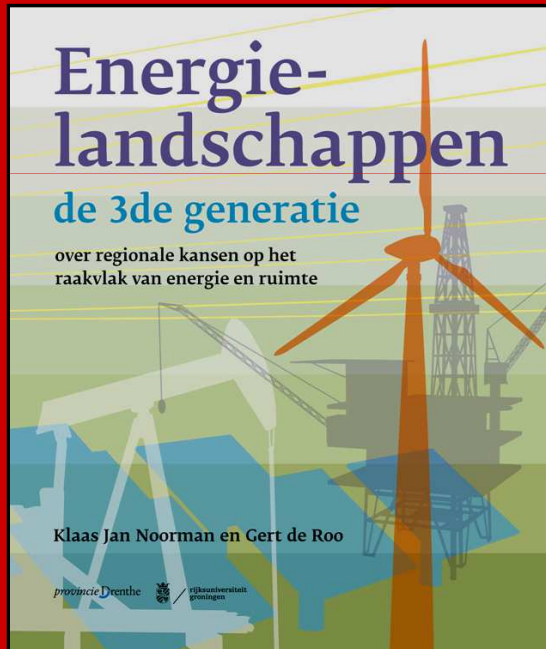


## Feiten Groningen

Inwoners:	190.000
Huishoudens:	89.000
Oppervlakte:	78 km <sup>2</sup>
Elektriciteitsverbruik:	8.117.000 GJ
per inwoner:	43 GJ
Gasverbruik:	9.684.000 GJ
Per inwoner:	52 GJ



# 3<sup>RD</sup> GENERATION ENERGY LANDSCAPES



## *GRONINGEN, FRIESLAND, DRENTHE*

- Patchwork of small and innovative projects
- High ambitions, connected to long term (restructuring) keyprojects
- Unorganised, introvert, relatively unknown
- No complete overview of projects and initiatives
- The Energy Valley initiative is not involved in or connected to spatial or urban planning
- Groningen en Hoogeveen: first serious attempts to address climate and energy ambitions in spatial planning and spatial policies
- Cities in the North are networking with other smaller cities in The Netherlands
- A beautiful beginning and a long way to go



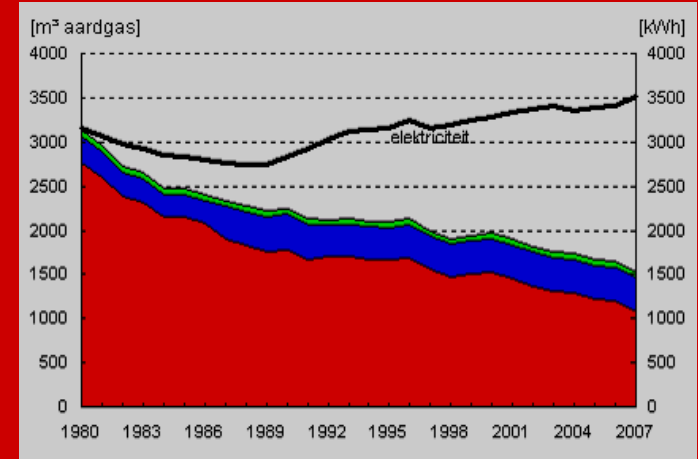
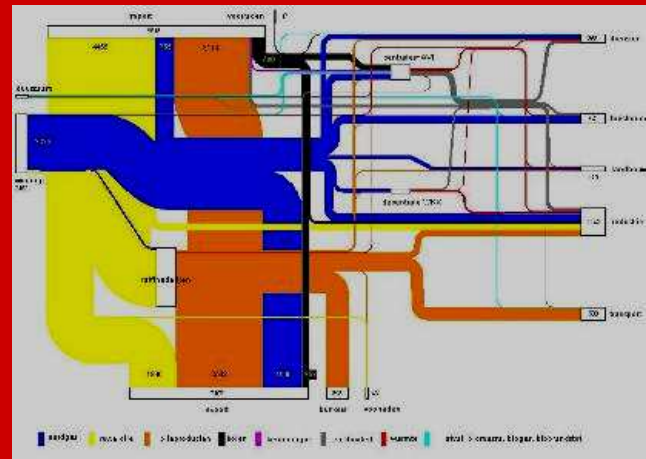
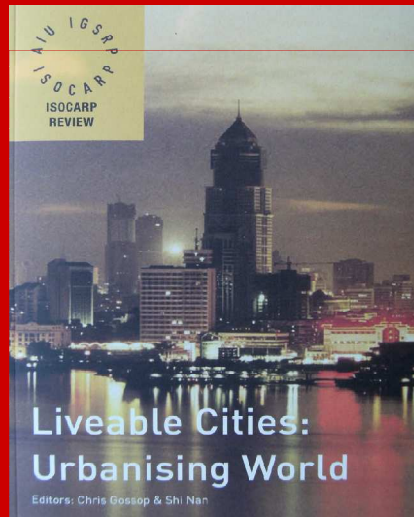
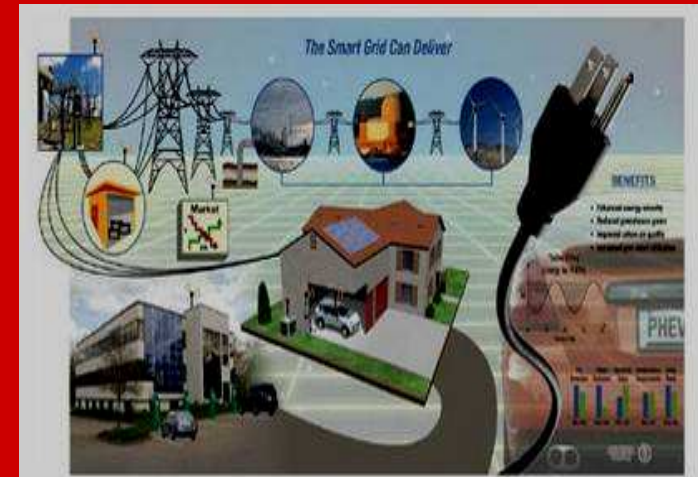
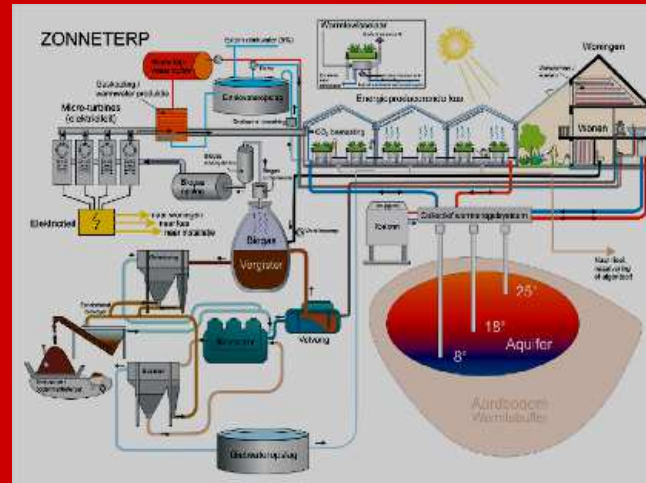
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# 2011 NATIONAL ENERGY REPORT VS THE NATIONAL POLICY STRATEGY FOR SPATIAL PLANNING AND INFRASTRUCTURE

# NATIONAL ENERGY REPORT

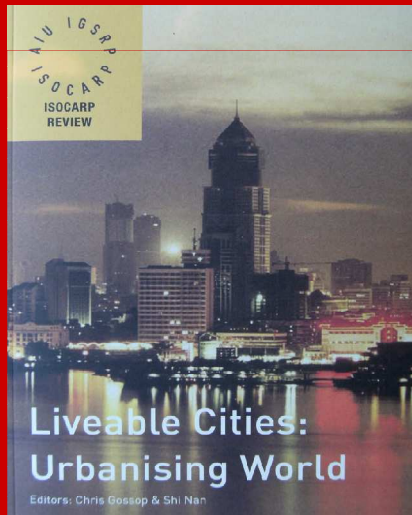


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**2011 NATIONAL  
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VS  
THE NATIONAL  
POLICY STRATEGY  
FOR SPATIAL  
PLANNING AND  
INFRASTRUCTURE**



**NATIONAL ENERGY REPORT:  
LOW CARBON ECONOMY IN 2050**

- Modern industrial policy; innovation in renewable energy technology, the Netherlands as a knowledge based economy and as the gas exchange of North-West Europe
- Increasing the share of renewable energy (hoping for European intervention)
- “Keeping all options open”; a flexible mix of grey, green, carbon capture and storage, even nuclear energy (!)
- A Green Deal with society : energy conservation and renewable energy
- Investing in a properly functioning European energy market and energy infrastructure for clean, secure and affordable energy

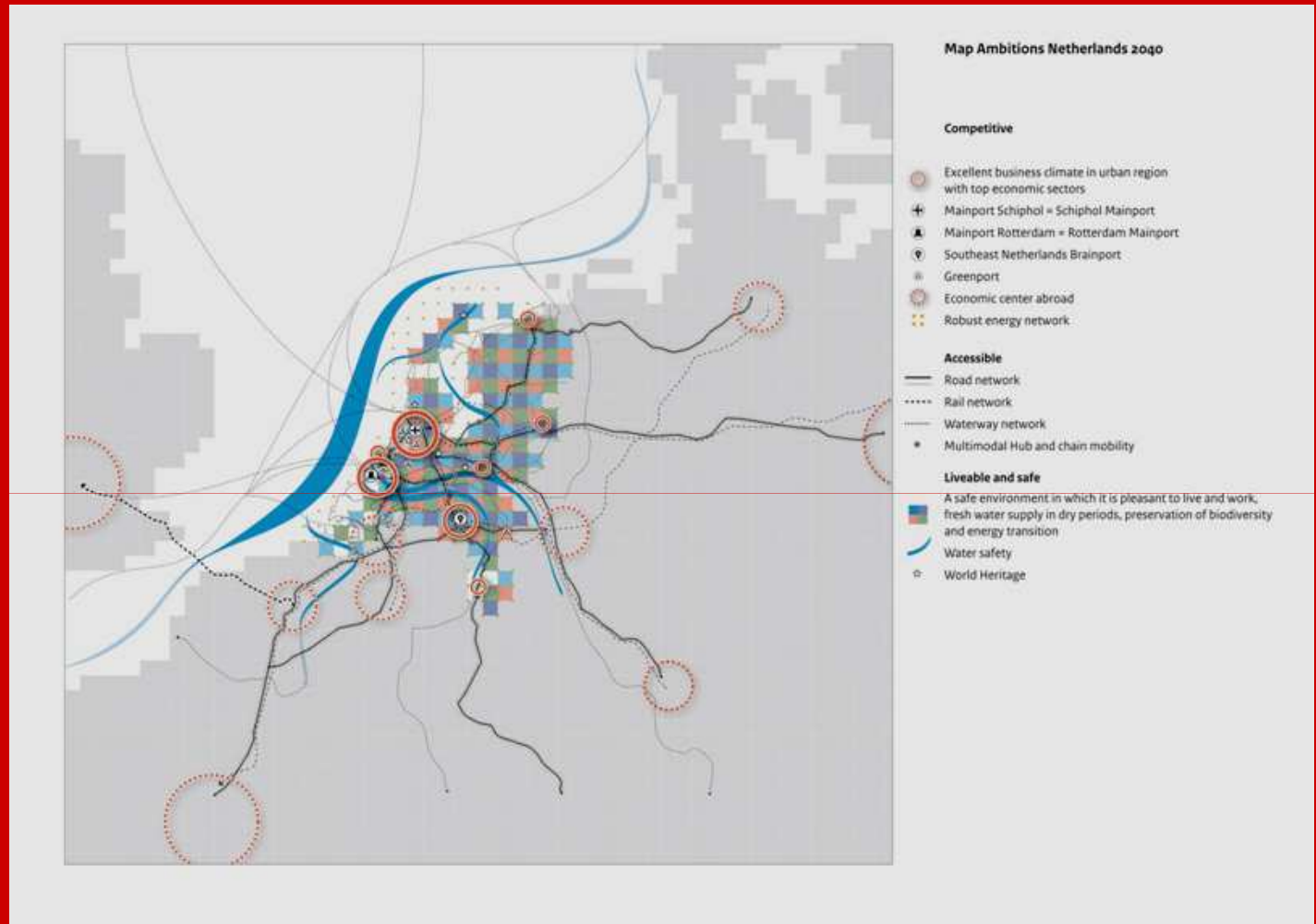
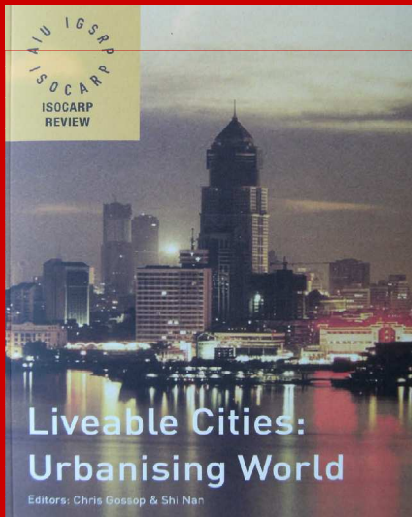


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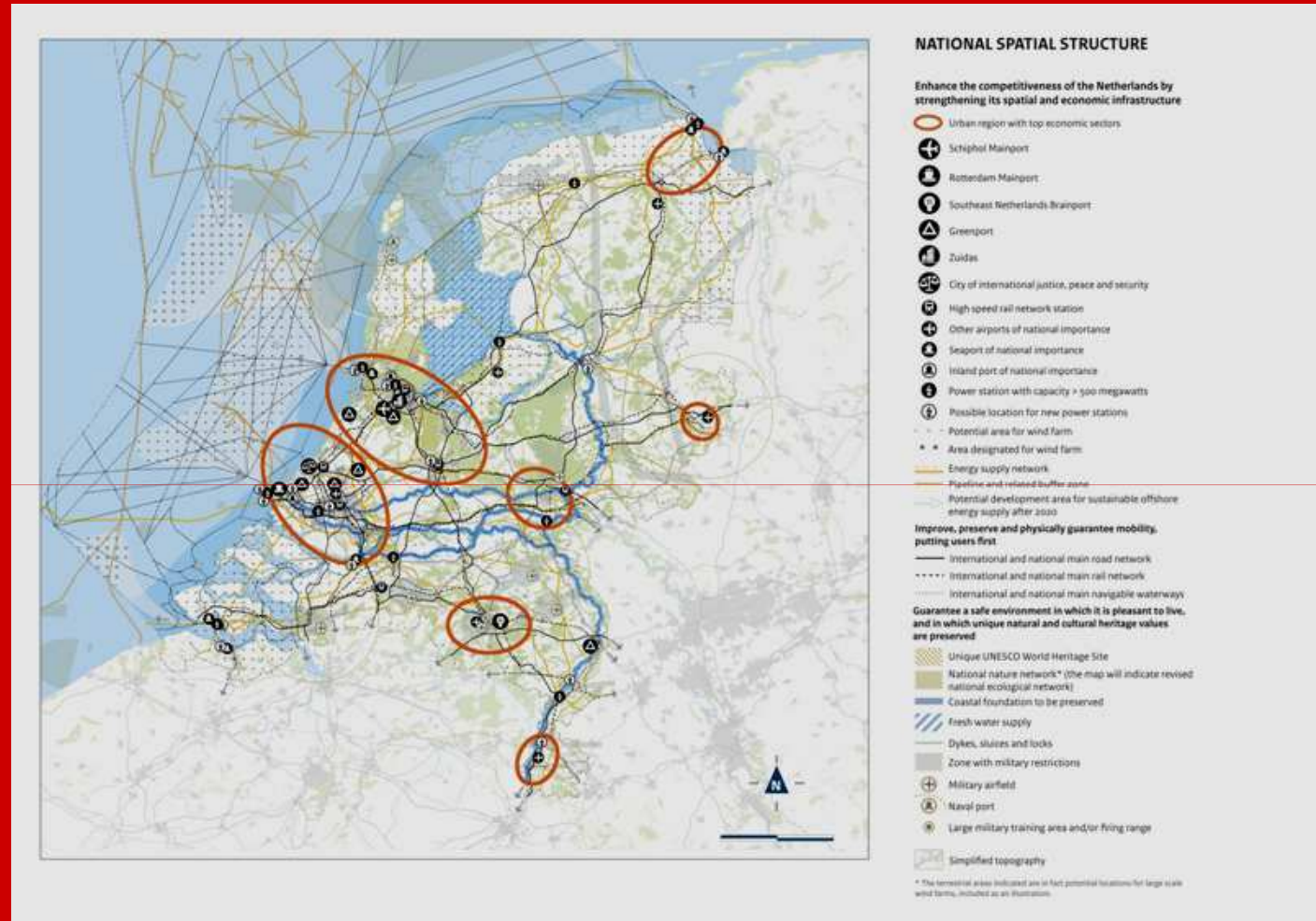
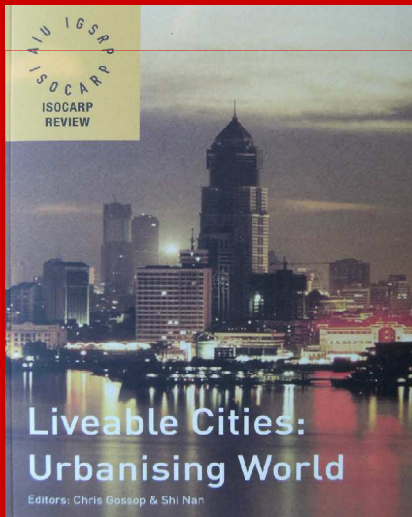


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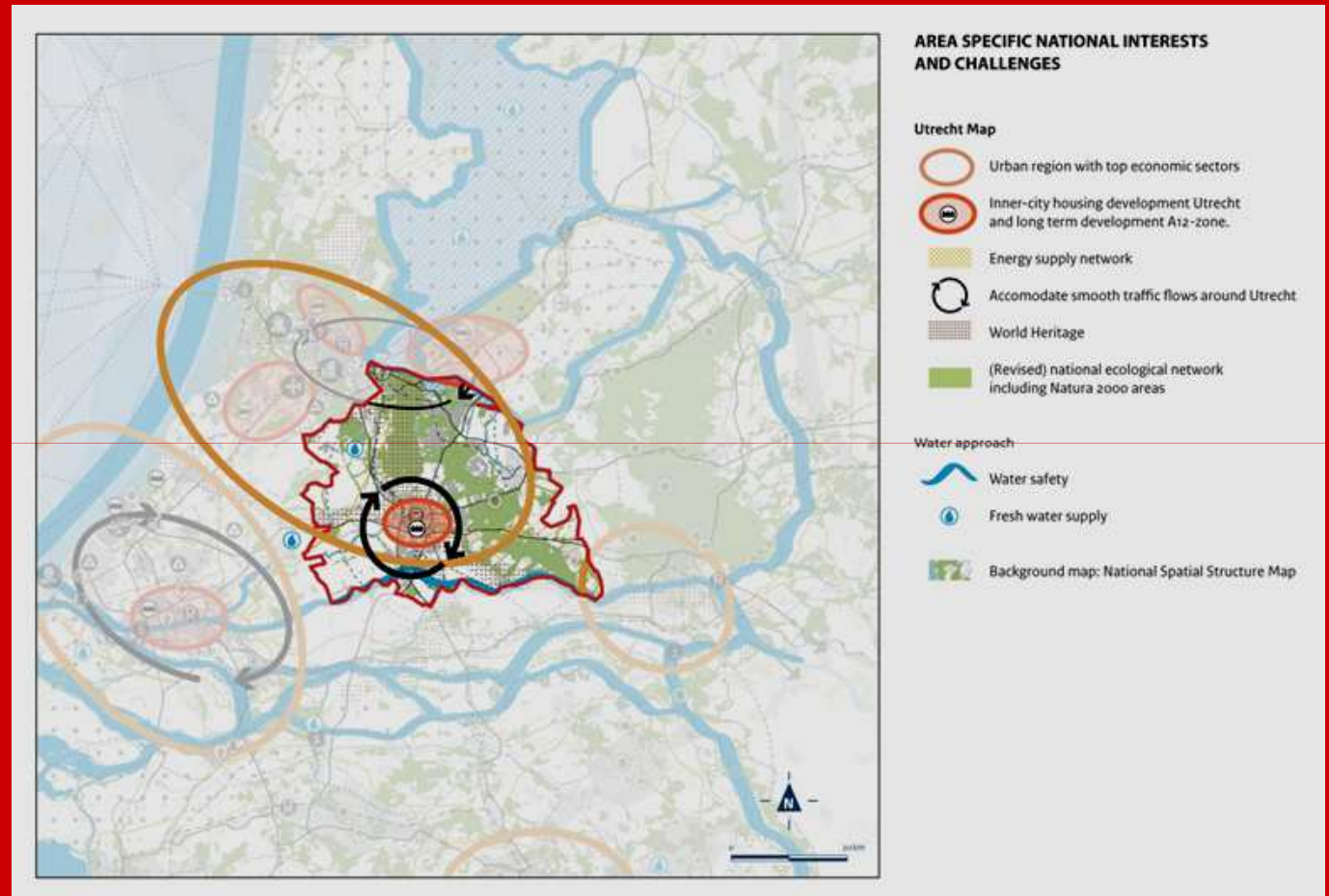
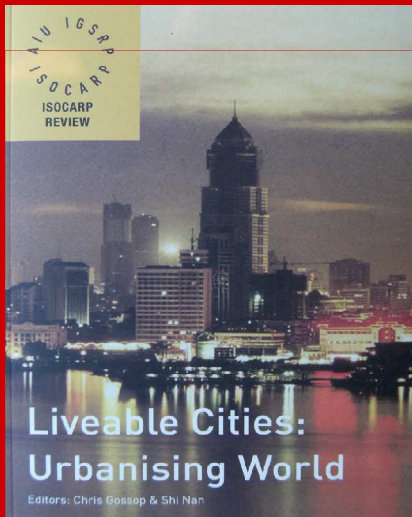


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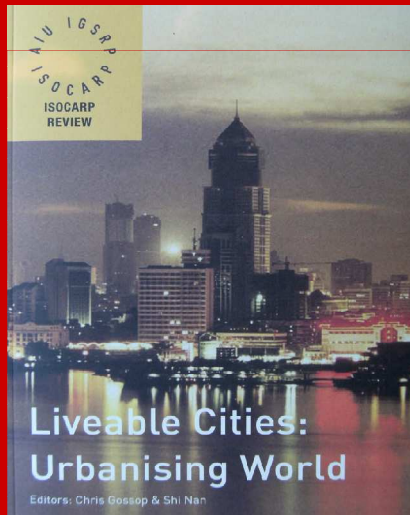
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# **THE UTRECHT 2040 MISSION VS UTRECHT SPATIAL PLANNING POLICY STRATEGY**

# **THE UTRECHT 2040 MISSION: THE THIRD INDUSTRIAL REVOLUTION**

- Energy Efficiency
- Use of renewable energy resources (geo thermal energy)
- Use of buildings as power plants
- Development of hydrogen and other energy storage technologies
- Shift to smart grids and electric plug-in vehicles



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# THE UTRECHT 2040 MISSION VS UTRECHT SPATIAL PLANNING POLICY STRATEGY



**Smart house**  
Features digital meter, smart thermostat and other devices to allow customers to adjust their energy consumption according to preference and rates.

**Solar panels:** Excess power generated can be sent back to the grid.

**Computer:** Customers can go online to a Web portal to view real-time information about their power consumption or change their home energy settings.

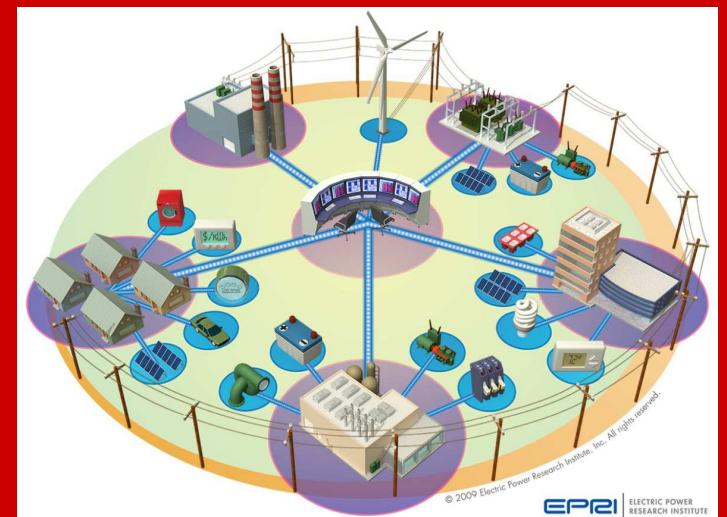
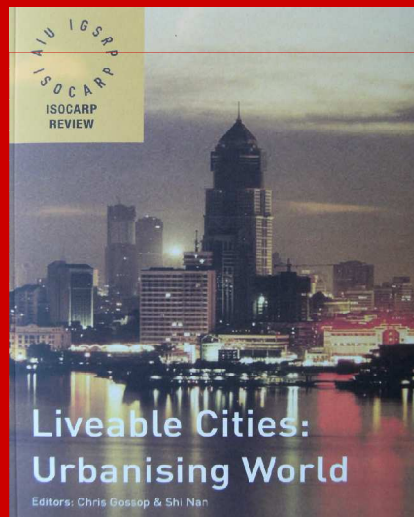
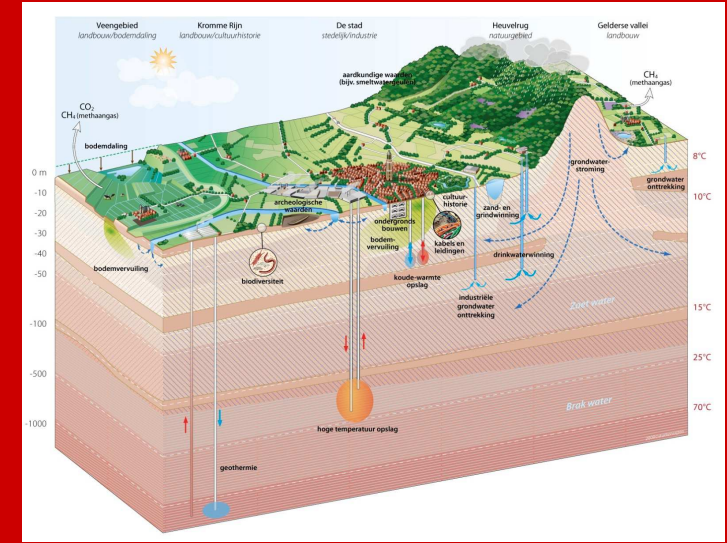
**Thermostat:** Can automatically adjust home temperature setting based on communication with power grid. Can also display how much customers are currently paying for power per kilowatt hour.

**Smart appliances:** Washers and dryers with on-board computer chips that can sense grid conditions and turn off or on as needed.

**Electric plug-in vehicle:** Can act as a backup generator for homes and supplement the grid during peak hours, and charge in off-peak hours at lower cost.

**Smart digital meter:** Allows two-way communication between customer's home and the utility and gives automatic energy usage readings, eliminating the need for meter readers.

Source: Intel, Denver Post research. The Denver Post.



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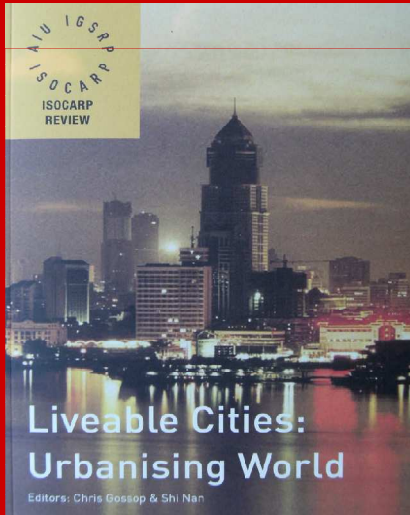
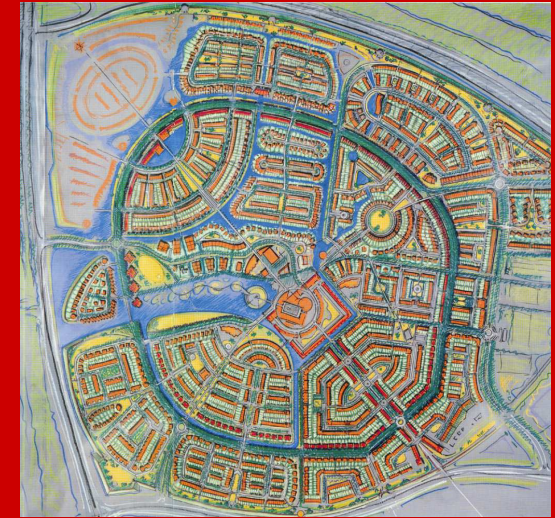
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# MUNICIPAL SPATIAL PLANNING POLICY STRATEGIES VS MUNICIPAL CLIMATE POLICY STRATEGIES

## AMERSFOORT



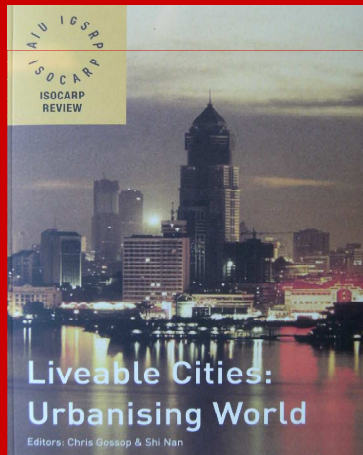
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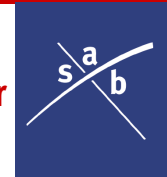
**MUNICIPAL SPATIAL  
PLANNING POLICY  
STRATEGIES  
VS  
MUNICIPAL CLIMATE  
POLICY STRATEGIES**

**UTRECHT**

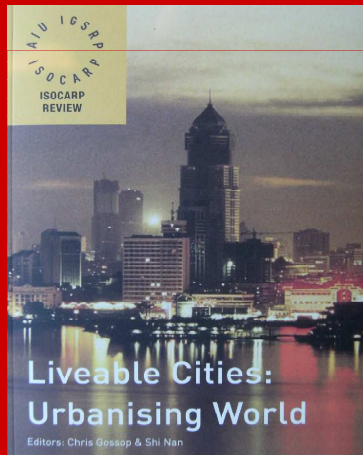


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STRATEGIES  
VS  
MUNICIPAL CLIMATE  
POLICY STRATEGIES  
  
UTRECHT & HOUTEN**



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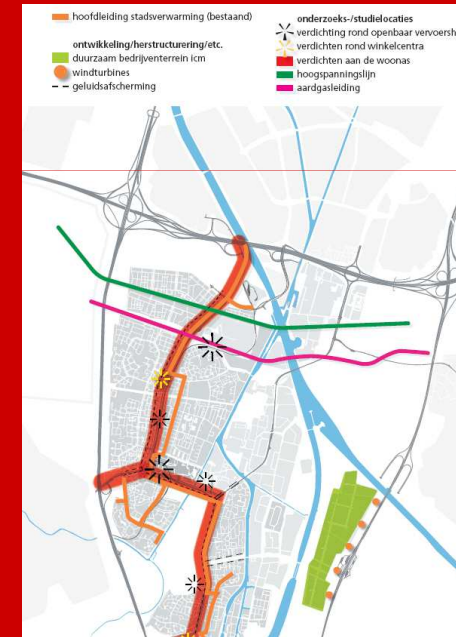
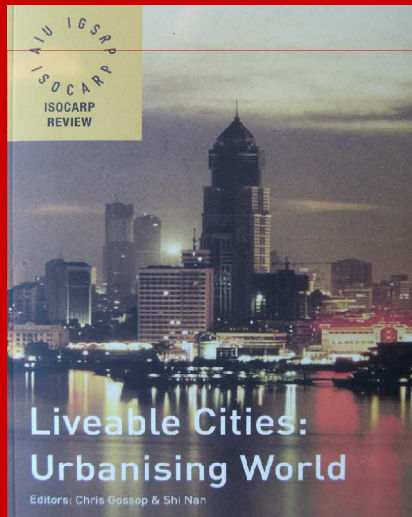
**THE NETHERLANDS IN TRANSITION**  
ir. Martin Dubbeling, urban planner & designer  
VP ISOCARP, Urban Planning Advisory Teams



# MUNICIPAL SPATIAL PLANNING POLICY STRATEGIES VS MUNICIPAL CLIMATE POLICY STRATEGIES



## NIEUWEGEIN



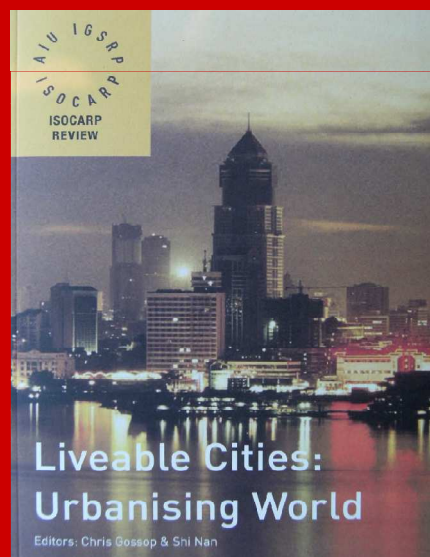
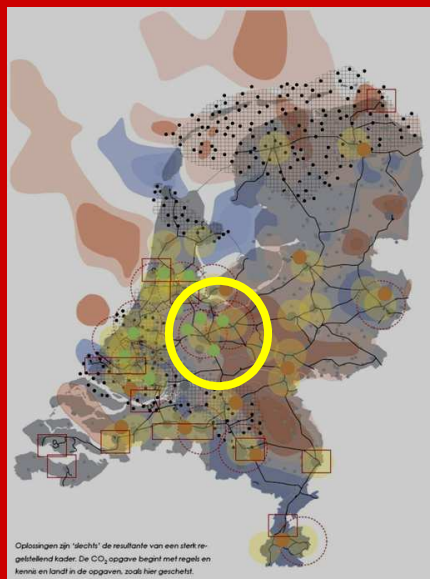
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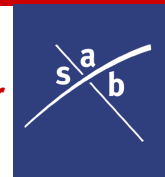
## THE UTRECHT REGION

- Policies of central government, the Utrecht Province and six larger cities are not connected
- High ambitions on climate and energy transition, not connected to national, regional, local spatial strategies
- Knowledge is unorganised, unknown, not wanted even, exchange is not stimulated
- Complete overview of projects and initiatives is missing
- Projects that are realised are more or less “coincidence” and not the results of continuous policies and planning
- No convincing relation between climate and spatial planning policy strategies
- Climate ambitions like “carbon neutral in 2030” are not realistic



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**THANK YOU FOR YOUR ATTENTION**



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