PBL Netherlands Environmental Assessment Agency

THE NEW URBAN AGENDA

Opportunities for inclusive and green urbanisation

Note

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SUMMARY AND FINDINGS

Since 22 October 2016, the day of the third UN-Habitat Conference in Quito, member countries of the United Nations have been signing the New Urban Agenda (UN-Habitat, 2016a). Under the New Urban Agenda, UN countries have commited to undertake efforts in order to make cities the drivers of a sustainable future. Thus, they are recognising the meaning of global urbanisation, as well as the crucial role cities can play in achieving the Sustainable Development Goals (SDGs) of the United Nations (UN, 2015). In the Netherlands, the Ministry of Foreign Affairs is exploring the role that the New Urban Agenda may play in national policy on inclusive and green (ecologically sustainable) growth in developing countries.

More attention needed for the informality of the city

The attention for cities is increasing, and so is the realisation of the importance of having a different perspective on them. A perspective that does justice to what it is that makes a city and how it functions — not only as a place of inspiration, exchange of information and opportunities for social advancement, but also as one that harbours disappointment, conflict and exclusion. The current perspective does not sufficiently consider this complexity, with all its implications. UN-Habitat, for example, points to this fact by stating the inefficient or infeasible legal reforms that reflect the dominance of 'universal' technical considerations, as well as to the fact that foreign best practices are copied without looking at local circumstances or possibilities for effective consideration and adjustments (UN-Habitat, 2016b: 104). Informality —inherently invisible to public governance in both planning and management— plays an important role, here. In developing countries, in certain cases, over half of the urbanisation and the local urban economy takes place under the radar of formal governance (UN-Habitat, 2016b: 139). Informality is directly related to exclusion and marginalisation of vulnerable groups in society. It, indirectly, undermines every attempt to counter damage to and depletion of ecosystems.

Connecting to local developments and interests

At the request of the Inclusive Green Growth programme by the Dutch Ministry of Foreign Affairs, a study was conducted by PBL Netherlands Environmental Assessment Agency into the possible starting points for a development policy that involves cities more closely in addressing social and ecological issues in developing countries. PBL investigated urbanisation in three very different cities in three developing countries with whom the Netherlands is in contact: Ho Chi Minh City in Vietnam, Beira in Mozambique and Barranquilla in Colombia. For each of these cities, PBL studied the interaction between physical urbanisation and local flooding risks and the underlying urban governance. The physical space is believed to tell a story about the underlying mechanisms and processes, in both a spatial and institutional sense. Using morphological research, urban formation was mapped down to the smallest distinguishable geographic scale; that of neighbourhoods and districts within these cities. This scale clearly shows the various tactics, interests and possibilities with respect to the daily users of urban space. It not only provides more insight into the causes of urban water issues, but also points to an approach that would be in keeping with local developments, interests and possibilities. The morphological research shows how much the informal, small-scale urbanisation differs from formal, mostly western-based, large-scale and technology-oriented urbanisation. Informal and formal urbanisation demonstrate entirely different relationships with local ecology and natural infrastructure, as well as with hard infrastructure and the local economy. Because the actors operate independently, they are not weighing the interests between formal and informal urbanisation against each other.

As a result, urbanisation in one location, often, has a negative impact on the development or situation in another location, in an unintended and unplanned way. On balance, circumstances for vulnerable and marginalised groups do not improve or by far less than for the more affluent urban dwellers, who always reside in the formal parts of a city. This is further amplified by the increasing spatial pressure. The least-affluent members of the urban population increasingly depend on dangerous, flood-prone and ecologically vulnerable locations. Local authorities are insufficiently able to prevent this situation, nor are they able to plan and coordinate developments. The possibilities to coordinate or manage developments are lacking, not only on institutional and organisational levels, but particularly also with respect to funding. This situation leads to increased pollution, depleted and overextended natural water systems, and thus to an increase in the risks of water-related problems and disasters — for the most vulnerable groups in society, as well as for the city as a whole.

Spatial interventions are based on the mechanisms of urbanisation

The PBL study shows that every spatial intervention, whether planned or unplanned, is part of multiple-scale spatial dynamics. This turns large-scale interventions, conceived at the drawing board, into risky projects. The complexity of the urban environment is the reason why such projects are seldom realised in the way they were originally designed. Problem-solving compromises often cause them to be also sub-optimal solutions that may even be totally ineffective by the time they are completed, certainly in a highly dynamic environment. These findings are in line with the long-established criticism of modernistic urbanisation being focused too much on the question of 'what' (what is the problem and what should therefore be done?). Answering the question of 'how' (how could changes and improvements be achieved?) should be at least as important. Using an approach that is based on the process and the various mechanisms of urbanisation rather than on their desired outcomes would provide opportunities for answering this 'how' question. In doing so, it would be crucially important to align with informal practices instead of ignoring them. In order for this to be effective, investments are necessary to generate and use local, planned and unplanned processes of urbanisation. The primary target audience for this new urban knowledge is not the ministry or the science community, but consists of the parties that are collaborating on local improvements, both in the Netherlands and in the project region. This knowledge is best gathered from activities and through learning by doing, in collaboration projects of Dutch knowledge institutes, companies and NGOs, together with local key stakeholders in local urbanisation.

Research by Design offers opportunities for urbanisation within deltas

Dutch stakeholders could 'make the difference', when choosing an approach in which they combine their knowledge about the water system with local knowledge and practices. The effectiveness of their contribution is not necessarily related to the quality and content of their extensive knowledge about water/water management or spatial planning, but rather to the way in which they apply this knowledge to achieve sustainable improvements that include local circumstances. One promising approach is that which uses the 'research-by-design' method. In essence, research by design is a method that integrates research, design and governance. *Research*, in these cases, represents spatial analysis, sometimes supported by model results, GIS data and future scenarios. *Design* stands for solutions to a certain problem, and the governance aspect makes the connection to local interests. The research-by-design method can be used by researchers, local experts and stakeholders for jointly working towards practical, implementable design solutions. Dutch knowledge institutes have developed practical methods and instruments for such participative research; an example of such an instrument is the *Delta Envisioning Support System* (DENVIS) (Meyer et al., 2015). Insights reached in the PBL study can be applied to further develop and attune this instrument to urbanisation in deltas in developing countries. These insights centre around the attention for the various levels of scale between a delta's ecology, the natural and hard infrastructure, the formal and informal use of urban space, and the local economy.

The New Urban Agenda: encouragement to continue along the current path

The Ministry of Foreign Affairs may regard the New Urban Agenda as encouragement to proceed on its course of collaboration and capacity building, involving local parties and promoting the exchange of knowledge via already existing 'learning' networks, such as the Delta Coalition, the Delta Alliance and the Human Cities Coalition, and via programmes already implemented, such as by VNG International and Cordaid. The policy may increase the effectiveness and efficiency of networking collaborations by focusing on the way in which collaboration within projects is achieved and related knowledge is obtained and used.

This may concern i) supporting the further development of existing instruments and work methods for participative and designing delta planning, in practice, in cities that are partly or almost completely informal; ii) analysis and evaluation of their application; iii) promoting insights into sharing knowledge about sustainable green urban growth and learning from each other's approaches; and iv) monitoring and assessing local interventions and projects in relation to the SDGs and possibly more specific ambitions for inclusive, green growth within urban deltas in partner countries.

1 Sustainable development and the crucial role of urbanisation

The Dutch Ministry of Foreign Affairs aims to promote a type of economic growth in developing countries that involves a reduction both in environmental pressure and in the number of people living on the fringe of society. The very opposite is happening in many of the developing countries, with economic growth (in some cases rapid growth), involving increased environmental pollution and permanent and sometimes increasing social exclusion and marginalisation of the more vulnerable groups within society (UN-Habitat, 2016a:2).

Over the last decade, the realisation has grown that global urbanisation is playing a crucial role in achieving global economic growth that is more inclusive and greener than current growth (Satterthwaithe, 2014). The figures on urbanisation speak for themselves. The number of people living and working in urban regions is projected to increase from nearly 4 billion in 2014 (which is more than half the current global population) to nearly 6.5 billion by 2050 (making up around two thirds of the projected future global population). In particular, in countries with a still rapidly growing population, urbanisation will play a crucial role. This role is stronger than average in Southeast Asia and parts of Africa. For example, 37% of worldwide urbanisation is projected to occur in only three countries: China, India and Nigeria. In absolute numbers, China is projected to experience an urban growth of around 250 million people, and the urban population in Africa is projected to grow from 400 million in 2014 to 1.2 billion by 2050 (UN DESA, 2014).

Unbridled urban growth leads to numerous social problems. Nearly 900 million people around the world are living in informal communities (UN-Habitat, 2016b: 63). Particularly in Africa, cities are unable to cope with the level of growth. Currently, 62% of the African urban population (i.e. 300 million people), is living in informal settlements, and in all developing countries, this is around 30%. The residents of these informal settlements are the poorest groups in society and live in the must vulnerable places, in terms of natural surroundings and their legal position. The emergence of 'new cities' and the construction of new infrastructure sometimes lead to land grabbing in urban, often largely informal, peripheral areas (Zoomers et al., 2016). At many locations, luxury housing developments are built in these areas, for the new urban middle class. This forces the poorer population groups towards the undeveloped land further away from town. This urbanisation process is partly the reason why most urban regions are becoming less rather than more densely populated (Angel, 2012). Increasingly more land is needed, per person, for living, working and travelling. For municipal authorities, this particularly means continually rising costs for infrastructure and maintenance, which, in turn, often is at the expense of informal communities and their ability to connect to basic facilities such as drinking water supply, sanitation, power and public transportation.

Current urbanisation is not only contributing to persistent social differences and disadvantages. It also increases a dependence on scarce resources and damages local ecosystems. In cities, this is most obvious with respect to water issues — ranging from the availability of clean drinking water to flooding risks. Urban expansion leads to increased water consumption and pollution, and hampers natural watercourses. More concrete paving and stone cover, ground subsidence and climate change cause flooding risks to increase in cities on the coast and near rivers. An earlier PBL study has mapped the developments around urbanisation in coastal areas and estuaries (Ligtvoet et al., 2014). That study shows

that, between 1980 and 2010, 90 million people were affected by flooding, causing 5,000 lives to be lost per year as well as around USD 20 billion in economic losses. On a global level, flooding risks are now in second place where this concerns the risks of humanitarian and economic disasters caused by nature (Ligtvoet et al., 2014).

2 The New Urban Agenda – reason for a new foreign policy?

Worldwide urbanisation changes not only the physical landscape, but also affects governmental and political landscapes, on national and regional levels as well as on a global scale. Demographic growth and economic activities are mostly concentrated in cities, which increases their political and economic power. This power increases even further by cities uniting in networks, such as ICLEI, United Cities and Local Governments (UCLG), Covenant of Mayors, C40, City Alliance and 100 Resilient Cities. In this way, cities have attracted the attention of the international community. The *Sustainable Development Goals* (SDGs), spearheaded by the UN, contain an explicit goal for cities (UN, 2015). The role of cities is also explicitly mentioned by the Intergovernmental Panel on Climate Change (IPCC) (Satterthwaith, 2014). With the recent New Urban Agenda, the meaning of global urbanisation and the role of cities has definitively been acknowledged (UN-Habitat, 2016a). By signing this declaration, at the third UN-Habitat Conference on 22 October 2016 in Quito, the UN member countries unanimously and broadly recognised the importance of sustainable urbanisation and the role played by cities, in this respect.

The Dutch Ministry of Foreign Affairs further explored the meaning of worldwide urbanisation for its own foreign policy. The outlook study showed that urbanisation affected the ministry's scope in a broad sense (Mosel et al., 2016). It is therefore obvious for the New Urban Agenda to be included in national foreign policy, in a way that contributes to the main goals of the policy, such as the SDG climate target. Here, it is important to include the potential of cities to contribute (Mosel et al., 2016). The first aspect that is named in this respect is the concentration of intellectual capital in cities. This capital can be applied to find local, innovative solutions in climate adaptation (Leichenko, 2011). In addition, in contrast to many rural areas, cities have a planning service at their disposal. Despite the fact that this service not always operates in the most optimal way, it can nevertheless be utilised to a certain degree. And, finally, because of their close proximity and relatively direct connections, cities have the possibility to unite a variety of private and public parties in sustainable strategies or projects (Terpstra et al., 2013).

However, exactly how policy could effectively connect to this potential is unclear. It is difficult to include a specific 'urban' policy component that is both concrete and feasible. Cities are divers and extremely complex, in their spatial–physical diversity and dynamics and in the way they function on a political and institutional level — and therefore also in the way they collaborate with urban actors. Even if problems related to regulation and distribution of income have a purely local character, adaptation is often embedded in a complex dynamics between local and national authorities (Shi et al., 2016). Cities are only one scale within a multi-scale landscape, both on a natural and governmental level. Developments on regional, national or international levels all have an impact on policy issues, as well as on the competences available to address these on an urban level (Bulkeley, 2010; Shi et al., 2016). Related to this is the fact that, in many countries, the role of cities is only acknowledged on paper. In practice, those countries do not provide cities with sufficient legal, financial or organisational support towards the large social and environmental problems that they are facing (OECD, 2014; UNEP, 2013; UN-Habitat, 2016a; UN-Habitat, UCLG & LSE Cities, 2016; WBGU, 2016).

The Ministry of Foreign Affairs, therefore, is looking for possibilities to achieve local climate goals via partnerships with the business community, NGOs and research institutes. For example, the Public Private Partnership for Climate Compatible Development in Maputo (Mozambique) shows how companies, cities and local communities are able to collaborate in their approach to climate change. The Dutch business community, specialised in developing and implementing new technologies of climate adaptation and risk reduction, may play an important role in such partnerships (Mosel et al., 2016).

Last year, in the run up to the UN-Habitat conference (October 2016), the Dutch Ministry of Foreign Affairs asked PBL to provide insights into the possible position of the New Urban Agenda in national foreign policy. PBL narrowed this request down to the question of whether and how national foreign policy could contribute to an effective collaboration with cities and urban parties, given the SDGs and the Netherlands' own specific foreign policy priorities. An example here would be the priority to promote inclusive, green growth in regions were water is an issue. To provide insight into the debate on this subject, PBL actively followed the development process of the New Urban Agenda; for example, by participating in meetings of the so-called Policy Units of UN-Habitat. These Policy Units were established by the United Nations in September 2015, to consolidate the scientific knowledge about urbanisation and cities. The resulting knowledge, from more than 200 experts united in these Policy Units, was presented late April 2016 to all UN member countries, during a five-day meeting, held at the United Nations building in New York. In addition, PBL representatives participated in the concluding UN-Habitat3 conference in Quito. In the run up to this conference, they collaborated in the national stakeholder network, the Human Cities Coalition, and the Delta Alliance knowledge network.

3 The importance of a new perspective on cities

The New Urban Agenda indicates that cities have a large role to play in sustainable development. It is also pointed out that cities will only be able to fill this role if there is a change in how we perceive them. A perception that is more in line with how cities develop and how their municipal authorities shape urban governance; namely, in formal and informal networks in connection with local practices and the interests of both citizens and entrepreneurs who operate within local, often experimental projects (UN-Habitat, 2016b: 139). An earlier outlook study conducted at the request of the Ministry of Foreign Affairs already also pointed to the importance of such a paradigm shift (Mosel et al., 2016). It even referred to a lacuna in the research on and knowledge about urban inequality. This lacuna particularly concerns the effect of informal urbanisation, including the informal institutions involved and any bottom-up approaches. Furthermore, there is no knowledge about which type of programme is really effective, or about programme context or type of partnership. Research that would specifically document the effects of projects during the process would be very valuable, according to the authors (Mosel et al., 2016: 53).

Informal, organic urban development can be found in many developing countries, but hardly pays a role in western-style urban planning. Urban planning, particularly in China, India and Africa, consists of large-scale projects and investments that, almost exclusively, are based on modernist urban planning traditions (Kennedy et al., 2011). The inclusive and green growth ambition seems difficult to incorporate. Large-scale and technological urbanisation is often focused on the expansion of automobility, with extensive hard infrastructure and stone cover. This style of construction, in fact, increases ecosystem vulnerability and contributes to the stress on the local environment. This type of formal urbanisation, which is oriented at economic growth and at attracting foreign and domestic private investments, often leads to the suppression and displacement of the most vulnerable groups within society (Kennedy et al., 2011). These groups, increasingly, have to resort to living in unattractive and often risky locations. This phenomenon particularly occurs in coastal regions and deltas, which substantially increases the risk of humanitarian and economic disasters (Ligtvoet et al., 2014; Meyer and Peeters, 2016). Reversing this trend requires more understanding of the role of urbanisation and inclusiveness in creating climate-adaptive cities (Shi et al., 2016; Zoomers et al., 2016).

Connecting to existing technocratic and informal practices, and looking for green and inclusive alternatives within them, is an alternative for traditional urbanisation in many cities in developing countries. For such connections to be effective, insights should first be gained into institutions and mechanisms that generate local urbanisation. This predominately concerns informal processes and the way in which they could be linked to formal processes. For example, interventions may emerge that connect to existing processes and practices and are able to improve them, instead of ignoring their existence and marginalising them. These interventions are related to collaborations between foreign knowledge institutes, companies and NGOs and parties in local key positions. These parties may be in the formal, private or public sectors or be the leaders or representatives of informal settlements and districts.

In order to obtain a first impression of the complexity of urbanisation in partly or completely informal cities — and, thus, to emphasise the importance of a new perspective on cities — PBL set up a study to analyse and describe various extremely local urbanisation processes and related mechanisms. The approach used was tested and further adjusted, and subsequently applied to the three strongly differing urbanisation contexts of Ho Chi Minh City (Vietnam), Beira (Mozambique) and Barranquilla (Colombia). These cities differ strongly in

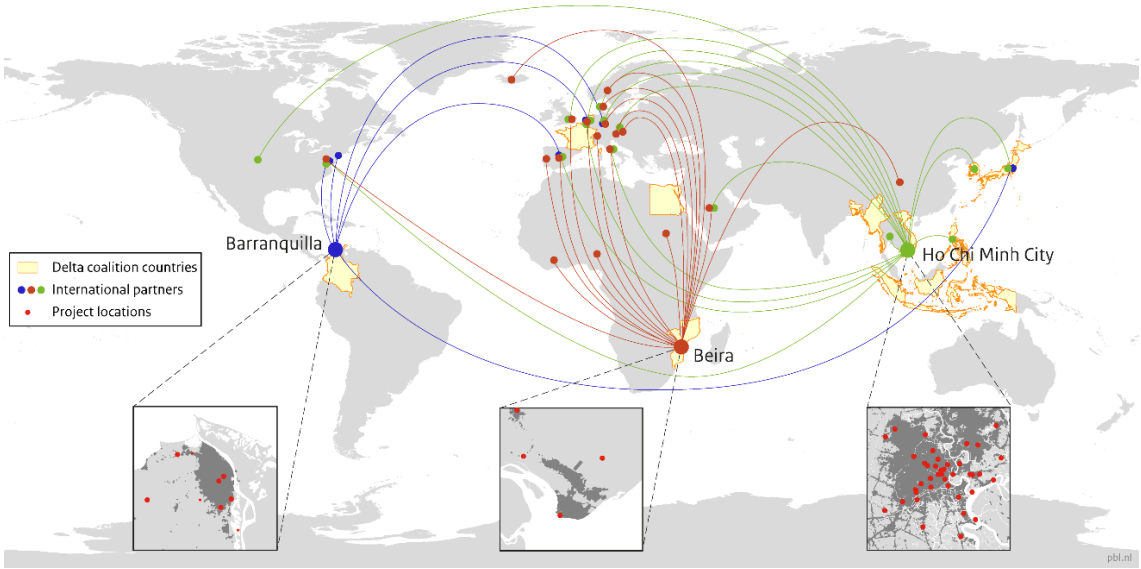
geographic location, planning structure, economic development and pace of urbanisation. What they have in common is their situation near or in estuaries. These cities were chosen because of the priority of Dutch policy for 'Sustainable Urban Deltas'. Moreover, the Netherlands is collaborating with Vietnam, Mozambique and Colombia within the Delta Coalition — a network of delta countries that was established partly at the initiative of the Netherlands (see Text box 3.1).

The approach and the results from the three case studies are extensively described in a study by Bijlsma et al. (2017). The present publication focuses on the knowledge and policy agenda of the Dutch Ministry of Foreign Affairs, using the descriptions from the Bijlsma et al. study. These were compared against insights from the literature and those obtained from participating in various conferences and meetings. PBL uses the case studies as practical examples of the added value of a 'new' approach to cities; showing that it delivers new, valuable insights and that this approach can be applied in practice, by both scientific and practice-oriented parties.

3.1 Three different delta cities: Ho Chi Minh City, Beira and Barranquilla

The three cities — Ho Chi Minh City (Vietnam), Beira (Mozambique) and Barranquilla (Colombia) — are located in Delta Coalition counties. The coalition was formed, in part, at the initiative of the Netherlands and is a network of countries that intend to address delta-related issues and exchange knowledge and experience through collaboration with others. All three cities are within or near estuaries, directly on or relatively near the coast. Their location offers advantages for trade and economic activity, which is why these cities have seen relatively strong development. However, there are also disadvantages, such as the risk of flooding for their low-lying regions, whether from rivers or the sea, or in times of excessive rainfall. The increased urbanisation of the deltas also increases these risks. In addition, sources of clean, fresh water become exhausted and groundwater and surface waters become polluted, in many areas. Various initiatives and projects have been started to address those problems. Often, there are also foreign partners involved, by way of co-financing, advising or organisational support (Figure 3.1).

Figure 3.1
Ho Chi Minh City, Beira en Barranquilla: their international partners and the project locations



There are large demographic and socio-economic differences between Ho Chi Minh City, Beira and Barranquilla. Ho Chi Minh City, the largest city of the three, is growing the most rapidly, in absolute numbers. Between 1990 and 2015, its population increased from 3 to 8 million. Population density increased within city limits from 11,000 inhabitants per square kilometre in 1900, to nearly 15,000 in 2015. Around 14% of its urbanisation is informal. Beira is much smaller with respect to population size, with around 0.6 million inhabitants. In 1990, this was only 0.3 million. Its population density is

remarkably low, with an average 5,000 inhabitants per square kilometre. However, with 66% unplanned urban growth, its degree of informal urbanisation is the largest. Barranquilla grew from 1.3 million inhabitants in 1990, to 2.3 million in 2015. Its population density is high, with 17,000 inhabitants per square kilometre, and continues to increase as the city approaches its administrative and natural limits. Most informal construction (around 9%) rapidly becomes formalised, and further urbanisation within city limits will mostly be formal in character.

Ho Chi Minh City and Barranquilla both suffer from river flooding events. However, this problem is larger in Ho Chi Minh City than in Barranquilla, due to the former's large tidal differences. Flooding events in Beira are more destructive and involve more human casualties than in the other two cities, but they are mostly caused by hurricanes. The heavy rainfall during these hurricanes cannot drain away, sufficiently enough, from the swampy built environment. These areas are closed off from the sea by dunes, where the water accumulates after such downpours. The same is true for Barranquilla, where the most serious water problems are not caused by the Magdalena River, but by rainfall. However, *flash flooding* occurs so rarely that it has a far less serious impact on the daily lives of its inhabitants. This in contrast to Ho Chi Minh City, where everyday life is completely determined by the fact that it is located in an open estuary. In both Beira and Ho Chi Minh City, many households are not yet connected to a water supply network. In Ho Chi Minh City, surface water pollution is caused by industrial discharges of contaminants and the flooding of landfill sites, whereas in Beira it is mostly due to waste and a badly functioning sewerage system. In Barranquilla, surface water pollution also plays a large role, but this is mainly caused by the negligence of its inhabitant, as well as by litter.

In Ho Chi Minh City and Beira, in particular, population growth has led to the urbanisation of flood-prone areas, most of which after the year 2000, when the pressure on the urban space became so large that these cities started to expand into lower lying areas. Current formal urbanisation is largely based on western principles and is increasingly pushing out the traditional, culture-specific type of urbanisation. Because the unplanned, informal urbanisation plays a much larger role in Beira than it does in Ho Chi Minh City, the former's water-related risks are mostly concentrated in poor residential areas. And yet, the most segregated city is not Beira but Barranquilla. The explanation for this fact is institutional rather than based on location, as the choice for a particular building site is determined by financial compensation for facilities under a location-specific tax system. Further development of these districts in Barranquilla, therefore, is far less dependent on historical patterns or natural foundation than it is in Beira and Ho Chi Minh City. In Ho Chi Minh City, segregation is relatively limited, although it appears to be on the increase, due to zoning and large-scale project development. Figure 3.2 depicts the urban expansion in Ho Chi Minh City, Beira and Barranquilla, showing the positioning of informal expansions in relation to flood-prone areas.

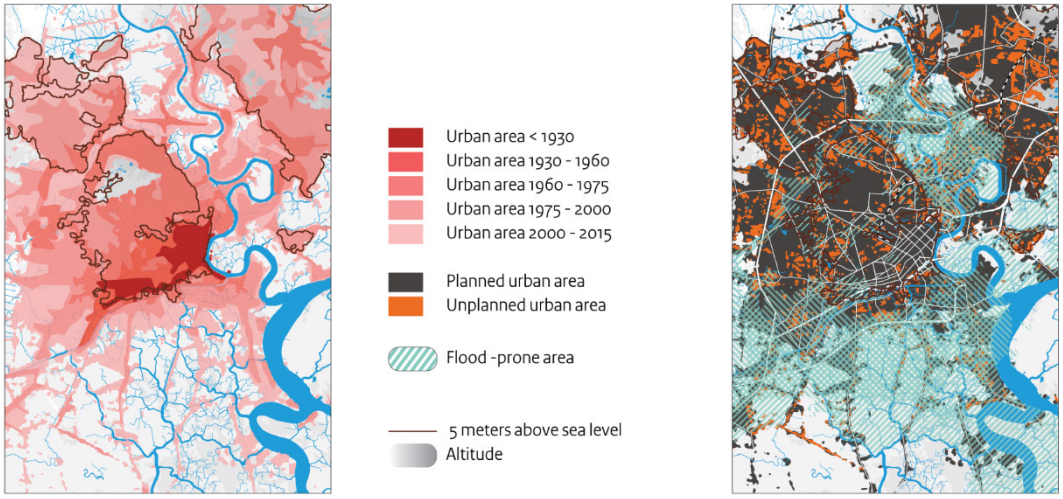
Figure 3.2

Urban development, planned and unplanned urbanisation and water risks

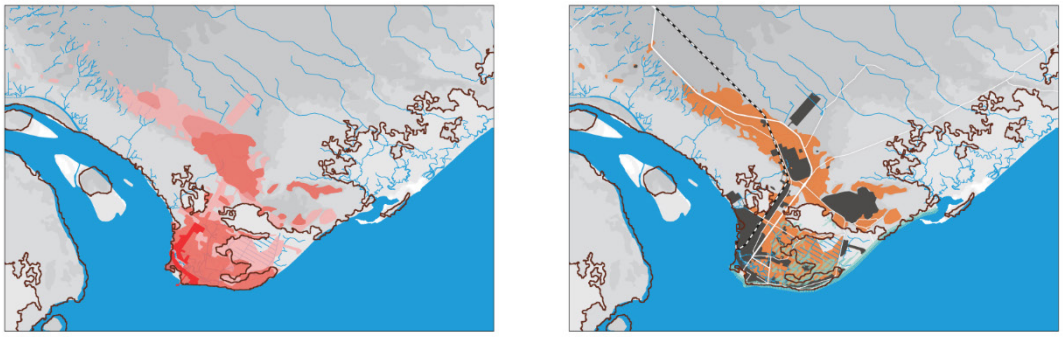
Urban development

planned and unplanned urbanisation and water risks

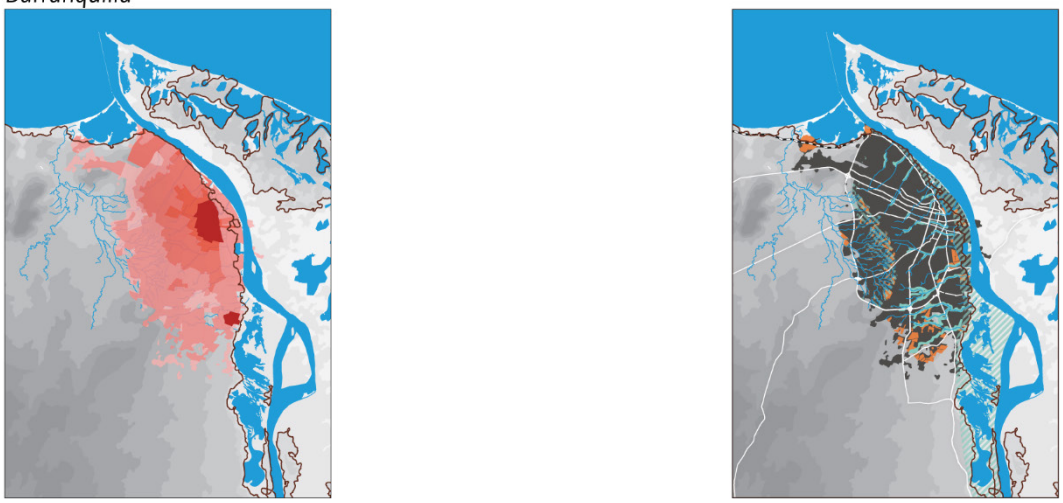
HCMC



Beira



Barranquilla



4 View on urbanisation – three delta cities as test cases for a new approach

Many coastal and delta cities have to content with either too much, too little and/or too polluted water, and these types of issues are on the increase (Ligtvoet et al., 2014). These problems are often attributed to climate change (e.g. sea level rise, higher peaks in precipitation) and to the erosion of the delta system's resilience (i.e. its natural ability to adjust). The emphasis, in the literature, is therefore often on the geographic scale of a delta's catchment area (Mosel et al., 2016). Deltas become urbanised at the expense of agriculture, and are changed by resource mining and the construction of dams built to provide electricity. These interventions cause real changes to a delta's hydrology and ecology. On a city scale, the pressure exerted by nature increases, among other things, due to the spatial constraints on water and by flood-prone areas becoming urbanised (Meyer and Nijhuis, 2013). However, to date, there has not been a great deal of attention for the underlying spatial processes. This has created a lack of insight into how urban dynamics could be used to address the various water-related issues.

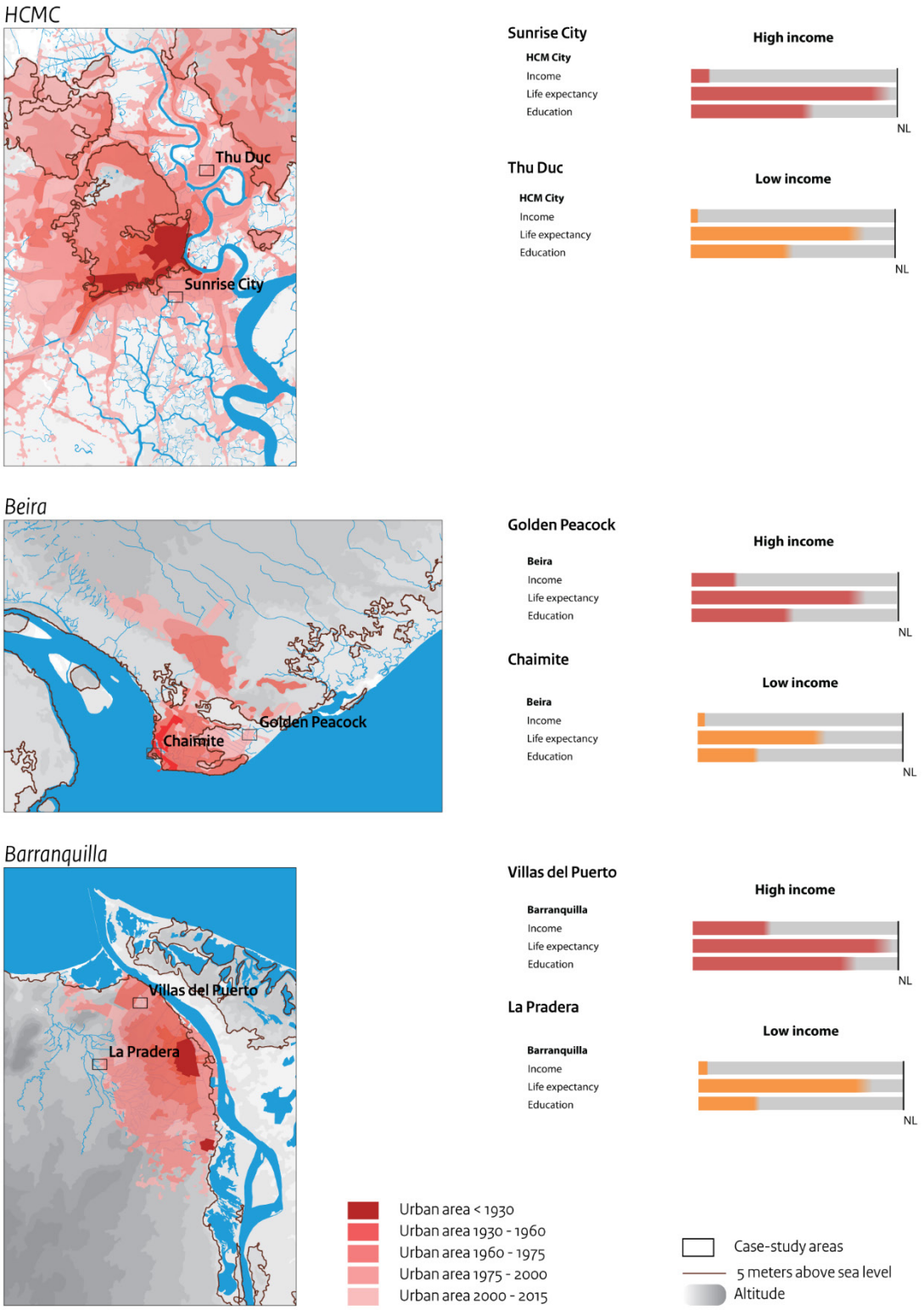
PBL studied the urbanisation in Ho Chi Minh City, Beira and Barranquilla by describing and analysing spatial processes, in great detail. The underlying factors that influence and shape these processes were also included in the analyses. The layered approach, commonly used in the Netherlands, was attuned to the urban situation in which informal and natural infrastructure play an important part. Relationships with the subterrean, hard and natural infrastructure, the diverse urbanisation and local economy were identified, wherever possible (Text box 4.1). In order to award broader meaning to all this, PBL mapped urban spatial developments over the past half century, including the water-related risks involved. Furthermore, it also conducted a general institutional analysis to map local formal and informal governance abilities.

4.1 Urbanisation in vulnerable areas: analysis of formal and informal processes of urbanisation

To provide insight into the various processes of urbanisation in developing countries, PBL studied the changes within the physical urban environment and their underlying mechanisms, in great detail. The study focuses on two areas per city, in Ho Chi Minh City, Beira and Barranquilla; one formal, planned district and one unplanned, largely informal district. All of these districts were established in vulnerable areas, over the 2000–2015 period. Water plays a role in each of the districts, with risks being related to either too much or not enough water, or to being too polluted. The districts involved are Thu Duc (unplanned) and Sunrise City (planned) in Ho Chi Minh City, Chaimite (unplanned) and Golden Peacock (planned) in Beira, and La Pradera (unplanned) and Villas del Puerto (planned) in Barranquilla. Figure 4.1 shows the location of the districts within the respective cities and provides an indication of their socio-economic development.

Figure 4.1

Case-study areas and an indication of their socio-economic development

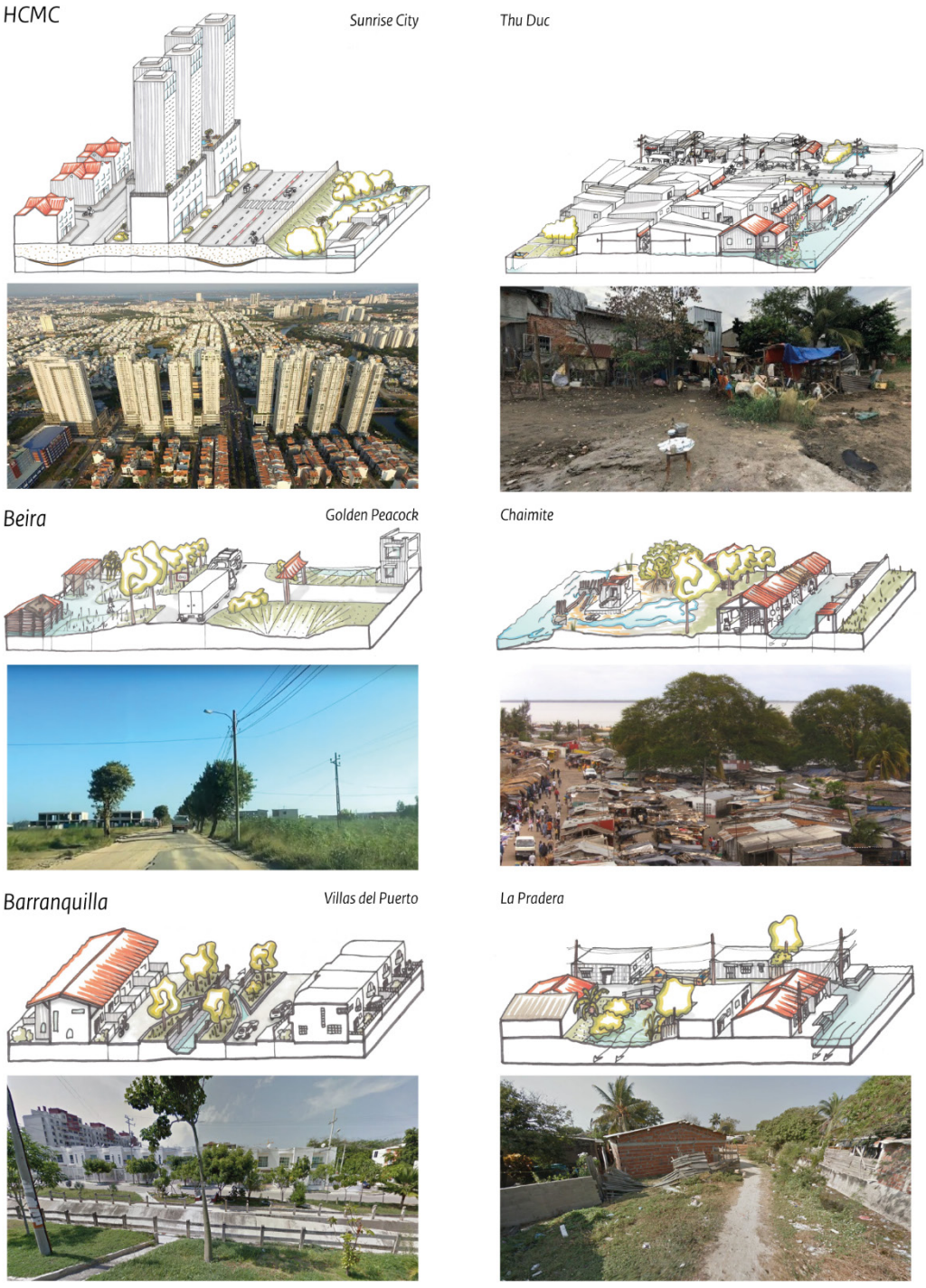


Location and indication of socio-economic development in Thu Duc (unplanned) and Sunrise City (planned) in Ho Chi Minh City, Chaimite (unplanned) and Golden Peacock (planned) in Beira, and La Pradera (unplanned) and Villas del Puerto (planned) in Barranquilla.

Spatial development over time was mapped for each district, followed by a morphological analysis. Satellite images (Google Maps) and surface images (e.g. Google Streetview) were used for the spatial analysis. The morphological analysis provided information about land use and spatial structure. Figure 4.2 contains photographs of the districts and gives an impression of the morphological construction. A cross section of an area that is typical to the particular district shows the subterrean, in combination with the layer of construction above it, in an isometric projection.

Figure 4.2

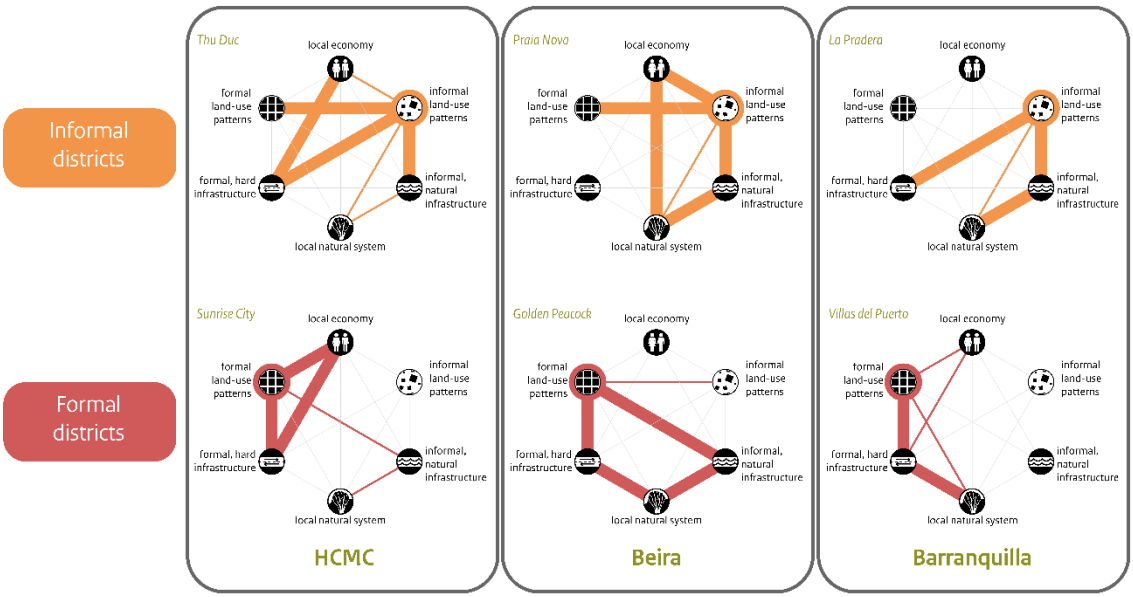
Morphology and impressions of case-study areas



The hexagon model helps to describe local urbanisation. It explicitly focuses on the relationship with the local economy and the interrelationships between subterrean, infrastructure and buildings as well as formal and informal urbanisation. All these relationships are crucially important to the connection with local interests and driving forces, and to incorporate them in collaboration projects. Large differences were found, not only between planned and unplanned urbanisation, but also between the ostensibly comparable districts of the three cities. Interconnecting the elements of the hexagon model on the basis of insights gained from the morphological analysis provides a first impression of the dominant relationships within the formal and informal urbanisation. By 'colouring in' the hexagons for multiple areas and setting them against each other, an image emerges of the coherence and possible transference mechanisms that play a role in restoring the delta's resilience. Figure 4.3 shows the results for the selected districts in Ho Chi Minh City, Beira and Barranquilla.

In all cases, formal urbanisation was found to connect to hard, formal infrastructure. In Ho Chi Minh City and Barranquilla, these were uncoupled from the natural subterrean. Informal urban dynamics appeared to always connect to natural infrastructure, such as riverbeds and rural roads. In some instances, there would also be a direct relationship between informal urbanisation and local ecology and economy. This, for example, applies to Chaimite, where commercial activities of the local fishery are interwoven with the district.

Figure 4.3
Hexagon diagram: Schematic of planned and unplanned processes of urban development



Hexagon model: Schematic of planned and unplanned processes of urbanisation in Ho Chi Minh City, Beira and Barranquilla. The thickness of the lines between the corners are a qualitative interpretation of the strength of the relationship between the natural delta system, the planned (formal) infrastructure, and the planned (formal) construction on the one hand, and the unplanned (informal) infrastructure and unplanned (informal) construction, on the other, and their relationship with the local economy.

5 The various faces of urbanisation

The morphological analyses of Ho Chi Minh City, Beira and Barranquilla showed how little coherent the urbanisation in these cities really is. Planned and unplanned expansion occurs in numerous locations and directly adjacent to each other, but each with its own and very different logic. They follow different development processes with their own, characteristic institutional mechanisms.

Formal urbanisation —apart from in Beira— mostly occurs according to projects and concerns an often partial and uncoordinated transition from natural to artificial water systems. Formal urbanisation occurs on replenished or elevated and levelled pieces of land, according to a method of parcellation that is unrelated to the natural or agricultural subterrean. Formal urbanisation is oriented to the location of motorways and is part of local policy strategy. It takes place via technical interventions according to modelled generic planning and construction systems with a hard impact on watercourse and subterrean, with often far-reaching systemic consequences. This causes new or further disruptions to the natural system and deflects water problems onto other, lower lying city areas.

Informal urbanisation, in contrast, is an incremental process that leads to gradual densification of existing structures. This type of urbanisation often takes the place of greenery, in riparian areas and near waterways. For their economic survival, these DIY builders stay close to formal structures. Informal urbanisation emerges from the habitation tactics of local communities, which, in some cases, are strongly interwoven in local natural systems and the local economy. In other cases, this interwovenness is less strong, the daily urban system, the area covering the daily sphere of influence of inhabitants covers the entire city. Informal urbanisation often consists of temporary construction and structures that have a less permanent impact. Examples are the houses made of reeds in Beira and the stilt houses in Ho Chi Minh City. Water problems within this urbanisation process are often solved on a local level; for instance, by building on piles or using boats for transportation. In such local interventions, local construction and lifestyles adjust themselves to the natural conditions. Buildings are improved over the course of time, reeds are replaced by bricks and multiple stories are added. Ultimately, in most cases, there is a formalisation process, when the government starts to construct public roads and homes are connected to the water supply network.

As formal and informal types of urbanisation develop according to their own logical processes, numerous conflicts emerge within the urban space. This generally concerns the battle over the use of space, between green areas and water storage on the one hand, and informal settlements on the other. The formal development of new blue-green infrastructure, often, results in informal communities being forced to move towards the city's periphery, with all its socio-economic implications. The reverse also happens, with informal urbanisation getting in the way of urban planning that transcends the district level; for example, when reserved green zones are being paved and built on. This occurred in Barranquilla, where informal construction is increasing the risk of landslides, because people build against unstable hillsides, while paving increases the frequency and intensity of flash flooding, which, in turn, increases erosion. Because informal districts have no proper waste disposal facilities, sanitation or clean drinking water, the water becomes polluted. Within this urbanisation process, problems are predominately deflected onto other local areas, but may also contribute to the deterioration of the water system on a larger scale. For example, when waste accumulates in local rivers, and pollution and debris moves downstream, along the riverbeds, or when the water or groundwater supply becomes depleted due to water being siphoned off by individual pumps.

6 The role of urban governance

Formal strategies and informal, incremental practices are constantly in each other's way. Local spatial planning is not offering any solutions, in this respect. This is partly due to the fact that public institutions, such as land registry offices, local spatial planning services, and enforcement services or committees that supervise compliance with procedures, are still relatively new, vulnerable or weak. The institutional study on Ho Chi Minh City, Beira and Barranquilla confirms this image of limited financial, legal and organisational governing capacity. In all cases, local authorities are financially dependent on national government, companies and foreign investors. This dependence is also strongly related to the nature of the problem. In cities with areas of informal urbanisation, there is a separation between the informal management that dominates unplanned, informal districts, and the formal governance of the planned urban districts. Informal management uses local capital and informal institutions, and tries to gain access to formal decision-making through local key figures. Formal governance often is coupled to investments by private investors and/or national government funding. For private investors, it is important that they receive relatively short-term returns on their investment, via real-estate developments or public–private collaboration in infrastructure projects. It must also be noted that there are certain differences between such formal projects.

The study indicated that there is an important distinction between the development of residential and employment locations and the construction or renovation of large infrastructure. Regulation and agreements about participation and environment are generally recognisable in the decision-making about the construction and renovation of infrastructure.

This recognition appears to relate to the financing or co-financing of such infrastructure projects by international organisations, such as the World Bank. This shows the importance of global institutes, such as the World Bank, applying instruments and procedures that promote green and inclusive developments. Here, it must be noted that the implementation of rules, such as ex-ante reviews, cannot fully ensure that a green and inclusive local development within such projects is guaranteed (Otsuki et al., 2016). In addition, enforcement and related sanctions are also important. The decision-making on area development less frequently requires participation and environmental regulation, which is why these subjects are less prominent or less frequently addressed.

The three case studies revealed that these cities are faced with enormous challenges with respect to governance, as they not only need to deal with various local strategies and formal and informal practices, but also with the interests and ambitions of regional and global stakeholders. To address those challenges, cities need the support of national authorities, the private sector and the international community. Without it, cities would have insufficient legal, financial and organisational leverage. This observation can also be found, described in various ways, in the New Urban Agenda (UN-Habitat, 2016a: 16–20).

A governance approach that meets the need for knowledge about the local situation, and is able to manage the limited leverage and widely varying local cultures, does not focus on the 'end result', such as in the form of the construction of a port, dyke, or infrastructure. Instead, it considers concrete spatial planning and development projects as a means of increasing local governance capacity (capacity building). In such processes, local parties are responsible for local practical knowledge and the connection to local perceptions, interests and initiatives. Dutch parties may contribute integral knowledge about water systems as well as more technical knowledge, also about spatial planning and urbanisation. Together with

other knowledge partners, they could also identify connections to other policy tasks that perhaps would not be immediately obvious to local parties; for example, with respect to the dependence on scarce basic resources and energy and food supply. Such an approach, which has been advocated before, by the Dutch Scientific Council for Government Policy (WRR, 2010), is currently part of the Dutch approach that focuses on capacity building through learning within networks. By the formation of networks that contain knowledge of Dutch businesses, knowledge institutes and local SMOs and applying them in local processes, local parties are able to learn about legal, financial and organisational instruments. In this way, they are able to indicate more clearly, and within their local context, what they need in order to develop this capacity for themselves. In addition, such an approach also offers more opportunity for inclusive developments.

Building collaborations by connecting to local parties and by involving them more on certain issues is not a one-size-fits-all solution to each case. A recent PBL study described how there is an essential difference between the governance culture in various countries, and also between the possibilities for effective governance (Berkhout et al., 2017; Vink, 2017). The analysis of urbanisation processes and their underlying institutional mechanisms, in fact, emphasises this point. It is not possible to set up or define a generic or 'traditional' multilevel governance structure beforehand, for the support of and/or concrete collaboration with cities. A participative approach will have a better chance of success in some countries than in others. Earlier PBL studies on the effectiveness of collaboration between public and private parties led to a critical comment, in this respect, namely with regard to the long payback time and risks of investments in infrastructure. The researchers therefore argue in favour of carefully designed partnerships in which attention is clearly on addressing the risks and responsibilities, and in which the interests of the various partners are explicitly identified, negotiated and coordinated (Bouma and Berkhout, 2015).

7 The New Urban Agenda: stimulating the continuation and enhancement of current policy and practice

At its core, the New Urban Agenda is about the role played by global urbanisation in achieving inclusive and green growth, in all countries of the United Nations. With respect to the Dutch policy priority of Sustainable Urban Deltas, it is important that climate change, flooding events and drought are explicitly identified as threats to urban regions, and that coastal regions and deltas are particularly vulnerable (UN-Habitat, 2016a: 9). Furthermore, urban deltas and coastal areas are mentioned in the New Urban Agenda, in relation to the role they play as suppliers of crucial resources, such as those for transport, food, economic progress and ecosystem services. This is why attention for these areas is particularly important for a global sustainable development (UN-Habitat, 2016a: 11).

The New Urban Agenda supports the policy objectives of the Dutch Ministry of Foreign Affairs. The added value of the New Urban Agenda, however, does not only refer to its objectives. It is possibly even more important for the agenda to call for a new type of approach. It points to the need for a new perspective on the way human settlements are planned, designed, financed, developed, governed and managed (UN-Habitat, 2016a: 1). In order to achieve this, better collaboration is needed between the various parties involved, on various levels of governance and with the recognition of the interests of the various groups inhabiting the city (UN-Habitat, 2016a: 10). Although this approach has not been elaborated in detail, and the New Urban Agenda still awards the leading role to nation states, this does represent an opportunity for the Netherlands. After all, the Netherlands has a long tradition in broad participative collaboration in networks, it has experience in local capacity building, and, with respect to water issues, it has a better than average reputation and access to local parties (Steputtat and Van Voorst, 2016). This type of approach, also known as the 'Dutch Approach', is further supported by the New Urban Agenda and may be improved and applied to urbanisation and urban governance in countries with which the Netherlands would like to enter into collaborations.

The Dutch Approach, essentially, comes down to the creation of alliances, to achieve change in a complex environment, in collaboration with relevant stakeholders and users. Here, *research by design* is key; it combines various perspectives and interests to present a concrete, conceivable physical intervention that can be accepted by all stakeholders. The Dutch Approach regularly leads to solutions that could not be imagined by the participants from their individual perspectives. The best-known examples are those of the Mississippi delta after the major flooding event in New Orleans, in 2005, and in New York after hurricane Sandy, late 2012. In both cases, the Dutch were involved by applying participatory research by design, in order to find a solution to the vulnerable situation in those locations. In New York, the Rebuild by Design competition was organised, initiated by the Presidential Hurricane Sandy Rebuilding Task Force, led by Dutchman Henk Ovink. The notable factor that the winning proposals all had in common is that they were set up around comparable ideas of integrality and multifunctionality, and that they all used the power of natural processes. This is also why they were titled 'building by nature'.

The research-by-design method plays an important role in the Dutch Approach. Essentially, it combines spatial analysis, design and governance. The power of research by design has recently also received a fair amount of attention in the scientific literature, where the emphasis is on the ethical side (particularly, of the application of technology or technocratic solutions), on the importance of understanding the roles of formal and informal institutions and of stakeholder involvement (Taebi et al., 2014). Key element is the recognition of the various values that are involved in spatial interventions — in science also known as *Value Sensitive Design* (Friedman, 1996; Van de Poel, 2013). By identifying, recognising and explicating the various values involved, mutual understanding can be achieved, as well as a collaboration process that includes reflection, learning and capacity building. Research by design does this by working iteratively from a shared problem analysis towards concrete design solutions. The problem analysis has a spatial foundation and may be supported by geographic information and geographic information systems (GIS). The designer, subsequently, proposes a concrete, location-related solution, which is then discussed and tested to uncover its impact and whether it is future-proof. This preferably happens on the basis of various scenarios, using both models and expert judgement.

Subsequently, the design is adjusted and once more subjected to the steps as described above. During this iterative process, it is important that local experts and stakeholders, on equal footing, contribute practical knowledge and experience. In this way, the various values will all be addressed and become integrated into the design. The effectiveness of the input of Dutch expertise will not so much be related to their quality and subject knowledge of water management and water systems — which is extensive and sound — but rather to the way in which this knowledge is presented and applied in order to achieve sustainable improvements that take the local context into account and that are within reach of local stakeholders.

In the past, Dutch knowledge institutes have developed practical methods and instruments for participative research by design, such as the *Delta Envisioning Support System* (DENVIS) (Meyer et al., 2015). The insights gained from this study can be used by PBL to further develop these types of instruments and attune them to the envisaged inclusive and green urbanisation in the deltas in developing countries. The point is that such instruments need to explicitly include the analysis of informal urbanisation processes, and take into account the relationships, on various levels, between a delta's ecology, the natural infrastructure and hard infrastructure, the formal and informal use of urban space, and the local economy. Therefore, the hexagon model could be considered to be used as a template for monitoring and further development of existing research-by-design instruments, such as DENVIS.

The Netherlands could implement the New Urban Agenda by promoting a project-oriented approach aimed to improve the connection to local processes and actors. This could be achieved using a number of complimentary policy actions. In the first place, to actively support the improvement in existing instruments, through collaboration between knowledge institutes in the fields of water management, spatial planning, urban development and planning, as well as universities and aid organisations with knowledge of informal urbanisation in developing countries. In the second place, to promote the application of improved instruments and the related process of methodical and process-oriented learning. Policy can provide direction, in this respect, by making the practical support (i.e. financing) for projects dependent on compliance with those elements. A comparable application of the instruments in multiple practical situations in which informal urbanisation is playing a role, is important, in this respect. A pilot project for an ongoing and well-organised programme could be recommended, to this end, with participation and capacity building as important elements.

An example of such a programme is 'Governance of inclusive green growth in cities' (DEALS) by VNG (Association of Netherlands Municipalities) (VNG, 2017). This five-year programme, supported by the Dutch Ministry of Foreign Affairs, is focused on developing local capacity to contribute to an inclusive, safer, adaptive and sustainable physical environment. In doing so,

VNG is seeking collaboration with seven cities in seven developing countries, taking the Dutch City Deals as an example of a form of governance in which cities (and their stakeholders) collaborate with national governments, on an equal footing (Ministry of the Interior and Kingdom Relations (BZK), Ministry of Economic Affairs (EZ) and the Ministry of Infrastructure and the Environment (IenM), 2015). Another example is that of the urban resilience programmes by Cordaid. These programmes are aimed to strengthen resilience against climate change and natural disasters, using a risk-oriented participative approach. The main elements consist of facilitating the execution of risk analyses in collaboration with slum dwellers, parties from the private sector and administrative authorities. Together, these parties are drafting action plans and developing integrated solutions. Cordaid advocates the inclusion of these plans in local and national policy, as well as plans being financed or co-financed by the national government. Capacity building on both community and local government levels is an explicit part of the operating procedure. Cordaid is currently operating such programmes in Ethiopia, the Philippines, Indonesia, Kenya and Myanmar.

It is further recommended that an independent party be appointed to evaluate (all projects) and monitor the application of research-by-design instruments within such programmes. Evaluation of the application of the instruments will provide insight into the topical, process-oriented and organisational aspects of interventions that have been executed. This will also provide insight into the effectiveness of the instruments in several spatial and, particularly, also governance and cultural contexts. Identifying the comparable situations is important if stakeholders from different cities and countries are to be able to learn from each other. Finally, it would also be desirable for the process and possibilities for effective knowledge exchange to become clear, and for the development of such interventions to be initiated. The obvious way to do so would be that of seeking collaboration with the monitoring process of the *Sustainable Development Goals* (SDGs) and of specific policy objectives.

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