DESIGNING HEALTHY ENVIRONMENTS
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AN INTEGRAL APPROACH FOR THE DESIGN OF HUMAN HEALTH SUPPORTING ENVIRONMENTS IN THE HAGUE

P5 PRESENTATION

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CONTENT

Problem field
   - Spatial trends
   - Health trends

Research approach: health promotion

Determinants of health

Design principles & elements

Cases studies
   - Rustenburg Oost
   - Morgenstond Zuid

Conclusions

Recommendations
POSITIVE HEALTH

Health as the ability to adapt and to self-manage, in the face of social, physical and emotional challenges (Huber, 2014)
URBANIZATION

The Netherlands

The Hague

Expected population growth departments 2020

<table>
<thead>
<tr>
<th>Department</th>
<th>2015</th>
<th>2020</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Hague</td>
<td>515,880</td>
<td>535,000</td>
<td>575,000</td>
</tr>
</tbody>
</table>

Population growth

Year   | 2015 | 2020 | 2040 |
-------|------|------|------|
The Hague | 515,880 | 535,000 | 575,000 |

Housing stock

Year   | 2015 | 2020 | 2040 |
-------|------|------|------|
The Hague | 251,000 | 262,000 | 282,000 |

Note: The percentages represent the expected population growth in each department.
CLIMATE CHANGE

The Netherlands

Possible climate changes for the 1990 – 2100 period, according to KNMI’06 scenarios

- **Wet periods**: Ten-day precipitation total that will be exceeded once every 10 years.
  - Winter: +3% to +12%

- **Dry periods**: +7 to +37%
  - Potential evaporation

- **Annual precipitation**: From +5% to +6%

- **Sea level at Dutch coast**: +35 to +85 cm

- **River discharges**:
  - River Rhine average in winter: +12% to +27%
  - River Rhine average in summer: -47% to +1%
  - River Rhine extremely high discharges: 4 to 40 times more often

The Hague

LEGENDA
- Coastal zone: sea level rise and ground water nuisance
- Urban area: water nuisance because paved surfaces
- Polders: water nuisance because a lack of storage
- Vulnerable for heat stress
### HEALTH TRENDS: NL

Life expectancy is growing

More people with diseases

#### Behavioural risk factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>13.1%</td>
</tr>
<tr>
<td>Obesity</td>
<td>5.2%</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>3.5%</td>
</tr>
<tr>
<td>Excessive alcohol use</td>
<td>2.8%</td>
</tr>
<tr>
<td>Too much salt</td>
<td>1.9%</td>
</tr>
<tr>
<td>Too less vegetables</td>
<td>0.5%</td>
</tr>
<tr>
<td>Too much saturated fat</td>
<td>0.3%</td>
</tr>
<tr>
<td>Too much salt</td>
<td>1.6%</td>
</tr>
<tr>
<td>Too less fruit</td>
<td>1.8%</td>
</tr>
<tr>
<td>Too less fish</td>
<td>1.5%</td>
</tr>
<tr>
<td>High cholesterol</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

% Not countable: 5.0%

Environmental factors: 4.0 - 5.7%

Unfavourable working conditions: 5.0%
HEALTH DIFFERENCES THE HAGUE

- Deprived neighbourhoods The Hague
- Non-deprived neighbourhoods The Hague

**Obesity**
- Deprived: 46%
- Non-deprived: 34%

**Mental health**
- Deprived: 59%
- Non-deprived: 60%

**Living environment**
- Deprived: 9%
- Non-deprived: 34%

**Self-Rated Health**
- Deprived: 79%
- Non-deprived: 60%

**At least 1 chronic condition**
- Deprived: 74%
- Non-deprived: 49%

**Risk of anxiety and depression**
- Deprived: 70%
- Non-deprived: 40%

**Social exclusion**
- Deprived: 57%
- Non-deprived: 0%

Dotted line is average of The Hague. The Hague 2012.
FROM HEALTH CARE TO HEALTH PROMOTION

From medication towards healthy lifestyle

- Bodily functions
- Social & societal participation
- Daily functioning
- Quality of life
- Spiritual/existential dimension
- Mental functions & perception
- Bodily functions
- Social & societal participation
How can the design of the urban space promote human health in The Hague?
Designing healthy environments by spatial transformations which will contribute to the health of the inhabitants in The Hague.
DETERMINANTS OF HEALTH

DETERMINANTS OF HEALTH

- Personal
- Behavioural
- Access to health services
- Environmental
- Social environment
- Physical environment
- Socioeconomic
DETERMINANTS OF HEALTH

Environmental
- Physical environment
  - Biodiversity
  - Urban form
  - Green space
  - Water
  - Air quality

Social environment
- Social capital
  - Social support
  - Interaction
  - Civil participation
  - Community

Socioeconomic
- Education
- Income
- Occupation

Personal
- Age
- Gender
- Weight
- Ethnicity

Behavioural
- Relaxing
- Traveling
- Physical activity
- Eating
- Job activities

Access to health services
- Affordability
- Accessibility
- Availability

Daily habits

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Access to health services

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Physical activity
Green space
Urban form
Water
Air quality

Social capital
Social support
Interaction
Civil participation
Community

Socioeconomic
Education
Income
Occupation

Personal
Age
Gender
Weight
Ethnicity

Behavioural
Relaxing
Traveling
Physical activity
Eating
Job activities
DETERMINANTS OF HEALTH

ENVIROMENTAL SCOPE

Determinants of Health

- Social environment
- Physical environment
- Environmental
- Socioeconomic
- Access to health services

Personal

Behavioural
ENVIRONMENTAL SCOPE

DETERMINANTS OF HEALTH

- Personal
- Behavioural
- Access to health services
- Environmental
- Physical environment
- Social environment
- Socioeconomic

DETERMINANTS OF HEALTH

- Behaviour
- Physical environment
- Social environment
- Socioeconomic
DESIGN PRINCIPLES

Physical environment
- Ecological resilience
- High quality structures

Social environment
- Social capital
- Social activities

Behavioural
- Active travel
- Healthy lifestyle
DESIGN PRINCIPLES

Ecological resilience
- Supporting, regulating and provisioning ecosystem services
- Biodiversity
- Protection of heat islands
- Climate stability
- Pure water
- Pollination
- Clean air
- Noise

Physical environment

High quality structures
- Cultural ecosystem services
- Identity
- Use and perception of environment
- Experience nature
- Local food production
- Attractiveness

Social capital
- Strong community
- Social support
- Sharing facilities
- Ownership of public space
- Local shops and facilities
- Optional activities
- Mutual tolerance

Social environment

Social activities
- Possibilities for social interaction
- Eyes on the street
- Mix of uses
- Different target groups
- Meeting and viewing people
- Necessary activities

Active travel
- Based on daily activities
- Accessibility of everyone
- Local accessibility - walking - cycling
- Nodes of public transport
- Choice in route: easy / active
- Traffic calming

Behaviour

Healthy lifestyle
- Based on recreation and spare time
- Active recreation
- Relaxing & rest
- Healthy food eating
- Conscious choice
- Awareness
DESIGN APPROACH

DESIGN CONDITIONS

Safety  Scale  Accessibility  Context  Climate

HEALTHY DESIGN PRINCIPLES

Ecological resilience  High quality structures  Social capital  Social activities  Active travel  Healthy lifestyle
DESIGN ELEMENTS

- Furniture
- Sport- and interactive objects
- Aesthetic and cultural objects
- Green infrastructure
- Food production
- Water
- Waste management
- Environmental protection
- Traffic calming
- Nodes of public transport
- Bicycle facilities
- Routes
- Ownership of public space
- Local shops and facilities
- Flexibility and temporality
- Information provision
- Surface
- Lightning
EXAMPLE PRINCIPLE
EXAMPLE ELEMENTS
DIFFERENCES NEIGHBOURHOODS

Rustenburg Oost
Pre-war housing
Row housing/ appartment buildings
Private ownership
Less green
Less public space
Shows some devriped related issues
Improvement public space

Morgenstond Zuid
After-war housing
Homogene porticoflats
Social housing
Much green
Much open space
Deprived neigbhourhood
Densification & transformation
NARRATIVE

John (44)  Software engineer  
Nadia (39)  Saleswoman at bakery  
Adam (9)  Primary school pupil  
Sofia (6)  Primary school pupil  
Bea (67)  Since a year retired  
Experience much stress  
Obesity, BMI > 30  
Asthma & hay fever  
Lives together with dog

Harry (79)  Back and neck complaints  
Sara (75)  Volunteer at neighbourhood centre  
Jamal (25)  Cipier in a prison  
Talisa (22)  Law student  
Osteoarthritis  
Recovering from a TIA  
Genetic coronary artery disease
CONTEXT NEIGHBOURHOOD

Rustenburg Oost

Morgenstond Zuid

LEGENDA
- Large green-blue zones
- Important green-blue zones structures
- Social functions
WATERLINE

Rustenburg Oost

Morgenstond Zuid
CASES STUDIES: ANALYSIS

Front of building
Back of building
Typological public space
Atypical public space
Buildings
Buildings in construction

Rustenburg Oost

Morgenstond Zuid

LEGENDA

Front of building
Public space
Streets
Buildings
DESIGN LOCATIONS: RUSTENBURG OOST

TYPOLOGY: LOENENSESTRAAT

SOESTDIJKSEKADE & LAKKKANAAL
WOONERF
DESIGN: RUSTENBURG OOST
33 // 56
DESIGN: RUSTENBURG OOST
34 // 56
SOESTDIJKSEKADE & LAARKANAAL
SECTION SOESTDIJKSEKADE & LAAKKANAAL

DESIGN:
RUSTENBURG OOST
37 // 56
DESIGN LOCATIONS: MORGENSTOND ZUID

TYPOLOGY: COLLECTIVE GARDEN

STEENWIJKLAAN & STREAM
COLLECTIVE
GARDEN

DESIGN:
MORGENSTOND ZUID
43 // 56
DESIGN:
MORGENSTOND ZUID
44 // 56
DESIGN:
MORGENSTOND ZUID
45 // 56
DESIGN: MORGENSTOND ZUID
47 // 56
SECTION STEENWIJKLAAN & STREAM
DESIGN:
MORGENSTOND ZUID
50 // 56
How can the design of the urban space promote human health in The Hague?
CONCLUSION

Design principles

Determinants of health

Goal
CONCLUSION

Comparison neighbourhoods:
- approach applicable on every type of neighbourhood/ public space

Long term investment

More awareness for health in urban design
RECOMMENDATIONS

Research
- More research necessary for stronger foundation, based on multiple positive aspects

Proces/ implementation
- More collaboration between health and spatial planning departments
- More investments for health promotion in public space
THANK U FOR LISTENING!

QUESTIONS?