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APRÈS NOUS LE DÉLUGE? CLIMATE ADAPTATION AND URBAN DEVELOPMENT IN ANTWERP, HAMBURG AND ROTTERDAM

A CLASSIC AND A MODERN APPROACH TO THE DELUGE

Fear of water is embedded in our human minds. This natural reaction (based on the indisputable knowledge that we cannot survive in water) has been portrayed in many forms of classic and modern culture.

1. The Biblical flood myth of Genesis 6-9 depicted by John Martin (1834). The Genesis deluge was intended by God, who wanted to destroy the evil of mankind. Noah, his family and certain animals survived on the Ark
Source: commons.wikipedia.org

2. Beasts Of The Southern Wild, a movie by Benh Zeitlin (2012). In this movie, Hushpuppy and her father make part of the Bathtub community between the ocean and the levee in New Orleans
Source: pathe.nl

Although Biblical examples and Hushpuppy lived as nomads in an ever-changing world, the majority of the world consists of permanent urban structures. Cities are normally perceived as strongholds of culture and prosperity, and must therefore be protected against external threats such as water.

Water issues in port cities

Despite a growing consciousness of shortening production chains and reducing energy consumption, port cities are still the turning wheels in national and international economies. While their economic importance remains unscathed and local populations are growing, port cities are increasingly challenged by major climate changes.

Port cities have always intertwined with water, and they therefore encounter the advantages and the disadvantages of water. Of all climate implications, water level rise is perceived as the most important one for port cities. Besides the rise of the general sea level, the unpredictable occurrence and implications of storms have increased too. Longer and more intense periods of drought and heavy rainfall inland lead to flooding of the main rivers on their way to the sea. These climate changes necessitate new water protection measures.

Climate adaptation in times of scarcity

The article shows spatial measures for the adaptation of port cities against water and how these measures are (or could be) integrated in urban development projects. The aim is to find building blocks for a new urban development model that serves social, environmental and economic goals.

Especially in times of scarcity, when our natural systems are continuously under attack, private and public money is scarce and social issues remain unresolved, climate adaptation measures could also be used to improve social cohesion and sustainable economic growth. It is about spending the scarcely available money on measures that serve several needs.

Comparative study

The article is a comparative study of climate adaptation measures and large-scale urban development projects. Three port cities in North-West Europe are chosen: Antwerp, Hamburg and Rotterdam.

These three major ports of Europe share several common characteristics. First, these ports in low-lying deltas are directly connected to the North Sea and face the threats of turbulent water tides. Secondly, all three are fluvial ports that have to cope with inland water rise and floods as well. Thirdly but not least, these cities are the second and non-capital cities of their respective countries. There are no ballrooms, but shunting yards; no first class, but second and third class; they are 'arrival cities'. These places face major social challenges too: gaps between the very poor and the very rich, gaps between native and foreign. Moreover, these cities of contrasts face other 'climate extremes': in political terms, that is.

On the other hand there are significant differences in terms of national economic situations and national and local political conditions. The Netherlands, for example, has experienced the strong power of water boards since their very beginnings. Crises have now halted investments. While Belgium is endlessly discussing the division of responsibilities in three regions, local political power turns out to be effective and supportive. Is Germany, the leading economy of Europe, an example for others? How do the cities and countries react to scarcity? Are they determined to cut costs, skip planning and set sail under the neoliberal flag? Or are there alternative ways?

3. Flooded land if sea level rises only 1 meter and no precautions are taken .
Source: flood.firetree.net

Current spatial developments and climate change measures

In many cities there is a trend of disappearing manufacturing and trading activities from the inner city to outlying districts. There are a few economic reasons for that: cheaper rents and better accessibility for employees and deliverers (trucks). More relaxed zoning regulations are often a very important reason to move to outlying districts as well. After decades of terrain vague, the inner city docklands are often transformed into new city quarters. New, fancy architecture in dangerous flood risk areas shows the power of human kind.

ANTWERP
Brief context

Antwerp is expanding its harbour toward the sea. The area between the city centre and the harbour is being redefined by urban development projects.

Partly realised urban development projects: Eilandje and Park Spoor Noord

The city of Antwerp primarily focuses on the development of Eilandje, a new residential area in the indeterminate zone between city centre and active harbour area. As times progressed and ships needed bigger docks and deeper waters, the former Napoleon harbour directly north of the city centre was abandoned. Due to its location on the fringe of the harbour and the city and its spatial recession, Eilandje was known as a focal point of (semi) illegal activities based on trade of goods and human beings. Since the 1990s, however, the city of Antwerp has initiated large-scaled development of Eilandje. Along with a striking marketing campaign, the city attracted private investments by building a new eye-catcher in the skyline of Antwerp: the MAS museum. Planned expansion of the city's tram network and the beautification of public space have also brought a boost to the area. In the end, the MAS museum, the public domain and the fairly well-connected location have indeed started a fast gentrification process. The once shabby docklands are now turned into a mixed city quarter where apartments are refurbished into lofts and where public space is walked-on by international tourists. Directly north of the MAS museum, a new city quarter (Cadix wijk) will be built by predominantly private investors.

This concept of public leveraging projects to attract private investments has been effective in Park Spoor Noord as well. In Park Spoor Noord, a former shunting yard has been transformed into a very successful park. The park, a relief for many city dwellers who live in the densely-built working class areas Noord and Borgerhout, has also initiated private investments in apartments and services (including a hospital). Eilandje and Park Spoor Noord have stimulated local enterprises and jobs in different economic sectors (culture, leisure, sports, shopping etcetera). They have become meeting places for everyone. The projects therefore contribute to the local economy and to resolving social issues.

4. The MAS museum and the surrounding public domain have initiated the gentrification process of Eilandje
Source: gva.be

5. Park Spoor Noord is a relief for those who live in densely-built urban neighbourhoods
Source: architectura.be

Planned urban development project: Nieuw Zuid

While Park Spoor Noord and Eilandje are partly realised and partly under construction today, the next development seems to be the Nieuw Zuid project: another new city quarter on another unused site. Nieuw Zuid is a housing project close to the water of the Scheldt river, south of the city centre. In contrast with Eilandje, Nieuw Zuid it will not quite be a mixed use urban area. The project aims to accommodate people who earn more than average. Moreover, and more importantly, the Nieuw Zuid project is not engaged by the city in terms of investments in a public building or public transport. The city is a facilitator instead of an initiator, which means that it tries to stimulate investments by permitting a lot. Nieuw Zuid seems to be a quick win of developing unused ground on unused land, without a collective agenda.

Climate adaptation

Simultaneously, water level rise implications and the protection of the city centre and the new quarters Eilandje and Nieuw Zuid are used as a starting point for the reconstruction of the piers. Other goals of the pier reconstruction are the improvement of public space and the relation between the city centre and the river.

Like the Eilandje area, the 'Antwerpse kaaien' (Antwerp pies) lost their industrial use a few decades ago and are now perceived as urban wasteland. The increasing chance of storms and water level rise and their implications lead to the reconstruction of the piers. The Sigmaplan of the Flemish government for the Antwerp piers is based on three aspects: strengthening, increasing and redesigning of the pier walls[1]. Antwerp is searching for a new 'relation' between the inner city and the Scheldt river. For years there has been a linear development alongside the river (pier with industrial activities, street, terraces, pedestrian and cyclist paths). The piers are now primarily used as parking space adjacent to the city centre. The redevelopment of the pier zone can be summarised in these plan elements:

- increasing the height of the piers
- creating a new public space along the river (boulevard)
- making a new connection between city centre and water (although the pier's height is increased)
- maintaining parking function beneath the new ground level (that is, at the same level as today).

The two urban development projects (Eilandje, Nieuw Zuid) will be secured from the water of the Scheldt river by the new piers. In Eilandje, much of the water management is done by the docks water system (apart from the Scheldt river). Within the docks, the water level is controlled by a network of sluices and pumps.

6. The unused space between the city centre and the highway will be transformed
Source: gva.be

7. Proposal for Nieuw Zuid by Secchi Viganò
Source: cartoon-productions.be

8. Great place for a pick nick with your beloved, but not appealing for tourists. That's why the city wants to redevelop the piers as well.
Source: author, 2013

9. Although functionally relieving the city centre by offering parking space, the pier area is not really contributing to a fruitful relation between city and water.
Source: author, 2013

10. The concrete wall on the left and its metal doors are too low for the future water level.
Source: author, 2013

11. Instead of increasing the wall shown on the left, an entire new slope will be built as a new public space.
Source: PROAP + WIT, 2009

HAMBURG
Brief context

Hamburg is expanding its harbour deeper inland (south of the city). The area between the city centre and the harbour is being redefined by urban development projects.

Partly realised urban development project: HafenCity

Hamburg is of course famous for HafenCity, a huge inner city development. An entire new urban quarter is built on former docklands and water next to the city centre. For HafenCity, the city of Hamburg also applied the urban renewal model of public investment as leveraging project for other developments. The two main investment attractors built with public money are the Elbphilharmonie (a concert hall) and the extension of the U-Bahn (underground public transport) network.

12. Overview of the HafenCity project
Source: skyscrapercity.com

Planned urban development project: Wilhelmsburg

While public attention goes out to the realisation of HafenCity and the costs of the Elbphilharmonie, the city has announced new developments in the working-class area of Wilhelmsburg, an island in the south[2]. Wilhelmsburg hosts the 'internationale Gartenschau' 2013 (international garden show). Moreover, the institutionalised IBA Hamburg (internationale Bauausstellung) is involved. The Wilhelmsburger Reichsstrasse (B4-B75, a heavy road infrastructure with four lanes) will be placed adjacent to the railroad tracks. The existing course of the Reichsstrasse will offer space for the international garden show and new urban development.

13. Wilhelmsburg will undergo much development initiated by IBA
Source: hamburg.de, IBA

14. Reducing noise caused by infrastructure makes space for urban development
Source: hamburg.de

Climate adaptation: city protection and building adjustments

Hamburg is used to high water: there are floods every year. The city is partially protected by high pier walls and 'locks' along the Elbe river.

HafenCity is built within the Elbe river delta and outside the city's water protection walls. In HafenCity, water protection is implemented at building level. This means that property owners are responsible for their own and their tenants'

15. Many first floors of buildings in HafenCity can be shut by steel doors to keep the water out
Source: quartier-magazin.com

16. At strategic spots, Hamburg has 'flood gates' as part of a collective protection system
Source: pro-wohnen.de

17. Hamburg designs a water protection measure as new public domain
Source: hafencitynews.de, LBSG/ON3

safety. Many first floors of buildings have been equipped with steel doors and concrete walls. Although the function may dominate, the form is unfortunately forgotten.

Wilhelmsburg is located in the Elbe river delta as well. The publication 'Climate Factor Metropolis'[3] underlines the importance of water protection measures. In Wilhelmsburg, IBA is set up a centre for climate engineering "to accelerate the information transfer on innovative technologies and processes, initially in the area of flood and coastal protection. The first research project will pursue the development of a standard for mobile flood defence systems." Unfortunately, there are no concrete protection measures applied in Wilhelmsburg. Most probably, however, the 'dikes' around the island will be made stronger and higher.

18. Historical parts of the collective Wasserschutzmauer
Source: the author, 2009

ROTTERDAM
Brief context

Rotterdam is expanding its harbour toward and into the North Sea. In Spring 2013, the Maasvlakte II in the North Sea has been put into operation. The area between the city centre and the harbour is being redefined by urban development projects.

Partly realised and planned urban development project: Stadshavens

The city is transforming former harbour areas into new commercial and residential zones. Other parts of the harbour are maintained as

19. Overview of the Stadshavens area
Source: officielebekendmakingen.nl

20. Inner city harbour areas are transformed into mixed urban neighbourhoods
Source: the author, 2013

21. The Maeslantkering (part of Deltawerken) protects Rotterdam from sea water
Source: rijkswaterstaat.nl

22. Flood risk in the Stadshavens project area
Source: rotterdam.nl

business districts (after intensification). The overall project name for the inner city harbour development is Stadshavens project. The economic crisis seems to have halted major investments in Rotterdam, both public and private.

Climate adaptation: Deltawerken and Stadshavens

Rotterdam is protected by the Deltawerken. This chain of national water structures shields the entire country. The Dutch context is very specific. Through centuries of retaining, creating, losing and recapturing land, the Netherlands has built up a steady water planning system. The national Rijkswaterstaat and the regional water boards (waterschappen) know how to deal with the impetuosity of water. Moreover, the Dutch share a collective consciousness of the threats of water. This has had its political consequences: the sector dealing with water issues is very powerful indeed.

Stadshavens is not protected by 'dike' infrastructure. Therefore the main questions are: how is water protection guaranteed, and has water management changed as a result of harbour transformation?

Because of the lack of 'dike' infrastructure, the ground level must be raised to minimise the possibility and impact of floods.

Climate resilient planning is necessary to create a place to work and live. In order to carry out pragmatic planning, there is a differentiation of norms. Vulnerable activities (such as a residential area) must be protected dramatically as opposed to other, less vulnerable activities (such as a park or a container terminal).

Instead of raising the ground level, increased pier walls, floating buildings and dry-proof and wet-proof building techniques are possibilities too.

'Dikes', roads and railroad tracks that surround Stadshavens are physical barriers today. It might be worth researching a multifunctional use of these 'dike' zones.[4]

Building blocks for climate adaptation and urban development

After comparing these three cities I reflect and contemplate, and I end up trying to rethink the entire urban development and planning system, its parties involved, its money flows, its mechanisms, its culture.

Urban development is a mixture of (shifting) public and private interests. The urban renewal model in Antwerp and Hamburg (approximately 1990-now), in which public investments have been used to trigger private speculation, has turned out very effective with satisfactory results. In this model, the public administration is a solid and reliable partner. If the city goes for it, private developers will follow. In this model, collective and private interests are both served.

There is a global trend of shifting city strategies. Instead of investing (there is no money!), cities tend to loosen regulations in order to stimulate private development. Some people call this rationalism and cost-saving. Others tend to call it neo-liberalism. Whatever you may call it, it often does not give pleasing results. Because of mainly satisfying self-interest, private 'island' developments are often not beneficial for a city. For example, the climate adaptation in Hamburg HafenCity is perceived as private responsibility which leads to 'dead' ground floor level of many buildings. In Antwerp, the Nieuw Zuid project does not comprise a collective agenda either and it will probably become a residential stronghold for a happy few.

On the other hand, public engagement alone is not enough. In Rotterdam, for example, the water boards are doing a great job securing

the city's welfare and economy. However, public investments are quite often not followed by private investments, notwithstanding a great need of private will in the case of Stadshavens project.

So: urban planning is not yet fit for scarcity. There is no public money. Governments are rusty. Private developers only think about themselves and they are often too slick. Let us rethink the city development system! And because of intertwining collective and private interests, climate adaptation could be an important trigger to do so.

If a city is secured, investments are secured. The city administration will keep a key role and responsibility in guiding (not just relaxing regulations). Adapting to climate change and creating new urban quarters may lead to a system in which a percentage of private profit flows back to public funds. In many countries, the foundations of such systems exist. In Belgium and the Netherlands, for example, private investors pay a certain amount if zoning regulations are changed by a public authority (and if the potential land value increases). It can also be agreed on in PPP contracts. It can be expanded to climate adaptation measures.

Paying a part of the profit will be accepted by the private investor if the solid partnership between him and the public administration leads to a smaller investment risk and a greater chance of profit - especially in times of scarcity. In the end there will be a well-running city budget that can satisfy the collective demands (schools, parks, roads, maintenance, jobs, etc.) and that can trigger private development.

Climate adaptation projects will become more and more urgent in the coming decades. Cities have the opportunity to change the communication and participation strategies as well. Climate adaptation projects (and urban planning in general) can be democratised.

In addition to the two key actors comprising government and private development parties, there is an important third actor involved. Especially when economic tides are low, people tend to share their sorrows with others. They think, speak, protest, they form groups and stand for certain beliefs. They achieve goals without spending large amounts. This third group of (partly) organised or non-organised people can be embraced by the government (because of the collective agenda) as well as by private parties (because they will need the public vote too).

In the case of democratisation and the true involvement of citizens, climate change and urban development can contribute to resolving social issues too (inequality, poverty, unemployment, lack of chances).

ONE LAST NOTE

Back to Hushpuppy and the Bathtub community, a microcosm in marginality. They are still there; somewhere between the Gulf of Mexico and the levee that protects New Orleans from further doom. The community is struggling, but they are keeping their heads above water, literally.

Adaptation to climate change is a short-term policy for leading world economies to ensure their status as leading economies. The daily experience of other, less wealthy places is the wrath of nature and the human role in this changing nature. These less wealthy places will disappear one day or the other. But in the long run this will be true for the leading economies as well, as it will not be enough to just adapt space to climate change. It is therefore at least as important to adapt our behaviour in producing and consuming, with other words mitigating, with other words changing the fundaments of our economic system.

1. The Sigmaplan is the Flemish (regional) plan for adapting land-use to water changes. Within the general framework of ensuring the country and its inhabitants against water, concrete projects are launched. Except the Antwerp quays, the Sigmaplan indicates controlled flood areas and dike projects along the Scheldt river. More information can be found on www.sigmaplan.be/en.
2. See masterplan 'Neue Mitte Wilhelmsburg' and http://www.iba-hamburg.de/themen-projekte/wilhelmsburg-mitte/projekt/wilhelmsburg-mitte.htmlMapping urban comfort in Bratislava <http://urbanclimate.stadachtig.nl/mapping-urban-comfort-bratislava/>, author Veronika Kovacsova
3. IBA Hamburg Climate Factor Metropolis, Projects for the future of the metropolis, Climate Protection Concept for a Renewable Wilhelmsburg
4. Structuurvisie Stadshavens Rotterdam 2011

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