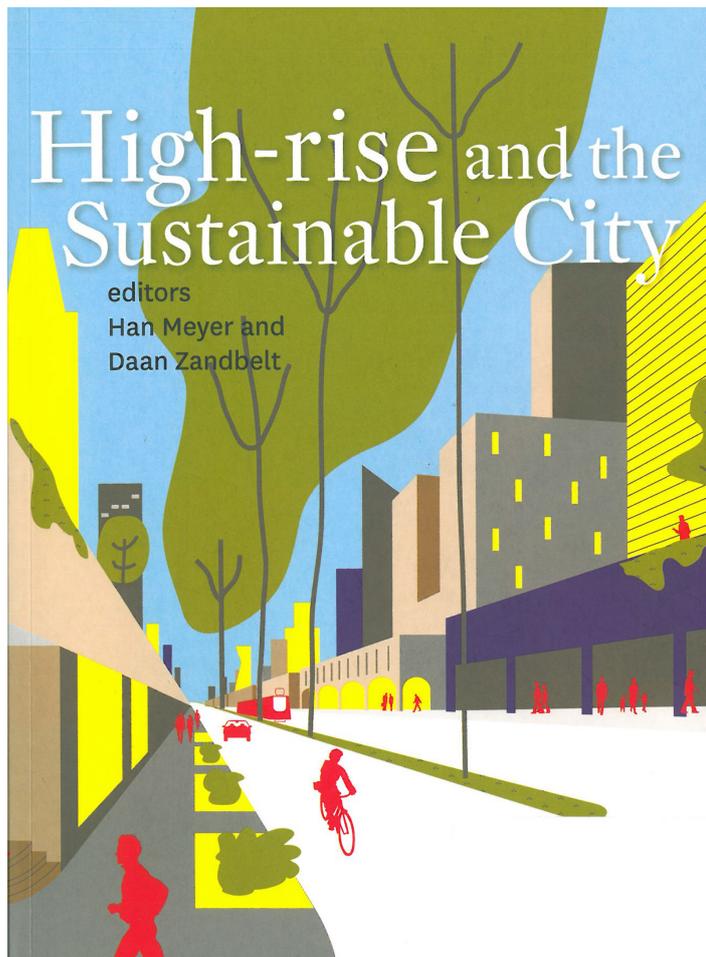


Sustainable High-rise in Dutch cities

Book H. Meyer and D. Zandbelt, *High-Rise and the Sustainable City* Techne Press, 2012.



What is sustainable?

The first question that arises when talking about sustainable high-rise is whether high rise can be sustainable at all. Buildings can be qualified as such by a certain energy label, but that does not automatically mean that this sustainability is contextually legitimate.

If you build a high rise office you can get a very good label, but you could still be making a bad choice. Look for example at the city of Rotterdam which is currently tackling the question of whether to continue building high-rise offices in the city center while there are so many empty buildings. Some developers say we should tear down offices that are in the wrong place. So apparently a sustainable building could be built in the wrong location and therefore ultimately become useless. Defining categories of sustainability is a very good way of identifying positive attributes in buildings.

Its a tool that keeps their pressure on main good sustainable projects, but the labels do not cover all the factors that determine if a building is sustainable. The amount of empty offices in the Netherlands has never been so high. During the recent boom there were many financial incentives to keep developing and building.

It was cheaper for users and more attractive as well to move to a new up-to-date building, rather than stay in an old one. The driving force was the financial bubble that provided too much money, investors were literally hunting for investment projects. Simultaneously the national government has delegated planning responsibilities to the provinces and municipalities . Now the provinces say that they have some influence, but that most influence lies with the municipalities. In their turn the municipalities say that they only have the land-use plans (bestemmingsplannen) and if the land-use plans allows it there is nothing they can do about it. If you combine all the different municipalities in the Netherlands, you discover that we can still build 10.000.000 m² of office space. The national government has very little influence on these land-use plans, or at least they do not have the political will to do something about it.

Dream of the metropolis

(KK01)Since the second half of the 19th century people have had this dream of metropolis. They have a fascination with this high density urban environment. Apart from the economic forces that drove urban expansion, we also have a deeply rooted admiration for cities. Out of this rational and sentimental force, the phenomenon of mid-town Manhattan emerged as one of the first places in the world where the dream of the high-rise city was partially realised.

If you look at New York now, you can see it as a future that did not happen: the future metropolis looks old. It seems that contemporary high-rise developments still cling to this futuristic vision, but that the reality of land-use and density does not match it (KK02).

Shifting land-use

The Fifth Nota (National Spatial Planning Strategy, 2001) contained data on Dutch land use over the last 120 years. It revealed that urban land and infrastructure have grown dramatically. Land for forest, nature and water have all reduced in share, while agriculture land use has remained more or less constant. Apparently farmers have a very strong lobbying position in national politics. Within the next 30 years a quarter of land in the Netherlands will again change in use. It seems we are constantly reshaping our small country (KK03).

So why do we use more and more land for urban development and infrastructure? It is of course because of demographics. The population has grown since the end of the Second World War, but also the number of people per household has decreased. Furthermore, we have become wealthy, leisure time has increased tremendously and our mobility has exploded along with it. Modern society increasingly requires a specific type of space for a specific type of use. Public space for example is relegated into different kinds of traffic.. And our building stock became more and more specific. Moreover, the increasing demand for guarantees on safety and security has led to an exaggerated level of specification. Each activity or program demands its own space. Only recently has there been a revival of the notion of 'shared space'. A phenomenon that used to be very common is now considered an innovation. If we need specific facilities for activities like living, working, leisure, education, health and all other needs, then we need a lot of buildings and a tremendous amount of infrastructure. In short the space needed per capita has grown probably must faster than the densification process as a result of urbanisation. And the densification is actually moving away from creative density.

Density of emptiness

This is a peculiar situation. Density statistics on the scale of the whole country show that we live in one of the most densely populated countries in the world, equal to Japan. But our relatively small cities are not among the densest at all. So apparently our country is like one big city with medium density. As a result it is not so clear how we define what is urban and what is not. "Urban" has become a unique network of urbanisations in a permanent state of change (KK04).

We are constantly fighting for space in this country, but why? There seems to be plenty of space. The Netherlands did not have the sort of explosive urban developments like London, Paris or Berlin did in the 19th century. Its urban network developed in the 17th and expanded it in the 20th century, during which time society was transforming from an industrial to a service-based economy. At this point ideas about urban planning had changed completely from the 19th century. Modernism had replaced all previous approaches.

In our profession the issue of density became apparent some ten years ago, everyone was talking and writing about density, but without being very precise. I did not understand why we were considering densification when Dutch cities are still so empty. Whether you are in Rotterdam or Amsterdam it is always quiet on the streets. When you compare it to a real metropolis our density is nothing. What we are doing is developing a density of projects that are either super-spacious or left empty. We are the luxury of building something for every need and then building all the roads in between. We are building huge new hospitals, but the number of people has not increased.

'Striking FSI'

The Rotterdam neighbourhood Zuidwijk consists of 8 quadrants mostly owned by housing corporations. Our architectural practice. Claus and Kaan, were asked by the Vestia corporation to design the transformation of De Burgen quadrant. This large-scale operation was possible because of this concentrated ownership. The municipality and Vestia wanted to demolish 1000 apartments and replace them with a low-rise, but with indoor parking. We developed an interesting concept for the project introducing a collective garden as a tool for diminishing the amount of open public space while at the same time preserving the beautiful green infrastructure of the neighbourhood. At some point I sat down to calculate what was actually happening. The objective was to tear down 1000 homes of 60 square meters each and replace them with 800 homes of 120 square meter and an additional 1200 parking spots. When the original plan was built 50 years ago, 3 to 4 people lived in one house. Now we live with 1.3 people in one house. Where 4000 people once lived, there was now space for 1000. So comparing the original plan to the new plan the density of concrete has increased 2,5 times for 4 times fewer people: the density increased by a factor of 10 just to accommodate our new wealth and lifestyle. We densify to make it emptier (KK05).

Rudy Utyenhaak explains in his book 'Steden vol ruimte' (Cities full of space) that this factor 10 is actually a factor 12, so my calculation is even conservative. Utyenhaak continues that the benefit of increasing density depends on some rules. Because of these rules, mostly related to daylight, there is an optimum block height, which is around 8 to 9 storeys.

So why build high-rises if, as Utyenhaak claims, it is not leading to higher density? And if high-rise is not very sustainable as a typology, why would you do it? Is high-rise a type that reflects our dream of the metropolis or is it an economic necessity? Some people state that no high-rise ever built, was financially sustainable. The problem with Utyenhaak's theory is that it is based on a tabula rasa, it works for extensions and area developments in which large plots of land are available. In an existing city we rarely get the change to build ideal blocks on a black slate. We have to work within the confines of small vacant plots and densify by doing high-rise acupuncture in the city's urban tissue. And surrounding such developments are existing buildings and their inhabitants.

Political climate

During the 20th century with its social-democratic ideology there was a definite belief in 'maakbaarheid' or the ability to mould a better society. Planning and building was a not just an activity to create cities, but also a tool to shape our society. During several decades planning decisions were made at a governmental level on the basis of a long-term ideological vision, while the cities and large housing corporations were responsible for the implementation.

Today we work in a political reality that is dominated by market forces. Urban development is now driven by private initiatives and crazy ideas. This reduces the chances of planners and architects to operate in a sustainable way. We can measure sustainability on the scale of a single building, maybe even on the scale of an area development, but on the wider scale there is a lack of coherence.

The political climate is populist and opportunistic. Long-term visions are lacking and thorough urban master planning is no longer common. This has been replaced by fluffy statements in which ambitions are expressed without doing the proper research and the tools to achieve them are not supplied, leaving responsibility to an unspecified 'market'. Thus fashion and labels rule in planning and architecture.

The issue addressed in this presentation is about densification. The question is if it is an appropriate strategy to meet today's needs in terms of a sustainable urban environment, and whether high-rise can contribute to this. However, we are living now in a society in which the market decides what is good. And the market forces can eschew the balances necessary for sustainability.

The statistics of Rotterdam's city centre tell us that the balance between living and working is off. There are about 60.000 people working in the city centre, and only around 30.000 people living there. In Amsterdam this ratio is more or less 50/50. To compensate the imbalance Rotterdam should build at least 10.000 more dwellings in its city centre, the equivalent of about 2000 residential storeys or 100 towers of 20 storeys high. It is interesting to compare Amsterdam and Rotterdam because Amsterdam chose, quite some time ago, to emphasise medium high buildings rather than high-rise in the city centre. For their urban expansion they built on surrounding islands and took the Amsterdam typology of canals and narrow row house buildings as a reference to achieve higher density. For IJburg a mix of Amsterdam Zuid typology and an Anglo Saxon city grid was used.

Amsterdam is expanding within its own tradition and has a very clear DNA. Rotterdam with its relatively empty and open city centre and a high open-to-closed space ratio chose the high-rise road. Now that we know we can have the same densities in either, we see that it's a choice whether to use high-rise for densification or not that the choice depends on the existing urban tissue and the city's existing cultural climate regarding high-rise (KK06).

The problem with Rotterdam's strategy of high-rise acupuncture is that it cannot draw on traditional knowledge because it is such a new typology for the Netherlands. Its projects tend to be prototypes with all the consequences.

The city's most natural choice is to perform acupuncture, more or less since it is the only way to transform the statistics and reclaim the balance in the inner city. It is also very proud of its image as a young high-rise city.

Mismatch of ambitions and rules

Everything is getting bigger. People get bigger, cars are bigger, televisions are bigger, and homes are getting bigger. It costs more energy to make buildings bigger and to build the infrastructure that connects everything. If the city sprawls mobility soars and we need even more space for infrastructure. If we build higher, more infrastructure goes into the buildings. The bill for this extra cost however cannot be handed over to the government. Intuitively we may feel that the more compact we build, the better. However, in order to implement high-rise in the existing city in a sustainable way, we need more typological knowledge. The ambition must be fuelled by knowledge. Knowledge of urban design and planning on the scale of a normal urban block is readily available, but we are still beginners when it comes to high-rise. Urban planners cannot do this research because it is too architectural, but architects are not doing it either, so the sustainability of high-rise in a Dutch context (i.e. medium density on a medium scale) remains unexplored territory. A lot of research by design is needed to close the knowledge gap (KK07).

On top of that there is a mismatch between the spatial ambitions we have and the rules we create to achieve these ambitions. Rotterdam's high-rise vision defines rules without an awareness of the consequences. Its expressed ambitions do not match its rules and policies. Simply starting ambitions without facilitating their implementation is like sitting in the backseat of a taxi giving directions to the driver without a plan of the city. Some of Rotterdam's projects have not materialised because of this. Yet the building industry cannot wait. Its basic economics that they must continue to pour concrete. So at the end of the day projects are built in the places of least resistance and our sustainable city cannot become reality since the market decided. If the city cannot facilitate the ambition it claims to have it will simply not happen (KK08,09).

The dilemmas of the procedural landscape

The planning procedures we have in place do not match the question of densification and urban transformation. They were made for the development of extensions and large-scale urban area development but they are not useful for the scale of complex urban projects. The usual legal procedures needed to make a project happen are also an opportunity for local city dwellers to slow it down. Urban residents often enjoy what the city has to offer, but they do not realise that its vitality is sustained by the constant renewal of facilities and new projects. All too often locals do not want high-rises in their backyard and they use all the legal tools available to block development. Since politicians always seem to lean towards the vox populi, the broader interests of the general public is underrepresented in these cases. The lack of political backbone causes uncertainties that in turn slow down these projects and are finally never developed because they take too much time.

Only when there is a smooth process with clear objectives and a long-term vision backed by local politics do they stand a chance. In summary, there are at least three reasons why large projects in the city tend to stall: lack of knowledge, long procedures, and political uncertainty (KK10).

Because of the current economic malaise some of these issues have been put aside, but these questions will come back when the economy picks up. The problem with huge projects, like building 100.000m² or more in the city is that they take very long to finish and therefore have to be phased. Potential users will not sign an open-ended contract, not knowing when the delivery date of the project is, so developers must provide clarity to potential users and obtain signed lease contracts to get investors interested. In some Rotterdam projects in fact, the municipality stepped in to guarantee the project for the investor or signed a lease in order to make the project possible (KK11).

The inevitable phasing can lead to breaking the project down further into smaller units of development, such as 20.000 m², which is more or less the size of a small single tower. In the case of a single tower, the indoor parking never fits in the building's footprint. As a result the parking will occur at ground level - the most vital and vulnerable part of the city. Several projects in Rotterdam were built this way.

This and other issues can only be addressed on a scale larger than a single project. If we can simplify the procedures and shorten the development time for the larger projects, there is a chance that people might sign on the dotted line and that we can improve the vitality of our cities (KK12,13).

Need for a high-rise culture

We can use densification in our cities as a tool to better utilise our existing infrastructure, make cities lively places and perhaps slow down unnecessary sprawl. However, there are many real problems that need to be solved at the conceptual stage of large projects. If we want to build high rises our priority should be to generate the required knowledge. At the same time, the issue of sustainability within this typology cannot be addressed by looking at one project in isolation.

The concept of high rise as a typology must be analysed within a broader urban environment. As long as we do not develop a real high-rise culture or agree on what densification really means for the Netherlands, we will not be able to address any real densification issues.