

# Urbanization

Prof.dr.ir. M.P.C. Weijnen

Professor, Faculty of TPM, TU Delft

# Infrastructure

*The right infrastructure, used well, and governed well – enables us to compete, to trade with the world, and to build higher living standards in a sustainable way*



# Seven billion people now!

- By 2050, more than two thirds of the world population will be urban
- In China, 1 billion people will live in cities by 2030. In 2050, more than 70% of the Chinese population will be urban



# Urbanization questions

- Why attractive?
- Because of infrastructure?
- Good or bad news?
- Future challenges?



# Urbanization in the world

|               | Urban population<br>(% of total) | Population in largest city<br>(% of urban population) | Rate of urbanization<br>(annual rate of change in %) |
|---------------|----------------------------------|---|--|
| Argentina     | 92                               | 35  | 1.1  |
| Australia     | 89                               | 22  | 1.2  |
| China         | 51                               | 2   | 2.3  |
| Germany       | 74                               | 6   | 0  |
| India         | 31                               | 6   | 2.4  |
| Japan         | 91                               | 32  | 0.2  |
| Netherlands   | 83                               | 8   | 0.8  |
| South Africa  | 62                               | 12  | 1.2  |
| United States | 82                               | 8   | 1.2  |

# Urban area

- 26 urban areas are megacities
- Continuous urban development within a metropolitan area



## Urban area (1/2)

*The physical expression of a city – it is what you can see and touch: a concentration of built environment – homes, offices, industrial facilities, all types of infrastructure – which is clearly visible in a satellite view, especially at night*

# Urban area (2/2)

- Many inhabitants
- Work close to home
- Economic and functional expression of a city  
→ metropolitan area





# Metropolitan area (1/3)

*Is an economic region: the combination of urban, sub-urban and rural areas which together comprise the labor market of the region*

## Metropolitan area (2/3)

*Is a region consisting of a densely populated urban core and its less densely populated surrounding territories, sharing industry, infrastructure and housing*

# Metropolitan area (3/3)

- Has urban area(s), satellite cities, socio-economic area(s)
- Multiple jurisdictions
- Socio-economic entity and cultural identities



# Urbanized countries

- Argentina and Australia



# Why are cities attractive?

- Social interaction, jobs, education, cultural activities etc.



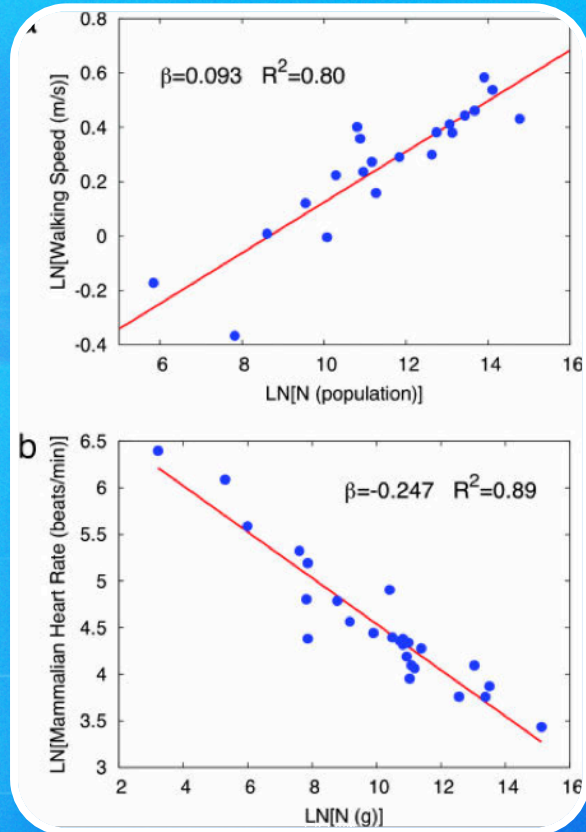
Geoffrey West, Louis Bettencourt et al.



- Productivity of cities increases when urban population increases
- Doubling the size of the city systematically increases wealth and income with a scaling factor of 1.15

# Intriguing organism

- Biological systems scale sublinear: the metabolism grows slower as the system gets bigger
- Urban systems scale superlinear: the metabolic rate increases with increasing size of the systems



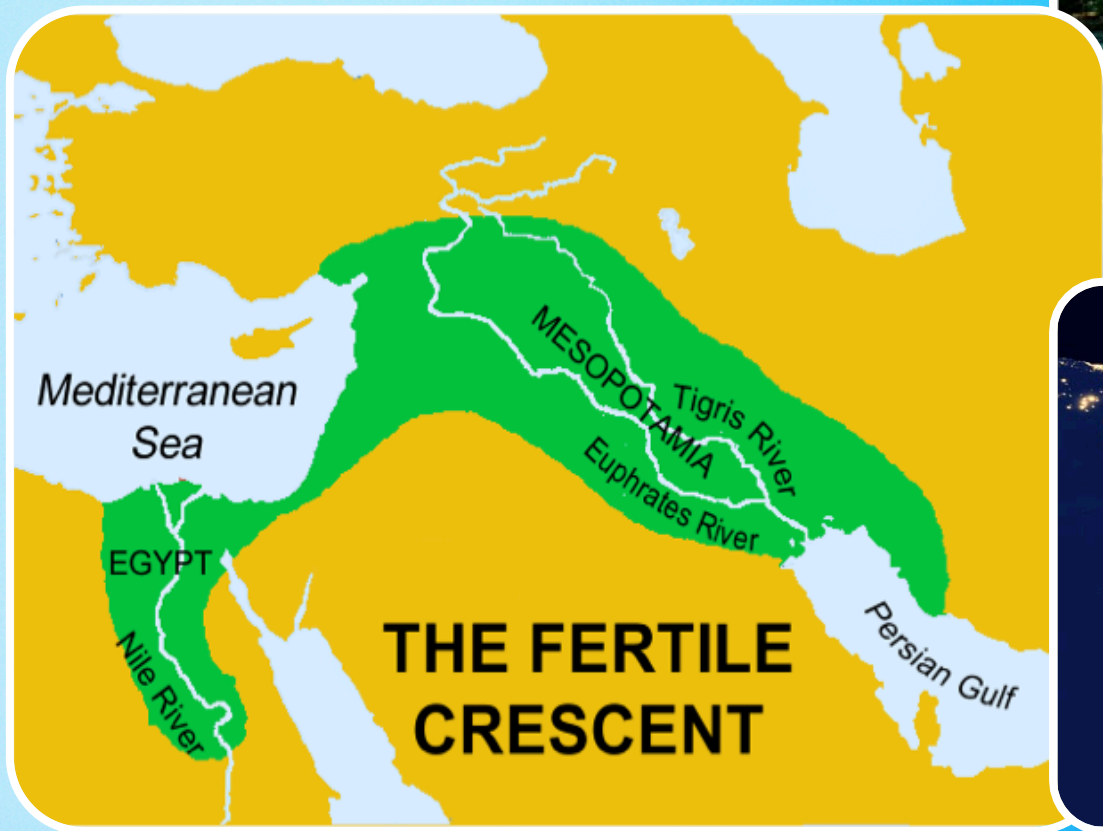
# History: natural infrastructure

- Natural infrastructure dictates the places where successful human settlements occurred!





# Euphrates, Tigris, Nile



# Trade-off

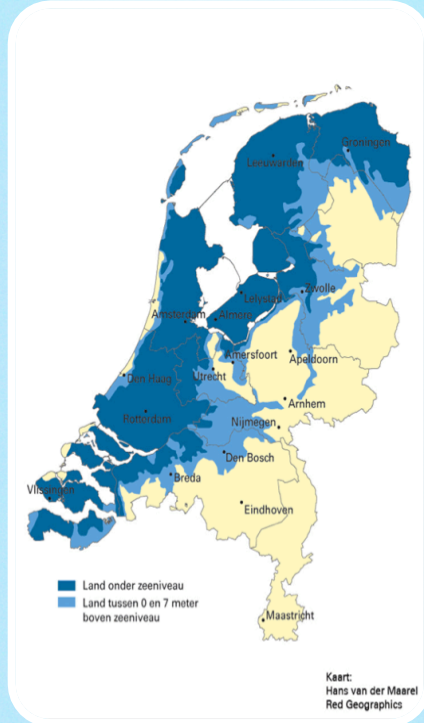
- Opportunity vs. risk
- Protection



# Position megacities



# Example: the Netherlands

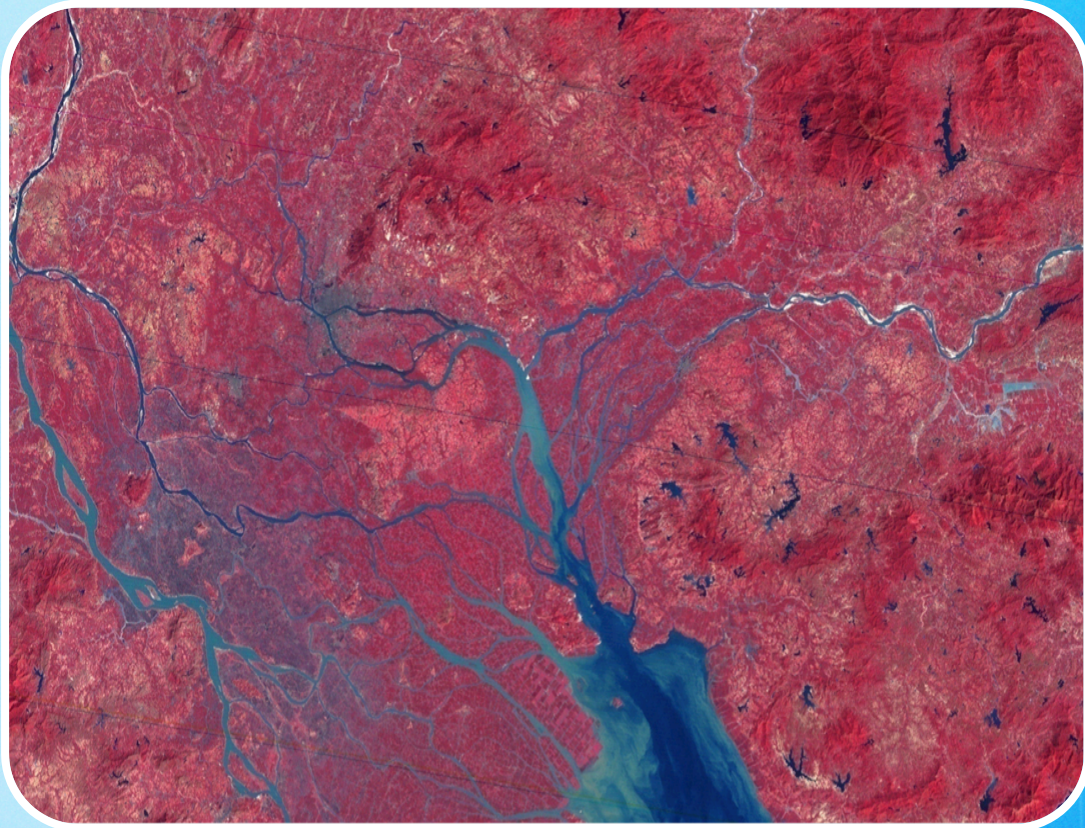


# Urbanization patterns

- Big differences in the world
- Europe: megacities are an exception
- South America and Asia: megacities are more common



# Pearl river delta 1979



# Pearl river delta 2003



# Infrastructures and the city

- Food, energy water security?
- Environment?
- Infrastructure development?



# Thank you for your attention!

Please post any questions you may have  
on our discussion forum.

# References

[References in word invoeren en dan importeren naar ppt]