



CITY PLANNING AND NEIGHBORHOOD DESIGN CASE STUDIES

Lessons Learnt from International Experiences



CITY PLANNING AND NEIGHBORHOOD DESIGN CASE STUDIES

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Kuala Lumpur © Flickr/Trey Ratcliff

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INTRODUCTION

CITY WIDE STRATEGIES 2

Casablanca / Medina Errahma, Casablanca City without Slums Programme 4

Chattanooga / Vision 2000 and Revision 2000 12

Kuala Lumpur / Structure Plan 2020 18

Evaluation Matrix 26

PLANNED CITY EXTENTIONS 28

Utrecht / Leidsche Rijn 30

New York / Manhattan 38

Shanghai / Pudong 46

Evaluation Matrix 52

URBAN TRANSFORMATIONS 54

Freiburg / Vauban Sustainable Neighborhood 56

Munich / Central Rail Corridor 66

Newcastle / Honeysuckle Renewal Project 72

Evaluation Matrix 78

NEW TOWNS 80

Almere / Almere 82

Cairo / 6th of October 92

Abu Dhabi / Masdar 98

Evaluation Matrix 104

PUBLIC SPACES 106

Montreal / Underground City 108

Tortosa / Historic Centre Renewal 116

Aguascalientes / Green Line 122

Evaluation Matrix 126

SUMMARY OF FINDINGS





INTRODUCTION

This research report, part of the broader UN-Habitat Future Saudi Cities Programme (FSCP), is presenting a set of international experiences on urban planning. The documented Case Studies seeks to provide inputs that inform the Kingdom of Saudi Arabia (KSA) on planning and implementation strategies, key lessons learnt and urban planning solutions. These case studies have been selected from diverse experiences; problem contexts, and from different geographical contexts.

The report is structured in five main categories, which according to UN-Habitat present specific focus in approaching various urban planning aspects. These categories are:

- City Wide Strategies: This category presents different planning activities and policies elaborated within a city-wide urban context, in order to find solution to one or more challenges that each city is facing. These strategies can be focused in several and different aspects of urban planning, such as: transportation and mobility, hierarchy of centers and growth, urban renewal and extension, land use policies etc. The common denominator for this category is the focus on a city-wide scale of intervention.
- Urban Transformations: Under this category, the case studies analyzed have urban planning interventions that focus on the scale of the district or neighborhood; Greenfields, based on a morphological urban planning approach. And interventions that introduce a new relevant amount of buildable residential land into the city context in order to steer the city development in a determinate direction.
- Planned City Infill: urban renewal and densification plans, which are introducing new uses, activities and densities in former brown field land within the city boundary.
- New towns: “human settlements that were founded at a certain moment in history by an explicit act of will, according to a preceding plan

and aiming to survive as a self-sustaining local community and independent local government, able to play a role in the on going development of the region in which the new town is located” .

- Public spaces projects: planning activities realized on public open space. These can be defined as the public owned space, free and accessible from all citizens. In this wider definition, the public space includes streets and in general all urban spaces open to free social interchange.

It is then containing five in deep analysis, each of them representing a different urban planning category, plus other ten cases that will provide a larger comparative analysis to experiences.

The selection criteria, collaboratively set by the UN-Habitat Headquarters and Riyadh Office, have been based on:

- Key lesson relevance of the planning experience in order to achieve more compact, better integrated, sustainable and resilient city.
- Objectives achievement through implementation process, and implementation process key findings in comparative to similar KSA context.
- Geographic diversity, including projects from OECD countries, Asia and Pacific Region, Latin America and the Caribbean and Arab States and Africa.
- Objective similitudes with Kingdom of Saudi Arabia present challenges.
- Historical framework, trying to prioritize contemporary or recent experiences and planning activities.

The Case Studies document will then provide a set of experiences, exposed and described unifying text format and analysis drawings, in order to facilitate comparisons between projects and plans, and to help extract main key issues, lessons and shortcomings. These comparisons in order to extract main findings have been structured following the proposed urban planning categories.

CITY WIDE STRATEGIES



Bidonville, Casablanca © Flickr/Mhobl

CASABLANCA, MOROCCO

Medina Errahma, Casablanca City Without Slums Programme



Morocco

Coordinates: 33°35'57"N 7°37'12"

GDP: 103,836 M USD.

Area: 38,600 ha.

Gross density: 105 pop/ha (approx.)

Budget: 2,860 M USD.

Medina Errahma Neighbourhood

Coordinates: 33°32'13"N 7°43'33"

Area: 67 ha.

Population: 32,500 possible inhabitants.

Density: 485 pop/ha.

Budget: 32 M USD.

Brief History

1960-1970s Provision of plots for self-constructed housing.

1990s Special programmes to reduce poor housing e.g. the Ministère de l'Habitat programme.

2004 Morocco launches the "Villes sans bidonvilles" programme in 85 cities.

2007 Medina Errahma neighbourhood recasement project starts.

2010 The implementation of the programme results to a reduction of the slum population in the country from 8.2% in 2004 to 3.9%.

2012 The programme is 75% complete, having helped a total of 272,939 dwellings. The state declares 45 cities within the country as cities "without slums".



CONTEXT AND RATIONALE

Since early 20th Century, Moroccan cities and particularly Casablanca experienced years of fast urban demographic growth produced by the massive rural-urban migrations. Just like it is the case with other North-African countries, in Morocco, industrialization and modernization processes were accompanied by huge housing backlogs, producing different “bidonvilles” in many urban areas. This trend continued throughout the century. Morocco attained independence from France in 1956 and as of 1960; the city of Casablanca had an estimated 32,700 barracks and a city total population of 640,000 inhabitants. Different programs have since 1956 been launched with the aim of addressing slum proliferation. In the 1960s and 1970s, the approaches focused on improving “hygienic urban patterns” by providing plots of 8 by 8 metres for auto construction (self-constructed housing) (Carrieres Centrales, 1952). Specifically, the 1970s strategies were aimed at the restructuration in-situ of slums, increasing participation processes and improvement of facilities. In the 1990s, the country witnessed special programs for reducing poor housing conditions in different cities, such as the *Ministere de l’Habitat* programme.

After decades of unresponsive interventions, Morocco officially launched the “Cities without Slums” programme in 2004 (*Villes Sans Bidonvilles*, VsB). This became a national priority, aimed at alleviating urban poverty and urban exclusion in the Moroccan urban context. The programme was structured through a public/private financial arrangement of an estimated 2,860 Million USD (40% public founded), and its objective was to “eradicate slums” in Moroccan cities (around 362,327 dwellings in total) and rehousing of 1.6 million people.

The program was based on:

- City-wide based initiatives;
- Shared responsibilities between the public and private sector; and,
- Social housing intensification towards slum prevention.

The success of the VsB programme draws from lessons learnt from past experiences, in the country:

- Renewal and upgrading model (restructuration), integrating the slums within the rest of urban context through infrastructure development (streets, sanitation, water and electricity supply), land tenure and register implementation.
- Relocation (relogement) of slums people to new social housing
- Rehousing (recasement), providing serviced plots (size changing from 64 to 80 square metres) for assisted auto construction.

Casablanca’s Medina Errahma neighbourhood is one of the most interesting and, at the moment, successful experiences within the “Villes sense bidonville” national programme. Located in the west of the city, 4 kilometres from Casablanca city border, it is an example of housing and infrastructure implementation through a recasement approach, which involves relatively smaller slums and those detached from the wider urban structure. The project was co-financed by the state (by providing loans to slums dwellers and technical assessment, and selling land), by the same slum dwellers (through purchase of land and meeting auto construction costs), as well as private investors (contractors and investing in commercial spaces).

PROCESS AND SOLUTIONS

Medina Errahma housing estate, planned on land with an existing slum, is composed of two sectors of housing estates of 3,000 and 3,500 new dwellings, respectively, in a GF+2 and GF+3 buildings with commerce on ground floor. The project area covers 62 hectares of land.

THE STREET PATTERN

The backbone of the entire new neighbourhood is a 30 metre wide boulevard, the only neighbourhood street that is directly connected to P3014, one of the main axes of connection between centre and the south west territory of Casablanca. The boulevard is flanked by GF+3 open-markets oriented buildings, and constitute the access to the entire neighbourhood street network. The rest of the vehicular urban pattern is composed by blocks, whose dimension is directly dependent of the 7 by 10 meters plot, being the common block around 200 by 110 meters. Two main "special block", located in each sector contain public facilities. Each block has in its interior, a local network of pedestrian streets, organized around a centric common space/square, mainly oriented as a space for parking plots



OPEN SPACES AND FACILITIES

Apart from the 30 meter central boulevard, the rest of the vehicular streets are 20 and 15 meters. This street system is supported, within the block, by a pedestrian oriented pattern of 8 meter width that provides access to all plots. Peripheral streets around the two sectors will enhance neighbourhood mobility and possible further extensions of the same in the future. Some additional squares (around 20 by 50 meters) are located nearby the public facilities and along the main boulevard. A public facilities strip (open areas and sport grounds) is located along P3014 Street, in order to provide service to also other neighbourhoods in the south.

PHASING AND MANAGEMENT

The process of development is based on a government driven mechanism, which involves the participation of slum dwellers (targeted beneficiaries/ inhabitants of the rehousing) and the private sector. The government offers to the slum dwellers the planned and serviced plots of 80 square meters, and an access to a special credit for auto construction of new dwellings.



Medina Errahma / before and after © Google Maps



PROCESS AND SOLUTIONS

Future residents are fully in charge of the building process, with technical support from government technical staff (engineers). Architectural and technical solutions are fixed and established before, and are uniform within the project. A model house has been built as reference for auto construction processes just close to credit offices.

FINANCING THE DEVELOPMENT

The future dwellers have different options to finance their building:

- Full finance, inhabit and own their building,
- Full finance, own and rent portions of the same to third persons (for example commercial ground floor). This aimed to cross-subsidize costs of construction, and also to ease the repayment of credit.
- Partnerships between beneficiaries (offers plot) and private investors (offers construction capital). The private investors are third parties, who finance the building process, and later the ownership of the building is divided between the beneficiary slum dweller and the private investor.

The credit system FOGARIM (Fond de Garantie en Faveur des Populations a Revenus Modestes et Irreguliers), was established in 2003 in order to enable low-income people access loans. The system allows the slum inhabitants to access to a maximum loan of 21,000 USD, with a 20 years payback period, which is calculated at 510 USD per year (or 42 USD per month). The government guarantees the 70% of the total loan amount.

This programme is among the major milestones that Morocco has achieved with regard to addressing slums. The projects have had major results, impacts, and shortcomings alike:

- Despite the ambitious programme of eradicating slums within 85 cities, Morocco has not been fully achieved the target.
- But, the “Ville sans Bidonvilles” programme still represents one of the most prominent efforts to confront the challenge of slums in Africa. It has been also useful to introduce different methodologies of intervention in the Moroccan context, combining the traditional relogement and social housing dwelling building programme with more innovative recasement and renewal oriented processes.
- The programme could be improved if combined with policies to increase the land offer and social housing production, to increase prevention focusing on urban planning strategies, and reforming the public sector to create fully dedicated public agencies to slum prevention and social housing functions.
- Medina Errahma, one of “Ville sans Bidonvilles” most interesting experiences, is today, almost fully complete; an interesting



Medina Errahma / plan



achievement if we consider that it is mainly based on auto construction; led by slum dwellers.

- Although the urban design proposal is not as rich and ambitious, the implementation process that is based on direct participation of beneficiary slum dwellers can be considered a precedent-setting reference for other similar programs in different countries.
- A collateral problem of re-planning the site of the original slum is envisaged in the necessity for some people with lowest

incomes and not able to temporarily relocate, to self-organize and build a temporary shelter during the construction process.

- Another shortcoming aspect can be linked to individual difficulties to access the 20 year loan, especially for the elder cohort of the community.
- A World Bank review of the project in 2006, cited limited institutional capacity to effectively coordinate full implementation of the project.



Construction Site Bidonville © ETH Studio Basel



KEY LESSONS

STRENGTHS:

- From the functional program point of view, having a stock of open market dwellings in the estate along the main boulevard will prevent the neighbourhood from becoming a ghetto; by providing more social mix to the community.
- The recasement process seems to be an interesting option in-situ interventions to slum upgrading/elimination programmes. This stems from the aspects of maintaining the original site for neighbourhood development, re-planning existing slums and relocating slum population to a better urban environment, which in turn helps to strengthen and maintain the social structure of the community; based on already established social equilibria and work relations. Importantly, people are not displaced from their actual neighbourhoods, but only involved in a programme to improve their conditions.
- From a socio-political perspective, that increases community confidence in the project from the very beginning, avoiding mistrusts that are often associated with these kinds of projects.
- The implementation process is also based on the direct participation of the target beneficiaries; slum dwellers, which inculcate a strong sense of responsibility, self-developing, and redefined relations between government and citizens, where the former becomes facilitators of self-development. Participation also increases a sense of belonging, enforcing already existing social relations between inhabitants, and finally strengthening the community structures.
- The introduction of flexible and different types of implementation for the auto construction process management and finance, introducing possible third party actors/investors, facilitates the development process, opening up possibilities of housing improvement for a wider range of slum dwellers. Furthermore, the recasement project in Medina Errahma has

demonstrated approaches to fast construction processes. In some cases it took only three months to build the new buildings, which was catalytic of the desire to own properties by the slum dwellers and land developers.

- Overall, we learn that Recasement and re-planning existing slum sites, combined with self-construction processes is a viable option to address slum issues in urban areas. This is mainly because of the minimal displacements and relocations, reduction of over-reliance on government finances, and inclusion (through participation) of different sectors of the community (not only at the neighbourhood scale) and actors in the project. The self-construction process proves that it can as well be a faster process of executing construction projects, if well executed. At the same time, this process prepares the occupants to the responsibility of implementation and maintenance.

WEAKNESSES:

- The housing estate has only one direct connection to P3014 Street, through the boulevard. That scheme, not only can generate mobility and vehicular access problems in the future, but also reduces substantively, possible



Shantytown Casablanca © Flickr/Magharebla



connections and community relations with other real estate neighbourhoods on the south.

- The open space and playground strip along P3014 on one hand reduces this problem by providing facilities for the different communities and housing estates, but on the other hand, it can also become a barrier for the neighbourhood interactions, considering the possibilities of the commercial ground floors in Madina Errahma.
- The neighbourhood design, based on the classic model of the “block/cluster” repetition, assures a decent amount of public spaces (streets, boulevard, squares) in relation to actual densities, but the in-block organization, based on the 8 meters pedestrian access to plots seem too rigid and not flexible enough for possible further densifications in the future.
- It cannot be underestimated if the costs for temporary relocation will always be affordable to beneficiaries. Therefore, even where self-construction model is adopted, finances

should be mobilised to address the immediate disruptions to households.

- Loaning system need to consider repayment and affordability for various age cohorts to avoid limiting their access by some households such as those headed by the elderly, as witnessed in Madina Errahma.
- In addition, the precondition of household contribution of about 70% risks the exclusion of households in absolute poverty.
- A lot of emphasis on housing units can limit slum upgrading programmes to conceptualising social exclusion as merely a housing problem as witnessed in the Morocco’s national upgrading programme; “Ville sans Bidonvilles”. This can be limited by combining housing with Local economic development projects.
- Displacements and location of housing programmes in cities peripheries tends to worsen other aspects of exclusion such as access to jobs and opportunities.

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Chattanooga Waterfront, Chattanooga © Planphilly.com

CHATTANOOGA, USA

Chattanooga, Vision 2000 and Revision 2000



Tennessee, USA

Coordinates: 35°2'44"N 85°16'2"W

GDP: 269.6 billion USD, 2013 (Tennessee)

Area: 354 sqkm (Chattanooga, 2013)

Population: 173,366 (Chattanooga, 2013)

Density: 471.9 pop/s q. km (Chattanooga, 2013)

Brief History

- 1969** A federal report lists Chattanooga as the most polluted air in the nation.
- 1980** Chattanooga's population declines by more than 10% due to serious socioeconomic challenges, including job layoffs connected to de-industrialization, deteriorating city infrastructure, racial tensions, and social division.
- 1982** A task force, the Mocassin Bend Task Force (MBTF), is appointed by the city to research possible futures for the Mocassin Bend, part of the Chattanooga River. MBTF recommends the creation of a River Park, along the city's 35 kilometer Tennessee River corridor.
- 1983** Chattanooga Venture is created to act as a forum for public participation. The participation process creates Vision 2000, which proposes several initiatives to improve the quality of life in Downtown Chattanooga.
- 1986** Plan for Tennessee River Park Master Plan is finished. The River City Company is founded to implement the recommendations of the MBTF.
- 1989** River City Company Launches Phase 1 of Tennessee River Park Master Plan.
- 1992** Tennessee Aquarium opens. Venture initiates Revision 2000. Again, Venture trains community residents to facilitate 2,600 participants, generating 2,500 ideas that are consolidated into 27 goals and 122 recommendations.
- 1996** First new hotel built in downtown in a decade.



CONTEXT AND RATIONALE

Chattanooga is located where the Tennessee River cuts through Cumberland Plateau, binding the historic city into a compact and beautiful setting. With access to the river, the city's growth was driven by transportation and manufacturing. By 1940, manufacturing accounted for 35% of all jobs and the city was known as the Dynamo of Dixie – a reference to its iron foundries and machine works.

But by 1960s, Chattanooga's successful industry brought serious environmental problems: a derelict waterfront, toxic sites, and air pollution so thick that inhabitants drove with their headlights on during the day. In 1969, the Human Education and Welfare (HEW) report called Chattanooga the "worst polluted city" in the U.S. Chattanooga's problems were to be compounded by de-industrialization. Between 1980 and 1990, the number of inhabitants

employed in manufacturing declined to 29 percent. As a result, the city's population shrank from 131,000 to 119,000 in the 1980s, and the downtown became a ghost town. City leaders understood that without a vision, the city would spiral into an irrevocable decline. Thus the city needed a new foundation for its economy and it built this by facilitating a long-term process based on a combination of strong public-private partnerships, community engagement and transformative projects.



Walnut street bridge © Flickr / Michael

PROCESS AND SOLUTIONS

Planning Approach

Chattanooga demonstrates a good example of a “rust-belt city” that found its development path; back to prosperity, by embracing a major overhaul of its public space through a combination of large and small scale projects, backed by a long-term community based planning system. This was to become known as “the Chattanooga way.” The process was initially started by a local foundation, and continued as a close partnership between local funders and municipalities.

The revitalization processes started when the city created a task force; MBTF, in 1982 that recommended the city to capitalize on its natural asset, the river. MBTF advised to reconnect the city and the river both physically and programmatically by creating Tennessee River Park along a 35 km stretch of waterfront. In 1985, this River Park Master plan was completed and to guide its implementation, the city created the River City Company. Parallel to the riverside development, the city initiated a participation-based approach to formulate a vision for Chattanooga Downtown. In 1983, Chattanooga’s leaders created Chattanooga Venture (CV), a non-governmental organization, to act as a platform for public participation. CV organized a series of public meetings and workshops in which over 1700 citizens participated. The resulting “Vision 2000” comprised 40 consensus goals and detailed 223 projects and initiatives that were to be integrated with the River Park Master Plan. Between 1988 and 1993, Chattanooga took steps to implement the signature projects detailed in Vision 2000 that were to be high-quality additions to the city’s environment. Signature projects were, for example, a Tennessee Aquarium to attract regional visitors, and preserving the Walnut Street Bridge as industrial

heritage.

Chattanooga Venture repeated the same process in 1992, when it initiated ReVision 2000. ReVision 2000 detailed another series of projects based on sustainable principles, including reforestation of urban areas and protection of natural forests, restricting all air pollution creating activities, and clean-up of polluted creeks.

Overall, we derive five major strategies from Vision 2000 and Revision 2000:

1. Integration of economic and community life in a sustainable way.

Chattanooga, for instance, has become known for its sustainable initiatives, such as an electric shuttle bus system and 154 hectare Southside brownfield revitalization.

2. Focus on transformative, doable projects. Such as the large scale projects of Tennessee Aquarium and smaller scale projects that acted as catalyst for community action, and helped build confidence and engagement in the community.

3. Building institutional capacity. An example is the recommendation by community leaders to have changes in government structure, whereby greater representation for neighborhoods would be incorporated as part of Vision 2000. As a result, the city’s charter was revised to strengthen legislative and executive powers.

4. Invest in human capital and employment opportunities.

The service economy demanded higher skill-levels from possible employees. Civic leaders therefore created public education funds to support the underperforming county and city schools.

5. Invest in social capital.

This was, among other things, achieved through the organization of the River Bend Festival that attracts 650,000 attendees, yearly, to the downtown. This has contributed significantly to a

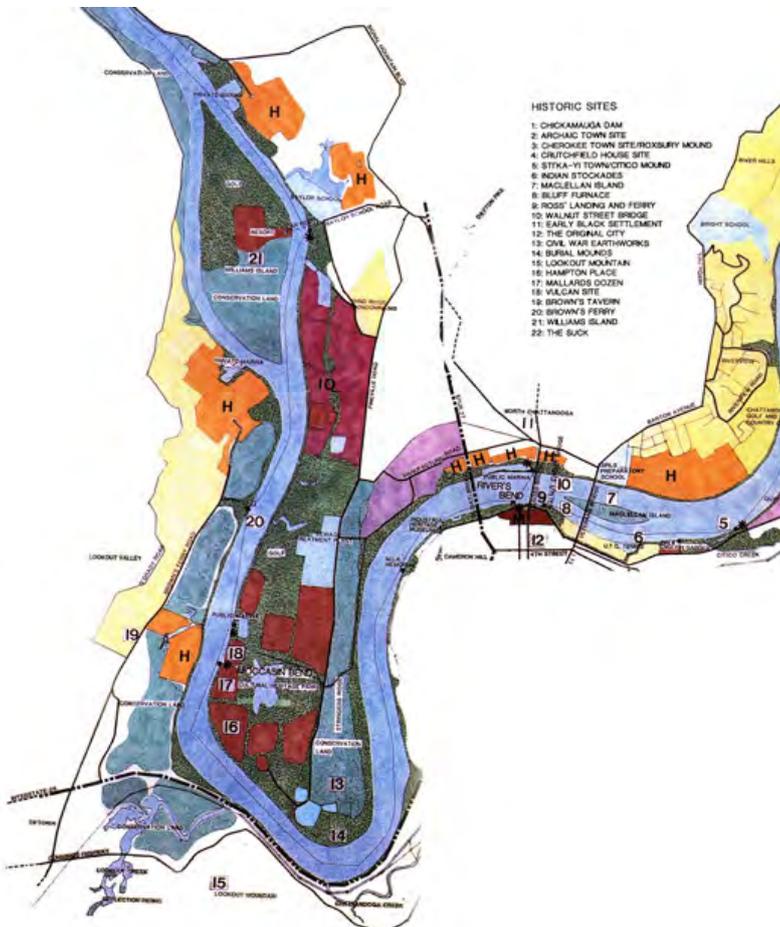


positive image of Chattanooga.

Financing the Development

Private stakeholders financed a significant part of the revitalization, especially the Lyndhurst Foundation that played an important role in creating the Moccasin Bend Task Force. The Tennessee River Park Master Plan was implemented with \$440 million in new investments, 83 percent of which came from private sources. The River City Company, founded to implement the Master Plan, was allocated \$12 million from eight local foundations and seven local financial contributions. The River City Company still exists today and manages some of Chattanooga’s Downtowns key projects. One of the key strategic projects, the Tennessee Aquarium, was fully financed by private sector,

while the plaza around it was funded by the state. For the 21st Century Waterfront plan, the city worked with River City Company and local foundations to secure \$60 million in private and foundation contributions. Another \$60 million was obtained from a debt issued by a redevelopment corporation created by the city.



River City Park Master Plan

RESULTS, IMPACTS AND SHORTCOMINGS

- Chattanooga is the only major U.S. city to lose 10% of its population in the 1980s and then regain the same proportion in the next two decades.
- It is now one of the nation's strongest local economies. The city, once famous for its pollution, is now noted for its sustainable economy.
- The "Chattanooga Way" represents a fundamentally different way of working that is characterized by broad public participation in decision-making, willingness to address difficult issues with bold and creative action, a commitment to a better life for all citizens, respect for the natural environment and a promise to preserve opportunities for future generations.
- As a result, there has been an increase in the amount of tourists by 73 percent between 1995 and 2000. In the vicinity of the Tennessee Aquarium, there had been an increase of from 33 to 128 businesses since the commencement of the project.
- Where at some point only rusting factories existed, now there are green open spaces surrounded by a bustling commercial and residential district. Abandoned warehouses have given way to an eight-mile greenway, the centerpiece of a planned, 75-mile network of greenways and trails.
- More people are deciding to move to downtown because they value proximity to amenities.

KEY LESSONS

Strengths:

- The transformation of Chattanooga is a testament to the success of a long-term commitment to a participatory process.
- Although key projects, like the Tennessee Aquarium played an important role in rebranding the city, a single investment in amenities or infrastructure is no magic devise to turn around an urban economy. But long-term commitment can only be sustained where there this is supported by a strong vision. This vision, supported by strong civic and political leadership, was based on a thorough understanding of the local constraints and natural assets — place matters.

Weaknesses:

- Planned offices outside downtown areas can have a competitive edge against office spaces at the center; resulting to cases of empty spaces at the later. Consequently, continued effort must be put towards creating 'ever-vibrant' downtown areas.
- Chattanooga is now famous for its collaboration between industry and community boards, on finding ways to work in an environmentally-friendly way. However, barriers still remain at federal level, regarding the choice of technologies applications and regulatory relief, as well as the presence of imperfect environmental laws.



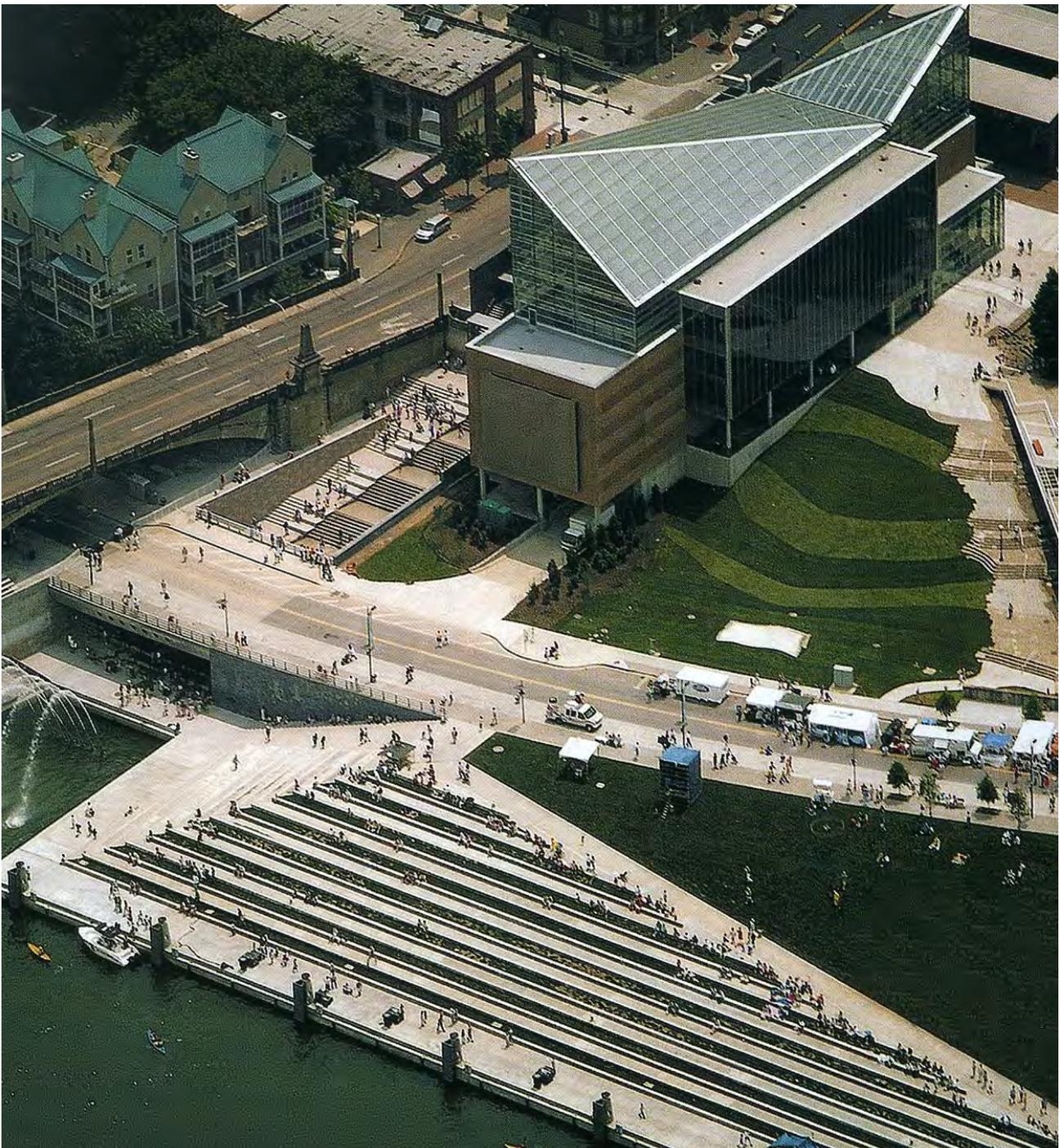
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Chattanooga 21st Century Waterfront Park © Graduate School Urban Studies Hanyang University



Kuala Lumpur from Sentul © Flickr/Sam Gao

KUALA LUMPUR MALAYSIA

Kuala Lumpur Structure Plan 2020



Malaysia

Coordinates: 3°8'51"N 101°41'36"E

GDP: 312.4 billion USD (2013)

Area: 243 km²

Population: 1,627,172 (2010)

Density: 6,891/km²

Brief History

- 1857** Kuala Lumpur was established.
- 1880** Kuala Lumpur made capital of Selangor.
- 1896** Kuala Lumpur made the capital city after incorporation of the Federated Malay States.
- 1957** Malaysia gains independence from British colonial rule.
- 1969** Racial riots in the city triggers suspension of the Malaysian parliament two years until 1971.
- 1972** Kuala Lumpur granted city status.
- 1974** Kuala Lumpur is formally detached from its mother state of Selangor and becomes a Federal Territory.
- 1976** Parliament passes the Town and Country Planning Act 1976 (Act172) for the purpose of providing a legal framework for planning and development control in Peninsular Malaysia.
- 1984** Kuala Lumpur Structure Plan (KLSP)
- 1991** Malaysia Vision 2020 unveiled.
- 2000** Expiry of KLSP of 1984 and process for a new plan begins.
- 2003** 10 March to 9 April 2003-public exhibition of the Draft Kuala Lumpur Structure Plan 2020 (DKLSP 2020).
Report of Public Objection Hearing submitted on 8th December 2003.
- 2004** Minister receives the Public Objection Hearing Committee and Amendment Reports on 4th March 2004 and refers the reports to the Federal territory Planning Advisory board, which recommended modifications to the Minister on 12th August 2004.
The Minister for Federal Territory approves the plan on 12 August 2004 and it's gazetted in the same year.
- 2005** Drafting of Local plan for Kuala Lumpur begins.



CONTEXT AND RATIONALE

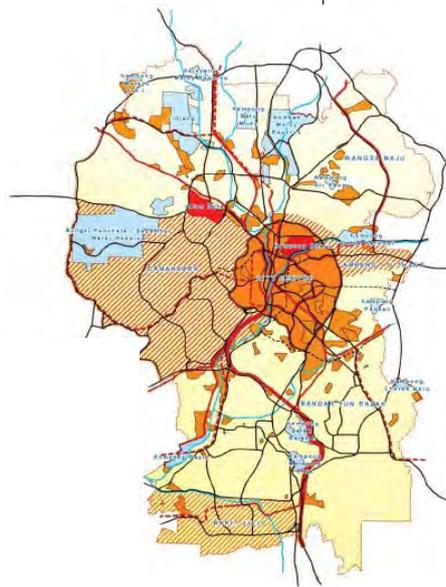
Over the last 20 years, Kuala Lumpur has recorded tremendous transformations. Its growth has, not only played a national and regional role; but has had significant linkages with global events. This has presented the city planners and policy makers with a fundamental task of ensuring that future growth is managed in a manner that it meets the country expectations, and be able rise above urban challenges of the future. The preparation of the Kuala Lumpur

Structure Plan 2020 (KLSP) is, therefore, driven by the desire to capitalize on the recent economic boom and rapid transformations of the city. Some of these transformations were beyond the guidelines of the 1984 structure plan. But, the city managed to implement much of the planned infrastructures; especially railways, roads and key utilities, a foundation that the 2020 plan builds upon.

Proposed and Existing Rail Lines

Development Plan

Green Structure



- Proposed Rail Lines
- ERL Lines
- LRT / PRT Lines
- KTM Commuter Lines
- Multi Modal Interchanges
- Park and Ride Stations
- Rail Stations

- City Centre
- International Zone
- Comprehensive Development Area
- Urban Renewal and Development Area
- Stable Area

- River Corridors
- Rail Corridors
- Open Spaces Forres Reserves

PROCESS AND SOLUTIONS

The development strategies for 2020 are founded on the success of the 1984 structure plan, and they aim to position Kuala Lumpur globally, as a “World-Class City”. During this period, the city’s population is projected to increase from 1.4 million to 2.2 Million. The plan aims to achieve this by focusing on four main aspects: working environment, living environment, business environment and governance.

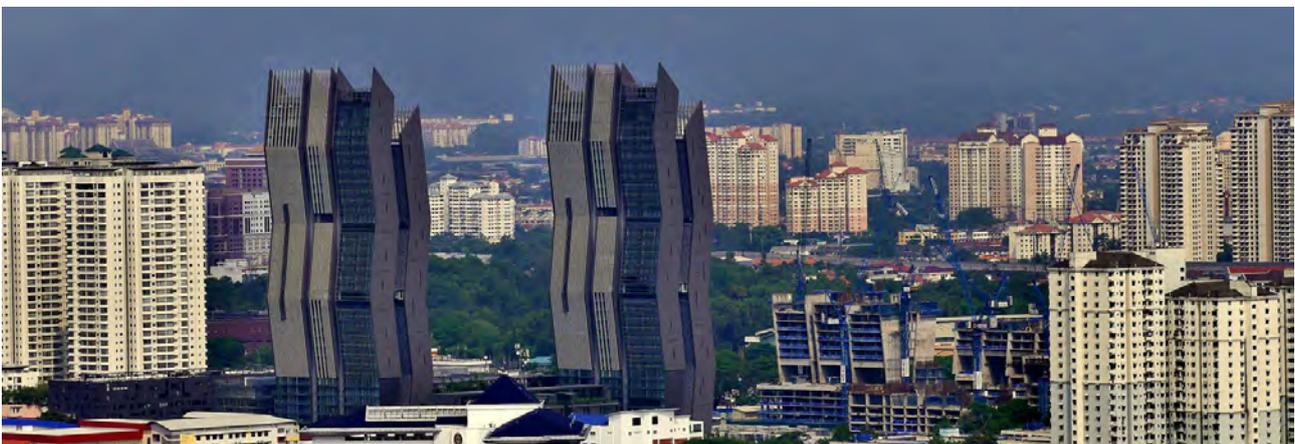
The plan provides the roadmap for the development of Kuala Lumpur over the next 20 years. It addresses the following components: the land use and development strategies, industry, tourism, commerce, economic base and population, housing, infrastructure and utilities, urban design and landscape, community facilities, environment and special areas. Overall the plan provided a structure for formulating comprehensive local plans.

To engage stakeholders, the plan was subjected to a public review process, where a Public Objection Hearing committee was set-up to consider the objections raised. These objections contributed towards modifications of the plan

proposals, and in August 2004, the plan was approved.

The plan was formulated to address the following major goals:

- “To enhance the role of Kuala Lumpur as an international commercial and financial center”
- “To create an efficient and equitable city structure” -the distribution of growth benefits, environmental conservation and equitable infrastructure developments.
- “To enhance the city living environment” - functional, liveable and a city that nurtures a sense of community and belonging.
- “To create a distinctive city identity and image” -built environment that adapts to the local climatic conditions and expresses the culture of the locals.
- “To have an efficient and effective governance” - Adherence to good governance; characteristic of transparency, accountability, effectiveness and efficiency, equity and fairness, and just governance. The plan underscores good governance as the underlying factor to the achievement of the set goals, strategies and



View on Sentul / Comprehensive Planning Area 2020 © Flickr/Geri



policies. This case study report chooses to outline the issues addressed under the land-use and development strategy.

LAND USE AND DEVELOPMENT STRATEGY

The plan reveals that residential land-use is the single largest land-use type in the city, whose overall land coverage increased from 3,822 hectares in 1984 to 5,490 hectares in 2000. But, in the city center, the residential land use decreased in the same period. Also in the Bukit Jalil area, there was slow residential growth. The commercial land-use increased by 116.5% between 1984 and 2000, from 504 hectares to 1,092 hectares, respectively. Similar trends (of increase) were observed in the industrial land-use and open spaces. However, there was a decline in land-use coverage for infrastructure and utilities, and the challenge of squatter settlements still exists in the city, at 2.4 % of the total land-use. Furthermore, the 2020 plan notes that the employment targets of the 1984 plan are not yet achieved. However, the central planning area has faced a decline in residential area but increase in commercial areas. There is also slow growth of new areas, infrastructure and utility developments are imbalanced and generally there has been inadequate integration of land-use planning and transportation.

To address these issues, the plan proposed ten main development strategies that will guide policy in the 20 year period. These strategies aims to achieve a balanced growth, by enhancing hierarchy of centers and their connectivity, and improving the overall living conditions across the city; through providing better infrastructures public spaces, and housing. The strategies will also aim to stimulate economic growth and enhance the city's global position in commerce and finance.

The ten development strategies outlined by the plan are:

- “Enhance the working, living and business environment of the City Centre;
 - Designate and develop International Zones;
 - Designate and implement Comprehensive Development Areas (CDAs) ;
 - Encourage and facilitate the development of Malay Reservation Areas, traditional kampungs and new villages;
 - Initiate and implement the redevelopment of blighted areas;
 - Ensure complete and integrated city linkages;
 - Provide priority and incentives to development in areas around transit terminals;
 - Ensure the functional distribution of centres and facilities;
 - Consolidate the development and enhance the environment of stable areas; and,
 - Consolidate the development and enhance the environment of major entry points.”
- Overall, the above strategies are translated into two main spatial strategies:
- Development Strategy 1: This strategy focuses on the city centre, international zones, areas for comprehensive developments, the blighted and stable areas, Malay reservation areas, and the traditional kampungs and new villages.
 - Development Strategy 2: This strategy guides the distribution of urban centres and facilities, transportation networks; rail and road networks, transit terminal nodes and main city entry points, and also addressed the green networks of the city.

The plan directs detailed planning and urban design to be undertaken to provide deeper focus, by identifying six main Comprehensive Planning Areas (CPAs), namely: the City Centre, Wangsa Maju-Maluri, w, Damansara-Penchala, Bukit Jalil-Seputech, and Bandar Tun Razak-Sungai Besi. These double as Kuala Lumpur's strategic zones for the next 20 years. In undertaking

detailed planning for these zones, the plan directs attention to: densities, diversity of functions and land-uses, transportation and linkages, public and open spaces, urban renewal and reservations, and community facilities.



Wangsa Maju-Maluri / Comprehensive Planning Area © thestar.com

RESULTS, IMPACTS AND SHORTCOMINGS

The plan is expected to leverage the growth opportunities offered by the city for more sustainable urban development, with the aim of making Kuala Lumpur a global model; “world-class city”. Below are some of the specific results, impacts and shortcomings of the plan.

- The government managed to successfully formulate a successive plan based on a previously expired plan, the KLSP 1984 that guided the city’s development until 2000. The 2020 plan will be the foundation for physical development of the city in the next 20 years.
- The plan created six strategic zones for the growth of Kuala Lumpur, an important strategy towards ensuring more balanced growth in the city.
- However, the plan is likely to face coordination issues, within and outside Kuala Lumpur. Nevertheless, the plan has prioritized policy and institutional reforms as key drivers of the implementation.
- Subsequently, the plan intends to

undertake the following to enhance sound governance:

- “Enhance its organizational and management structure and practices;
- Establish a proper legal framework to make enforcement more effective;
- Ensure the sufficiency of funds available for development of programmes and projects; and
- Ensure the optimal efficient and effective utilization and management of all resources.
- Also, the rules and regulations that came before the Federal Territory (planning) Act of 1982 will have to be revised in order to achieve the proposed strategies.
- Furthermore, the continued out-migration of the middle and upper income populations is likely to contribute towards overall economic activities in the city and result to the city’s per capita income.



KEY LESSONS

STRENGTHS:

- 1 Kuala Lumpur's vision for 2020 is evidently anchored on the city's potential in growth and its success in previous planning efforts.
- 2 It is important to acknowledge that long-term plans need reviews as dynamics change with time, and cities need to adapt to changing environments through making plans that accommodate flexibility. As observed with Kuala Lumpur, the current plan acknowledges that some of the current development and transformations were not envisioned by the previous plan (of 1984).
- 3 By establishing strategic zones and promoting connectivity and hierarchy of centres, the plan demonstrates priority to more inclusive and balanced development, which is in fact imperative for sustainable urban development.
- 4 Incentives are vital in attracting private sector investments towards implementation of plans. The KLSP 2020 offers private developers incentives (e.g. provisions for mixed-use developments and high Floor Area Ratios) to develop areas around transit terminals.
- 5 The plan had attempted to balance interests, by addressing local, national and international priorities, which enhances the city's role at different levels.
- 6 The plan promotes mixed use developments, urban renewal, reservations and seeks to enhance walkability and connectivity.
- 7 The plan has clearly identified and analyzed the likely obstacles to its implementation; and consequently it has gone ahead to outline the policy approaches towards the issues. Such include: strengthening institutional coordination and integration of planning functions, embracing public participation, promoting private sector

involvement, enhancing use of information and communication technologies, and enhancing revenue sourcing, including cost reduction measures.

WEAKNESSES:

Although the plan is considered a major achievement for Kuala Lumpur, it has its associated weaknesses that policy makers and planners can draw important lessons from. Such include:

- 1 The urban design elements for the green infrastructures network are seen as aimed at attaining the minimum and not the optimum. Such inadequacies can result to misinterpretation of the guidelines and weaken coordination of various implementation aspects.
- 2 The trend of out-migration arising from high living costs in the core city; without concrete incentives to attract residence in the city may undermine the effectiveness of attaining quality living for the plan's targeted population.
- 3 There are still inadequacies facing the institutional capacity of the various departments and institutions that will have to implement the plan.
- 4 Like many cities in the world, financing the plan may pose various challenges considering the increasing operating expenditure of the city of Kuala Lumpur.
- 5 Lastly, the plan report ought to have improved the number of maps and spatial outputs associated with the guidelines offered.

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CITY WIDE STRATEGIES

Evaluation Matrix

EVALUATIVE MATRIX

Diagnostic and Formulation	Casablanca	Chattanooga	Kuala Lumpur
Name of the Plan/Project	Cities Without Slums Programme & Medina Errahma Project	Tennessee Riverpark Master Plan	Kuala Lumpur Structure Plan 2020
Timeframe	CWS programme:2004-2010 Medina Errahma Project: 2004-today	1982-2000	2000-2020
History of Plans & Projects	Prost Zoning Plan: 1917 Habous Quarter: 1917 Ben M'Sik neighbourhood: 1920 SOCICA workers housing: 1942 Ecochard Zoning Plan: 1951 Ain Chock rehousing project: 1949 Carrieres Centrales social housing: 1952 Le Plateau social housing: 1957 Agence Urbaine Zoning Plan: 1991 Social housing projects in the south: 1975-1985 Dar Lamane social housing: 1983	Tennessee River Park: 1982 Tennessee River Park Master Plan: 1982 (Check!) Vision 2000: 1982 (Check) ReVision 2000: 1992	1857: Kuala Lumpur was established. 1957: Malaysia gains independence from British colonial rule. 1972: Kuala Lumpur granted city status. 1974: Kuala Lumpur is formally detached from its mother state of Selangor and becomes a Federal Territory. 1984: Kuala Lumpur Structure Plan (KLSP) 1991: Malaysia Vision 2020 unveiled. 2000: Expiry of KLSP of 1984 and process for a new plan begins. 2003: public exhibition of the Draft Kuala Lumpur Structure Plan 2020 (DKLSP 2020). 2004: Public Objection Hearing Committee and Amendment Reports to the Federal territory Planning Advisory board, which recommended modifications to the Minister. The Minister for Federal Territory approves the plan. 2005: Drafting of Local plan for Kuala Lumpur begins.
Format	CWS: National programme Medina Errahma: Slum "re-housing" proposal	City wide strategy	City-Wide Strategy
Legal basis	Hautes Directives Royales	-	Federal Territory (Planning) Act 1982 (Act 267)
Vision	UN Millenium Development Goals	Vision 2000 ReVision 2000	Kuala Lumpur-A World-Class City
Objectives	Cities Without Slums Programme: (1) Eradicate slums from all Moroccan cities; Medina Errahma Re-housing project: (1) Housing and infrastructure improvement of a slum not relocating the slum's dwellers in other location; (2) Project co-finance (government funds and private investments); (3) Direct involvement of slum population in project founding and dwelling construction.	(1) Transform the former manufacturing based city through a strong public-private partnership; (2) Increase tourism, commercial and residential quality; (3) reduce pollution and river banks renewal for leisure uses	1) To enhance the role of Kuala Lumpur as an international commercial and financial centre 2) To create an efficient and equitable city structure 3) To enhance the city living environment 4) To create a distinctive city identity and image 5) To have and efficient and effective governance
Led by	Government of Morocco: Ministere de l'Habitat, Ministere de l'Interieur, Ministere de l'Economie et Finance	City of Chattanooga Lyndhurst Foundation	City of Kuala Lumpur
Drafted by	Government of Morocco: Ministere de l'Habitat, Ministere de l'Interieur, Ministere de l'Economie et Finance	Chattanooga Venture Public participative process	City of Kuala Lumpur, in collaboration with other government agencies and supported by the Planning Advisory Board of the Federal Territory, the Public Hearing Committee, and Institute Sultan Iskandar, Universiti Teknologi Malaysia
Discussed with	Community Participation (consultation with beneficiaries)	Over 1,700 citizens participated in Vision 2000 Private Foundations involvement	Public Hearings were conducted during the plan formulation
Revised by	-	-	-
Approved by	Government of Morocco	-	Kuala Lumpur Minister for Federal Territory

Implementation and Monitoring	Casablanca	Chattanooga	Kuala Lumpur
Specific Institutional Set-up	Comite Regional de Coordination Comite Provincial d'Identification et de Mise en Oeuvre	Chattanooga Venture River City Company	City Hall Kuala Lumpur
Specific Financial Arrangements	Fonds de Solidarite Habitat (FSH), created through a new tax on concrete (2002) in order to better support the Programme	River City Company was founded to manage 440 M USD for Tennessee River park Master Plan . 83% of which came from private sources. 21st Century Waterfront Plan was founded 50% with private foundations capitals and 50% with debt issued by a city development corporation	The implementation will rely mainly on government funding, city revenues, and private sector investments e.g. The KLSP 2020 offers private developers incentives (e.g. provisions for mixed-use developments and high Floor Area Ratios) to develop areas around transit terminals.
M&E Mechanisms	Periodic reports	River City Company still exists today and manages some of Chattanooga's Downtowns key projects	City Hall Kuala Lumpur (CHKL) will periodically review the plan and its implementation. The plan directs CHKL to "enhance the effectiveness of the Monitoring and Enforcement Capability"
Uptake by sectoral Plans and lower spatial Plans	City-wide based initiatives Neighbourhood Planning	Strategic Projects in a city wide initiative	The structure plan provided basis for formulation of detailed local plans.
Key Results/Shortcomings	Cities Without Slums Programme: (1) Eradicated slums from 85 Moroccan cities, representing one of the most successful worldwide programmes that challenged slum eradication. Medina Errahma Re-housing project: (1) Successful re-housing project that converted a slum in a new neighbourhood served by good quality infrastructure; (2) Fast implementation process through good public/private founding process and through an in deep participative process that involved future dwellers in all the project steps.	(1) Transformation of the old industrial based city economy in a more commerce and business one (2) Increased tourism activity, commercial and residential quality through specific strategic projects as the Tennessee river banks and abandoned warehouses renewal and the new Aquarium; (3) Pollution reduction; (4) reconversion of the former in crisis manufacture city in one of the nation's strongest local economies	1). The government managed to successfully formulate a successive plan based on a previously expired plan, the KLSP 1984 that guided the city's development until 2000. 2) Kuala Lumpur's vision for 2020 is evidently anchored on the city's potential in growth and its success in previous planning efforts. 3).The plan made efforts to balance interests, by addressing local, national and international priorities, which enhances the city's role at different levels. 4). The plan created six strategic zones for the growth of Kuala Lumpur, an important strategy towards ensuring more balanced growth in the city. 5). However, the plan is likely to face coordination issues, within and outside Kuala Lumpur 6). The rules and regulations that came before the Federal Territory (planning) Act of 1982 will have to be revised in order to achieve the proposed strategies.

Plan/Project basic data	Casablanca	Chattanooga	Kuala Lumpur
Land area	Medina Errahma Re-housing project: 67 ha	354 sq km (City)	243 sq.km
Population	32,500 possible inhabitants	173,366 (City)	1,627,172 (2010)
Density	485 pop/ha	471,9 pop/sq. km (city)	6,891 inhabitants/sq.km
Budget	32 M USD	Tennessee River park Master Plan: 440 M USD (17% public) 21st Century Waterfront Plan: 120 M USD (50% public)	-

PLANNED CITY EXTENTIONS



New housing at Leidsche Rijn, Netherlands © Flickr/Willie Miller

UTRECHT, NETHERLANDS

Leidsche Rijn Neighbourhood



Utrecht, Netherlands

GDP Netherlands: 800.2 billion USD (2013)

Municipality Area: 99.21 km²

Municipality Population: 330,772

Density: 3,507/km²

Leidsche Rijn

Coordinates: 52°05'47.7"N 5°02'41.6"E

Area: 2100 ha

Population: 28,711 (2014)

Population Final Stage: 100,000

Density Current: 13.3 persons/ha

Density Final Stage: 47 p/ha

Brief History

- 1991** VINEX-report, 4th bill of national planning
- 1995** Maxwan Urban Planners commissioned by the city of Utrecht delivered its Master Plan for the district
- 1998** First dwelling built
- 2009** 15.000 dwellings delivered and 24.000 inhabitants live in Leidsche Rijn
- 2014** 28.000 inhabitants live in Leidsche Rijn
- 2015** Planned completion date



CONTEXT AND RATIONALE

In the 90's, the Netherlands was going through social-economic changes. House ownership was increasingly attractive, and resultant suburban developments became a recipe for urban sprawl. To counter this, the national government introduced the concept of 'compact cities', with the 'VINEX-report'. The report fixed sites for future urban extensions close to middle to large-sized cities. An amendment to the 4th national planning bill prescribed the requirements for the construction 1.2 million new homes before 2015. This initiative informed plans to develop Leidsche Rijn as an extension of Utrecht.

With planned 30,000 dwellings, 700,000 m² of offices space and 280 hectares of industrial land, Leidsche Rijn is the largest VINEX development. It comprises approximately 2100 hectare of land and is situated south of the city of Utrecht. Before the redevelopment, Leidsche Rijn was largely pastureland with a rich archeological history. With its central location within Netherlands, Utrecht is a major junction of many of the nation's motorways.

These thoroughfares are detoured around the city centre and until recently, all development and expansion of the city occurred within this motorway ring. Leidsche Rijn, however, was to be built outside this motorway ring. In addition, noise pollution regulations prohibit development of housing within 600 metres from motorways.

The project was specifically designed to meet the following objectives:

- To create housing facilities that could accommodate population growth of the Utrecht Region.
- To create urban development closely linked to city of Utrecht.
- To create urban development that would contribute to Utrecht's goal of becoming a carbon neutral city by 2030.
- To achieve this with a Master plan that is resilient to future changes.



Neighbourhood courtyard parks © Flickr/Hein Lagerweij

PROCESS AND SOLUTIONS

The project of Leidsche Rijn was the result of a national policy, VINEX that proposed to build 1.2 million homes in 20 years: an increase of 20% of the national building stock. These facts posed two challenges for planners and designers. The first challenge was how to plan for a 20-year period; considering that the economic situation for households and demands of inhabitants with regard to living environment would certainly change over 20 years. Meaning, at its best, a Master plan that aimed to fixing streets, typologies, and functions would risk losing relevance in the future. The second challenge was how to delivery a large stock of housing that would that offers diversity and produces neighbourhoods of varied characters. Furthermore, for all VINEX extensions, a deliberate integration with existing urban fabric is emphasised.

Land-use Planning and Spatial Layout

In order to address the above issues, the architects developed a 'growth model', whereby, the district is expected to 'grow' neighbourhood by neighbourhood. The qualities of the neighbourhoods were regulated as follows: in the first stage of planning, the Master plan fixed the large scale operations: placement of infrastructure, placement of the central park, and the designation of industrial and residential areas. In this stage, the plan did not determine a fixed street lay-out. Instead, with an 'index-approach', the architects aimed to guide urban development through seven urban parameters: program, density, distribution, mixing, control, urban edge and public space character.

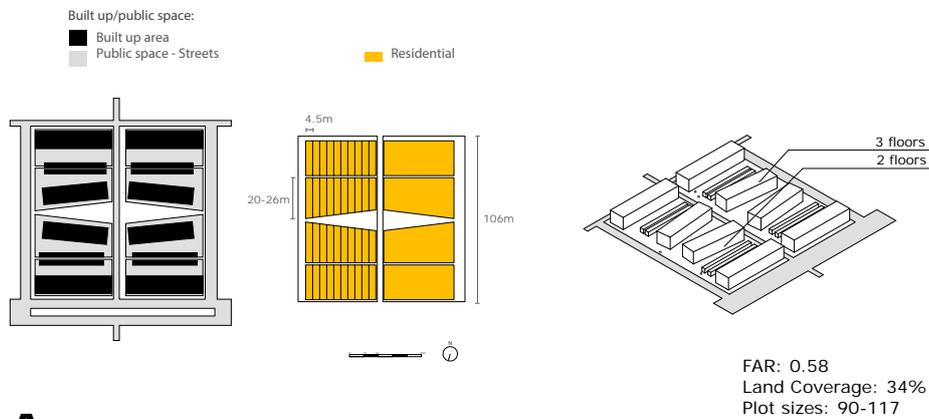




Program determined where housing, parks, offices, mixed areas, shops and services and schools were to be constructed. Density prescribed the number of people expected to occupy a given area, regardless of type of use. Areas close to transit hubs and the commercial area that traverses the central park were planned to accommodate high densities. Distribution pertains to both building typology and public space typology. For example whether there is one villa with open land, several row houses, or one large apartment building. The fifth parameter measured the amount of typology-diversity to be included within a block or a neighbourhood. The amount of regulation or control that the municipality would enforce in areas was also planned. For example, areas that had more restricted funding and were expected to see higher densities would require more control. The result is a great diversity in architecture and types of housing.

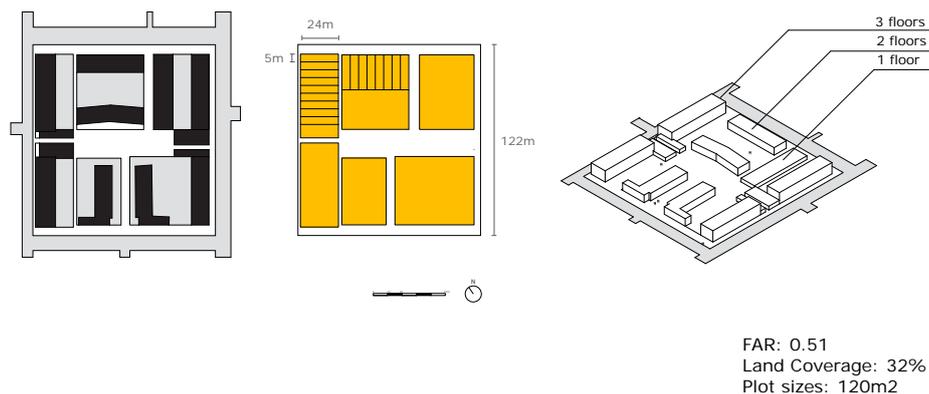
The neighbourhood was designed to offer both rental stock (27%) and housing for purchase (73%). Out of the rental stock; 2,800 single family units and 5,400 apartment units. For the buyers; 3,600 apartment units and 18,200 single family units.

The spatial continuity of Utrecht and Leidsche Rijn extension had to overcome the challenge of separation or fragmentation; posed by the Amsterdam-Rhine Canal and the A2 motorway. A common approach in the Netherlands is to use green spaces as buffers between heavy infrastructure and residential areas; which results to low-quality green areas that have minimal use. As an alternative, Maxwan proposed to encapsulate the road in a 2 km long suppressed tunnel so that the area around the road could be designed as quality living environment. This became a controversial plan; with concerns for safety, by the national government resulting to revisions to the original plan, in 1996.



A

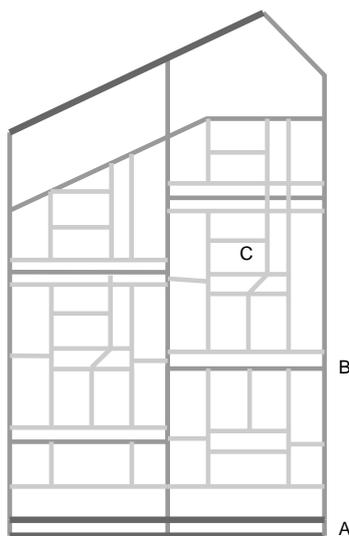
B





Subsequently, it was proposed that the tunnel design will be replaced by a complete above-ground design. The revised plan now accommodated 3 short tunnels of 450 m, 408m and 188m with recreational uses above them. Noise barriers were to be installed close to the tunnel openings to reduce the environmental impact. Another key intervention was to locate a major central park at the centre to suppress potential noise and air pollution, from the surrounding highways and to ensure the park's close proximity to the residences. This design allowed for a more immediate proximity of the new district to the existing city just across the Canal, providing a continuous and compact urban fabric.

To ensure the plan would incorporate qualities already present at the site, local residents were involved from the start. The designers engaged the residents in developing a 'quality map' for the neighbourhood, with priority rendered to locations associated with meaning and aesthetics. However, observing these elements became an additional constraint to the design of the street pattern.



Street hierarchy

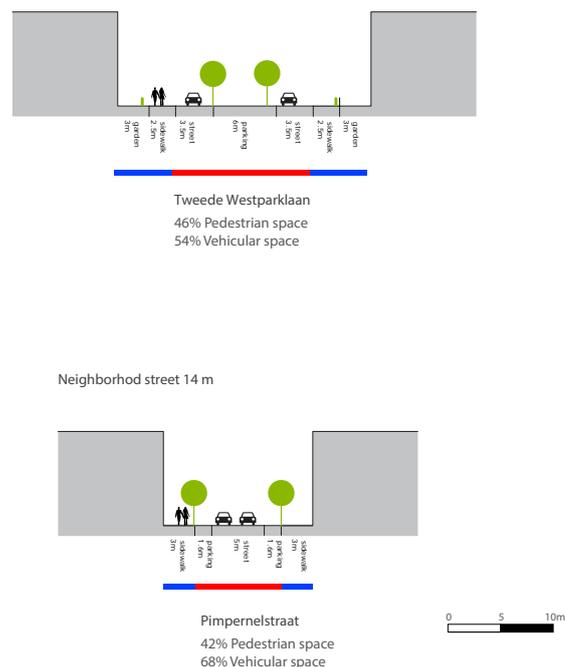
- A: City Street 2x5 m
- B: Neighborhood street 14m
- C: Local path 5m

Street Network and Patterns

The new district is bound by the A2 national motorway and Amsterdam-Rhine Canal to the North and East, respectively. The street layout has different patterns; each neighbourhood has a distinct layout to create distinct neighbourhood characters. The main street structure is formed by two main east-west roads: Vieuatensebaan and Landschapsbaan. In between these roads and the bounding highways, is a network of smaller north-south streets, with low speed traffic and a sense of hierarchy. The area accommodates several types of low-rise, low density dwellings with gardens.

Financing the Development

The total budget for the development of Leidsche Rijn was estimated at USD 4,100 million. Out of this, the municipality of Utrecht did not pay the costs. Investments needed in public spaces, schools and sustainability were paid by house buyers, industrial and commercial investors, project developers and other partners. Sometimes, grants from third parties such as the EU were obtained.





RESULTS, IMPACTS AND SHORTCOMINGS

Leidsche Rijn is among the most successful PCEs in the Netherlands, and generally in Europe. Its planning was successfully completed, which followed the implementation. Thousands of dwellings have been delivered, and inhabitants continue to build the Leidsche Rijn community. Its focus on sustainability is crucial

Outlined below are some of the results, impacts as well as shortcomings of the development:

- In the beginning of 2008, the neighborhood contained 14,000 dwellings and 36,000 inhabitants were living in Leidsche Rijn.
- Leidsche Rijn is being built in accordance with the principles of sustainable construction and significant investments have been made in environmental protection and energy management – such as a rainwater collection system. The goal of this project is to retain the water in the green spaces of the area. In this way less capacity is needed for water management. This also contributes to the sustainability in terms of not shifting problems to other (low lying) areas in the neighborhood.
- The low-energy street lighting and the low-energy demand of the houses will result in savings for both the Municipality and the residents.
- Large areas of Leidsche Rijn are connected to the city's district heating system, thereby achieving a reduction in the demand for expensive fuels and a decrease in the level of carbon emissions.
- A reduction of approximately 30% of Carbon Dioxide (Co2) is foreseen due to the connection of the dwellings at district heating. However, with the growth of Leidsche Rijn, the CO2 production in the area will increase. In the long term, more sustainable sources (biogas, biomass) for the district heating system should be used.
- The parking space for a dwelling is foreseen to be between 1, 45 and 1, 75, and this will depend on the type of dwelling and its location in relation to the public transport system.
- Leidsche Rijn is connected to the old city of Utrecht via several road bridges over the Amsterdam-Rhine canal.
- The ultimate network will not be completed for some years to come; however accessibility is one of the Municipality's spearheads, and consequently the local authorities are making a great deal of effort to provide for these facilities.
- The program is also intended to accommodate 700,000m2 of office spaces and 280 hectares of industrial area.
- However, Leidsche Rijn has faced a number of shortcomings. The very initial ones was the drafting of the first plan, whose ambitious solution to the effect of the A2 motorway had to be revised. Of course this resulted to delays in the completion of the plan.
- Marketing the encapsulation of the motorway as driving concept made the plan very susceptible to regional politics.
- Because of the growth model, the amount neighbourhood amenities were perceived as insufficient by the inhabitants in the early phases of the project.

KEY LESSONS

The planning and development of Leidsche Rijn presents important lessons for cities grappling with challenges of accommodating new growth. It has presents vital lessons with regard on how to approach planned city extensions.

Strengths

- Involving local stakeholders early in the process enables the construction of large scale city extensions with sensitivity for local qualities, which ends-up nurturing a sense of ownership right from the beginning.
- Offering variety of housing is vital in planned city extensions. Learning from Leidsche Rijn, it is notable that the plan had a deliberate effort to mix home ownership and delivery of rental stock for those unable or not willing to purchase housing.
- To enhance sustainability, land-use mix is crucial. Leidsche Rijn approached this by ensuring that spaces for residential, commercial, industrial and recreational are adequately provided to enhance functionality and sustainability of the urban extension.
- Developing an area by use of a 'growth model'; neighbourhood by neighbourhood, allows one to control quality of city extension projects with a large time-span.
- Heavy infrastructure does not have to fragment a city extension and the core city. Instead, innovative design approaches, combined with legislative and political goodwill, alternatives such as investing in the ideal "green infrastructure" to serve as vital linkages, can be realised.
- Financing of planned city extension developments can be realised where governments avail a sound framework and incentives to the private sector. The fact that the Utrecht municipality has managed to develop Leidsche Rijn with little direct investments is recommendable.
- It is important to incorporate imperatives for sustainability during planning and decision of PCEs as witnessed in Leidsche Rijn.

Weaknesses

- Increasing the allocation to low-rise, single-family dwellings, combined with provision for parking tends to undermine successes in enhancing sustainability. This is because this type of typology tends to attract car-dependency. Efficient public transport and provision of Non Motorist Transport infrastructures can however counter this. But this has to be tied with other incentives such as public safety, and planning cities where work and amenities are accessible within short distances.
- Motorways and some geographical features e.g. large water channels and rough terrains can present significant challenges to PCEs. The costs for overcoming these barriers, to enhance connectivity between the PCE and the core are often high.



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Leidsche Rijn housing projects © Flickr/harry_nl



View of the Central Park in Manhattan © Flickr/Al_HikesAZ

NEW YORK, USA

Manhattan



New York, U.S.A

GDP: 14,991,300 M. USD

Area: 4.036 Ha

Population: 1,073,573

Density: 266 p/Ha

FAR: 2.89

Brief History

- 17th.c** Dutch settlement of New Amsterdam
- 1796** Goerck Plan of the Common Lands
- 1807** Establishment of the Street Commission
- 1811** The Commissioners' Plan of 1811
- 1858** Greensward Plan for Central Park, designed by Frederic Law Olmsted and Calvert Vaux
- 1871** The grid is built up to the 155th Street 1863 Plan for Upper Manhattan



THE GRID

The grid of Manhattan extends through the peninsula in a direction that is parallel and perpendicular to the Hudson and East rivers. The orientation of the grid is Northwest-Southeast and Northeast-Southwest.

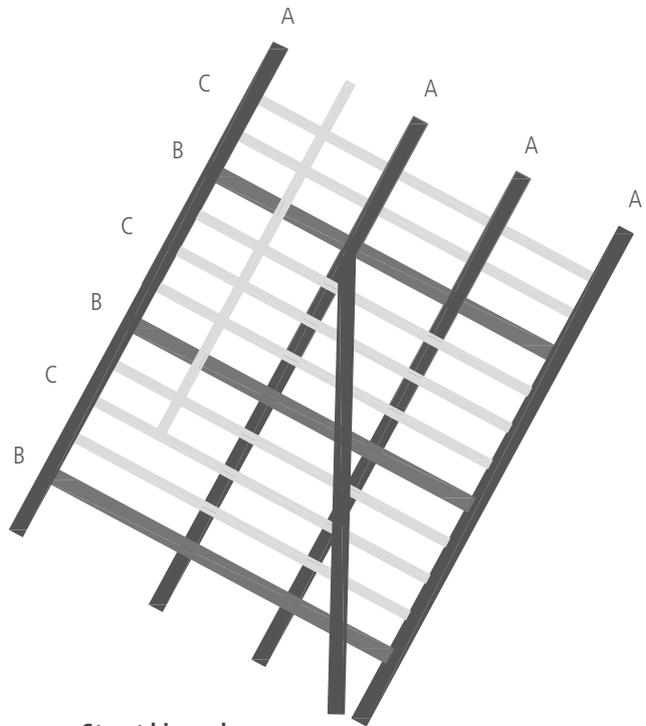
The Commissioners' Plan of 1811 follows in many ways the Goerck Plan of the Common lands of 1796. The Common Lands were the vacant areas of central Manhattan that were granted by the Dutch Provincial Authority to the Government of New Amsterdam in 1656. Originally this area was ignored, but after the Revolution the impoverished city government decided to profit by selling the land. The Goerck Plan divided the area into hundreds of 5-acre lots, separated by N-S roads. The lots would evolve into blocks and the roads into the N-S avenues.

The existing topography was abrupt, 'an island of hills', and it was regraded to accommodate the grid. Although some of the main slopes remain, there was an average increase in elevation of 3m and a decrease of 4m (some areas stayed the same but others were regraded up to 30m). Some of the original topography can be observed today in Central Park. In the Upper West Side, some of the more extreme topographical features were also maintained in parks (Morningside and St. Nicholas Parks) and streets (Convent Av, Morningside drive and St. Nicholas Av.).



THE STREET

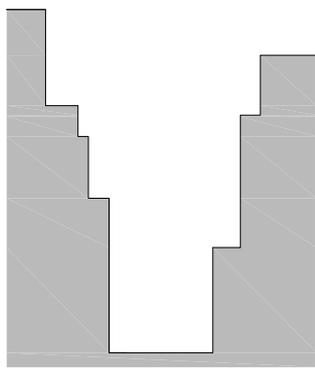
Manhattan's grid has two main factors that create variety: street widths and block dimensions. Although block widths are constant (60m), block lengths vary. The street network considers the territorial and the local scales. The 30m wide, NE-SW Avenues, represent the territorial scale. The 30m wide major cross streets and the 18m wide standard cross streets represent the local scale. Broadway is the exception to the grid.



Street hierarchy

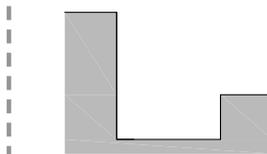
- A: Avenues 30m
- B: Major cross streets 30m
- C: Standard cross streets 18m

Street types



Avenue 30m

33% Pedestrian space
67% Vehicular space
Building height/Street width prop.:
Front plane: 1.5V/1H



Major cross street 30m

40% Pedestrian space
60% Vehicular space
height/width prop.: 1.2V/1H



Standard street 18m

45% Pedestrian space
55% Vehicular space
height/width prop.: 0.75V/1H

— Pedestrian
— Vehicular

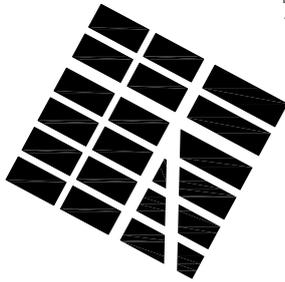


THE BLOCKS

Block width: 60m
 Block length: 280m, 244m,
 189m, 125m, 198m

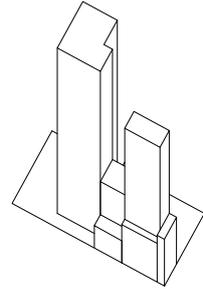
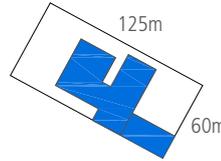
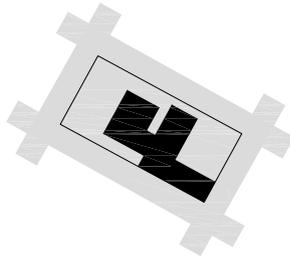
Built up/public space:
 ■ Built up area
 ■ Public space - Streets

Uses:
 ■ Residential, single family
 ■ Residential, multi-family
 ■ Services
 ■ Industry
 - - - GF commercial



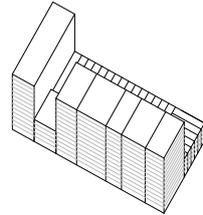
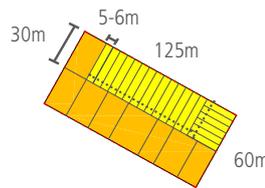
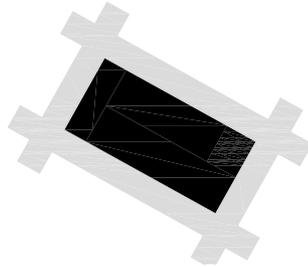
Business block

FAR: 10m²/m²
 Land coverage: 40%
 Average plot size: 7500m²



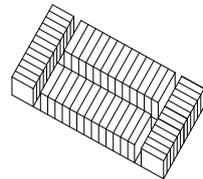
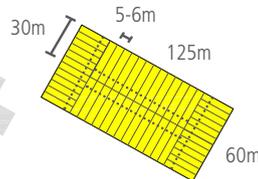
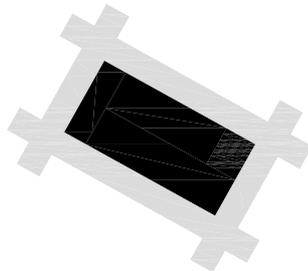
Mixed residential block

FAR: 7m²/m²
 Land coverage: 90%
 Average plot sizes: 150-600m²



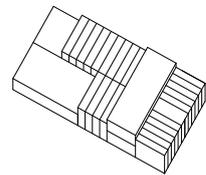
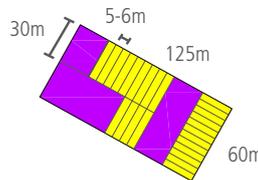
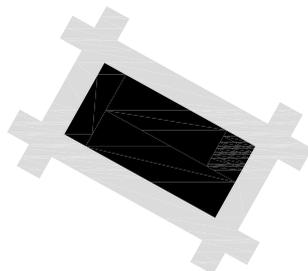
Residential block

FAR: 3.25m²/m²
 Land coverage: 80%
 Average plot size: 150m²



Industrial and residential block

FAR: 3m²/m²
 Land coverage: 90%
 Average plot sizes: 150-1500m²



OPEN SPACES & FACILITIES

The first stage of development (1811-1850s) contemplated smaller open spaces such as small parks and squares which worked at the neighbourhood scale:

- In the initial plan there were several smaller interruptions of the grid, such as the Grand Parade between 23rd Street and 33rd Street, which was the precursor of Madison Square Park, and four squares named Harlem, Hamilton, Bloomingdale and Manhattan.
- Between the 1820s and 1840s public officials and private individuals spearheaded the creation of smaller squares that served as nuclei for new and exclusive neighbourhoods, such as Washington Square, Gramercy Park or Union Square, amongst others.
- The second stage of development (post-1850s) introduced Central Park, a public park of 340Ha that would become the main open space at city scale and was not present in the 1811 Plan. (Land acquisition started in 1853 and the park design competition in 1859 was won by F.L.Olmsted and C.Vaux).



Time Square, New York © Flickr/Stefan Georgi

PHASING AND MANAGEMENT

Manhattan was constructed in four different phases:

Phase 1: Street layout

In this phase the streets were laid out. The existing topography was abrupt and it took a long time to regrade the slopes and lay out the basic lines of the general plan.

Phase 2: Street construction

This was a multistep process managed by the Street Commission: In the first step the city would acquire or trade the lands required for street openings. The 1807 state legislature act defined the street opening system, which enabled the city to trade land destined for streets or other public areas and to compensate the owners financially. Proprietors often contested this system and refused to cede land to the city. This resulted in a subsequent law, passed in 1836, which reinforced the position of the city council. The second step was the assessment of the value of the properties adjacent to the new streets and the calculation of how much the streets would increase the land value of these properties. The land owners of the properties were then charged proportionally to the increase in land value and this surplus was dedicated to the construction of the streets. Only after 1869 was the city permitted to fund half the cost of the street with tax revenue.

The last step was the construction of the street, which comprised the regrading of the surface and street paving.



Phase 3: Plot division

The 1811 Plan did not dictate plot dimensions but the block yielded a modular system (a block was dividable into modules 20-25ft wide and 100ft long, which were the standard dimensions of full block.

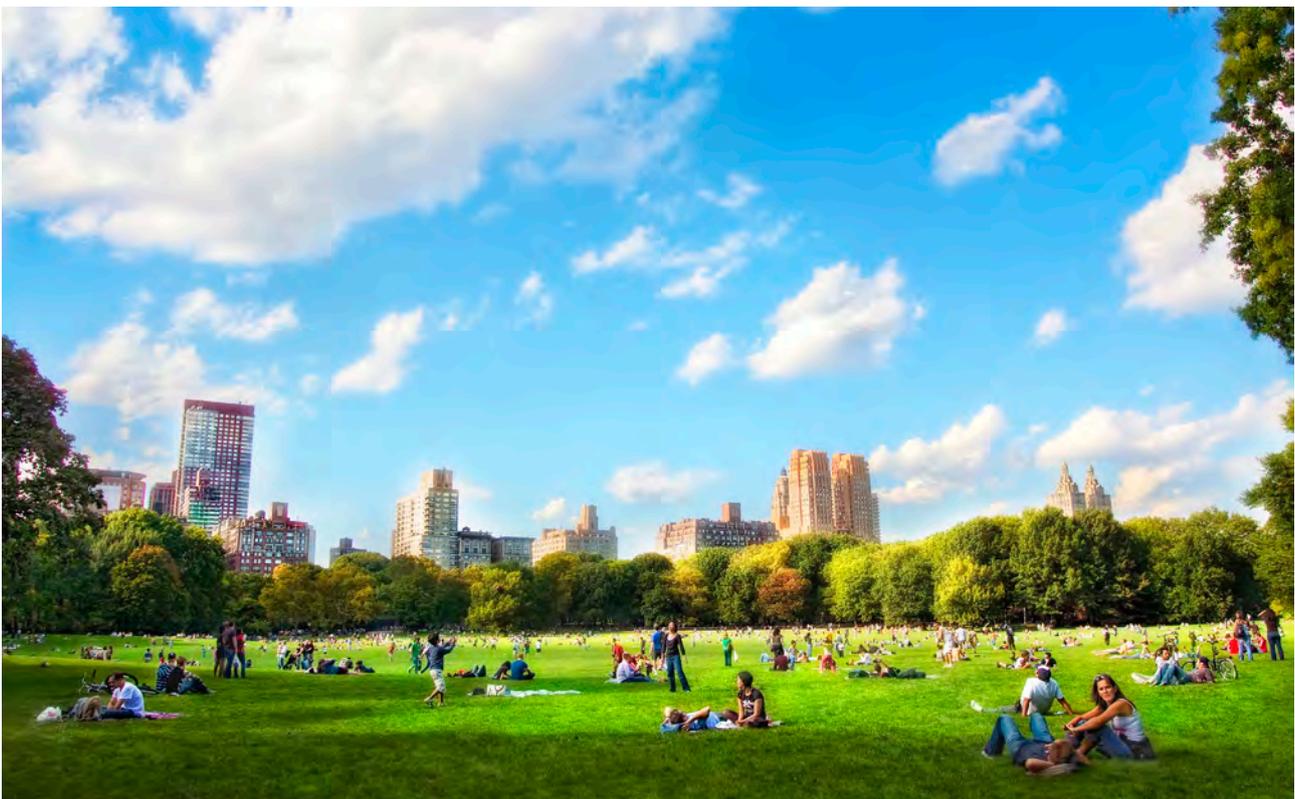
Phase 4: Buildings

Commissioners’ Plan of 1811: Original design plan for the streets of Manhattan, which put in place the grid plan that has defined Manhattan to this day.

Tenement House Act 1901: A series of height restrictions on residential buildings in response to the loss of light and air to the taller residential buildings that had appeared. Among other sanctions, the law required that new buildings be built with outward- facing windows in every room, an open courtyard, proper ventilation systems, indoor toilets and fire safeguards.

Zoning Resolution 1916: Regulation of the height and bulk of buildings, the area of yards, courts and other open spaces. Setback principle and maximum spatial envelope regulation. District use regulations: the districts were classified into three categories: residence, business and unrestricted with use restrictions defined for each one.

Zoning Resolution 1961: It coordinated use and bulk regulations, incorporated parking requirements and emphasized the creation of open space. It introduced incentive zoning by adding a bonus of extra floor space to encourage developers of office buildings and apartment towers to incorporate plazas into their projects.



Central Park, New York © Flickr/Chris Ford

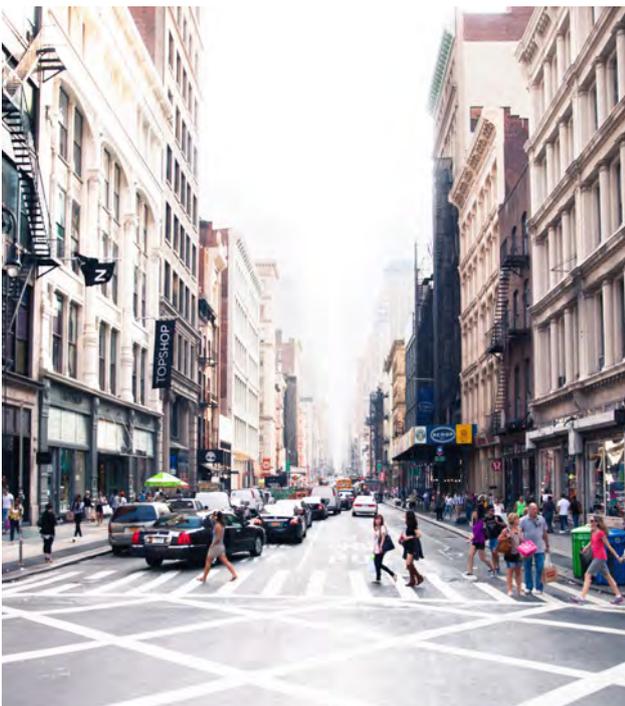
KEY LESSONS

Strengths

- A simple, clear and flexible grid structure, with a limited city extension area defined by the river.
- The grid has proved extremely flexible by accepting many variations to the original 1811 Plan without losing its essence: the introduction of Madison and Lexington Avenues, Broadway, Central Park, the broadening of Park and Lenox Avenues, the introduction of neighbourhood squares and superblocks (Columbia University, United Nations, Grand Central Station, NY Public Library) and soon.
- A global project understood at different scales: city scale and local scale. A street hierarchy composed of a territorial system of avenues and a basic street grid.
- The flexibility of the street pattern was defined by the generosity of the initial street and avenue dimensions.
- A varied grid. The grid contained two elements that generated variety: street widths (with 30m wide avenues,
- 30m wide major cross streets and 18m wide standard cross streets) and block dimensions (always 60m wide and varying lengths diminishing from the centre of the island to the shorelines).
- Although the original plan did not regulate alignments, the pairing of block and plot sizes with common housing typologies ensured maximum land coverage and resulted in street frontage.
- Although the initial plan didn't regulate the image of the city, the city has produced a series of regulations to control the evolution of its image, hygiene and functionality.
- The involvement of the private sector (property owners) in the economic field, through the imposition of charges to cover the cost of street urbanization.

Weaknesses

- Land use zoning that has separated the business and residential districts. Nevertheless the high density and a mix of certain uses (commercial use is spread throughout the city) has diffused this problem.
- As in most North American cities, although the layout plan is rational and organized, the building heights are narchical, resulting in a disorderly urban image where skyscrapers are adjacent to buildings of few floors. As A.E.J Morris explains in *The History of Urban Form* the substitution of the domestic scale buildings of the original city nucleus took place in an urbanistical void after the innovations of building in height and public and private transport had taken place.



Broadway, New York © Flickr/Chris Ford



The Pond at night, Central Park, New York © Flickr/Andrew Mace



The Bund, Shanghai © Flickr/ Jens Schott Knudsen

SHANGHAI, CHINA

Pudong



Shanghai

Yangtze River delta, China

Coordinates: 31 14'N 121 29'E

GDP: 2,160.21 (RMB Billion / USD 516.5 billion in 2013)

Area: 6,340.5 sq.km

Population: 23.9 million (2013)

Density: 3,700 inhabitants/sq.km

Pudong

Area: 1.200 sq km

Popultion: 5.41 million (2014)

GDP Share: 30% of GDP Shanghai

Brief History

- Early 1980s China inaugurates the development of Special Economic Zones.
- 1982 Shanghai Master Plan proposes a multimode urban system to decentralise growing population.
- 1984 Pudong New Area (PNA) is conceptualised.
- 1990 The Central Committee and State Council announces opening up of Pudong, and sets up the Pudong Development Office.
- 1991 The comprehensive Plan of Pudong New District is published.
- 1995 All major projects are finalized.
- 2000 150 sq.miles developed: including 54 million square feet of commercial real estate.
- 2009 State Council approves merger of Nanhui Administrative area into Pudong New Area.
- 2010 The year Pudong was expected to be fully developed, per the plans.
- 2013 Total import and export volume in Pudong was \$250 billion.

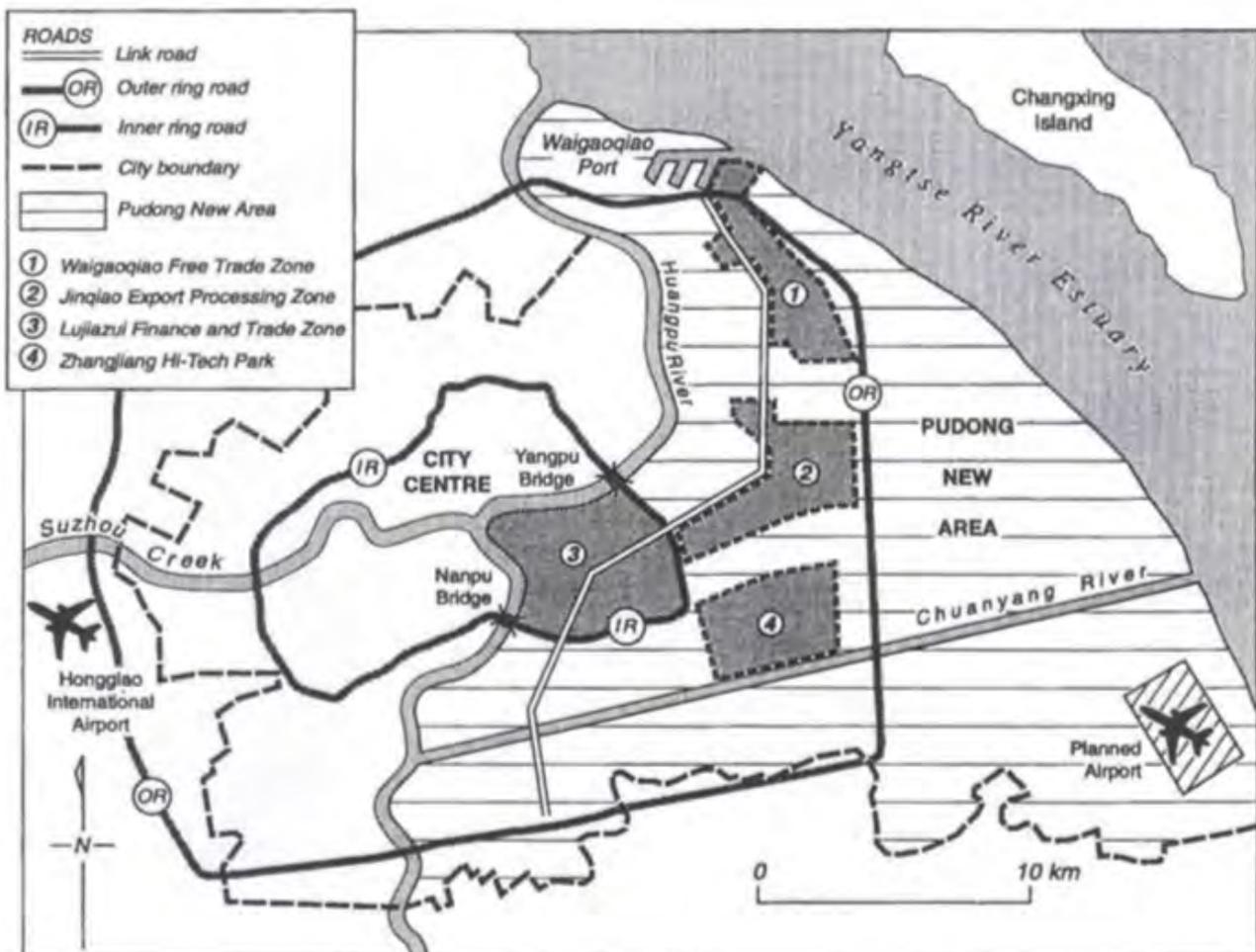


CONTEXT AND RATIONALE

Pudong is located on the east bank of the Huangpu River, Shanghai area, at the midpoint along China's coastline.

Prior to the 1990s, Shanghai had concentrated on relocating industrial plants and populace away from the core city. But this was not enough to lure the masses to relocate. Mass influx of rural migrants continued to complicate the growth of Shanghai. It was during this period (1980s) when China established Special Economic Zones. Shanghai decided to create a SEZ on the east bank of Huangpu River, which is Pudong New Area. This was planned as an extension of Shanghai, with specialized economic functions. Then, the east bank of Huangpu River (Pudong)

was relatively underdeveloped. The area was mainly occupied by a strip of development with service centres and lots of agriculture. Pudong was, therefore, designed to relieve Shanghai of spatial pressure that had accumulated following years of urban growth, and most importantly; to enable Shanghai resume its leading role as China's lead international financial, economic and trade centre. It was, therefore, developed as a special economic zone, although at that time, it could be interpreted to double as an economic experiment.



The Pudong New Area project / Olds, 1997: 113

PROCESS AND SOLUTIONS

PLANNING ZONING AND PHASING

The period running 1990-1995 was basically dedicated to planning, environmental analysis and developing solutions to anticipated traffic problems that Pudong's development would likely result to. 1995-2000, attention was on development of planned major roads, public utilities and other key infrastructures. The plan created 4 main zones for developing in Pudong, namely: the Lujiazui Finance and Trade Zone, Jinqiao Export Processing Zone, Weigaoqiao Free Trade Zone and Zhangjiang High-Tech Park.

To address social shortcomings of planned urban development's then, the municipal invested in a complete education and health system, sports complexes, parks and recreational facilities, for Pudong. Another key focus was the connection of PNA with existing Shanghai urban footprint. To do so, major roads, railway systems were developed.

FINANCING AND DEVELOPMENT

During the first year of construction, the government invested RMB25 billion on major infrastructures. The project was phased, with the first phase of construction comprising of the Pudong International Airport, metro lines and light rail transit system, highways, river crossing, deep water harbour. The subsequent phase included: power plants, water supply and drainages and an international info-port. PNA received financial support from government under the Eighth and Ninth Five-Year Plans of 1991-1995 and 1996-2000, respectively. A combination of preferential policies were utilised by the government to facilitate developments in the PNA. These were instrumental in attracting private sector investments towards the realisation of PNA. They include:

- A special low rate to access enterprises for income tax.
- Tax-free import of materials and equipment and exports.
- Unlike other areas in China, foreign investments were allowed for seaports, airports, highways, railways and power plants.
- Preferential taxes to domestic investors, with the aim of enabling them compete with foreign investors receiving similar benefits.
- Tax breaks and deductions for enterprises operating in the area.
- Transaction of land-use rights in the markets was allowed.
- Revenue from Pudong was retained to develop and improve Pudong in the future. This was not submitted to central government.

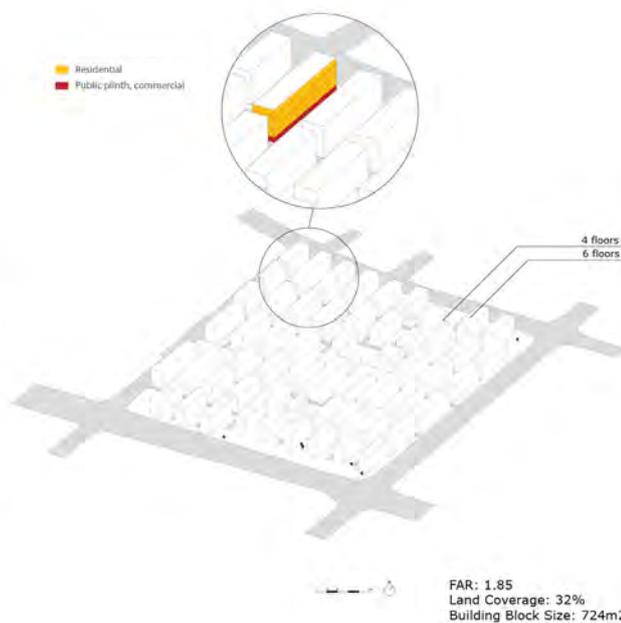
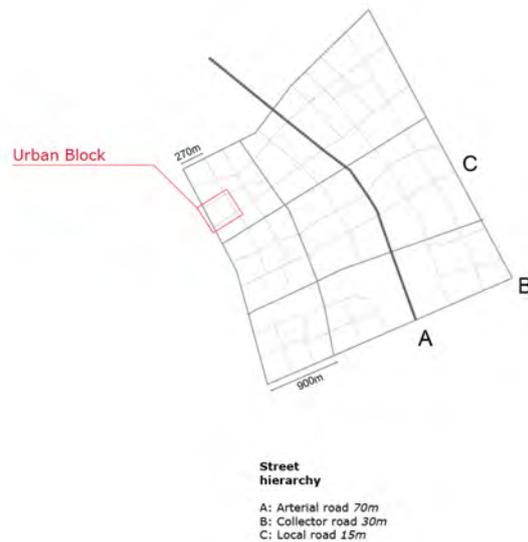




RESULTS, IMPACTS AND SHORTCOMINGS

- The development of PNA is reported as a vital factor for the economic transformation of Shanghai; it catalyzed the development of Shanghai.
- The output of PNA reached RMB367.6 billion in 2008, which then was 27% of the total of Shanghai.
- The development managed to produce a vital traffic hub for Shanghai which comprise of the Yangshan Deep Water Port, Pudong international Airport and Waigaoqiao Port Area and extensive high capacity roads.
- Pudong has built, in the last 19 years, numerous cultural facilities, making it a major destination for cultural tourism in China.
- Although PNA and Shanghai are strong, economically, and competitive, there is

still significant competition with other similar regional centres, especially Beijing and Hong Kong.





KEY LESSONS

STRENGTHS

- With deliberate government policy and support, large-scale economic strategic developments can be realised. The development of PNA was inspired by the need for Chinese government to build Shanghai as a leading international financial, trade and economic centre.
- Large-scale infrastructure investments are imperative for undertaking developments of the scale of PNA. The government took lead in providing these infrastructures.
- Preferential policies and incentives such as tax breaks attracts foreign direct investments in PNA.
- The decision to retain income from Pudong instead of having it remitted to central government gave the project an opportunity to mobilise financial resources for further development and

improvement. This is a vital lesson for sustaining development of city extensions.

- Planned city extensions are capable of minimizing physical limitations of urban growth, as noted with case of Pudong.

WEAKNESSES

- It is argued that PNA sustainability may be challenged by the fact that increasing reliance on markets has exposed the growth to increased income inequalities, noting that poor migrants continue to pour into Shanghai and by extension to PNA.
- With rapid urbanisation, Pudong New Area and other growth strategies are yet to adequately address the growth demands of Shanghai's urbanisation.

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Yinheang Road, Pudong © Flickr / Robert S. Donovan

PLANNED CITY EXTENTIONS

Evaluation Matrix

Diagnostic and Formulation	Leidsche Rijn	Manhattan	Pudong
Name of the Plan/Project	Leidsche Rijn Master Plan	Commissioners' Plan	Pudong New Area
Timeframe	1991-2015	1796-1863	1982-2010
History of Plans & Projects	1991 VINEX-report, 4th bill of national planning 1995 Maxwan Urban Planners commissioned by the city of Utrecht delivered its Master Plan for the district 1998 First dwelling built 2009 15.000 dwellings delivered and 24.000 inhabitants live in Leidsche Rijn 2014 28.000 inhabitants live in Leidsche Rijn 2015 Planned completion date	17th.c: Dutch settlement of New Amsterdam 1796: Goerck Plan of the Common Lands 1811: The Commissioners' Plan of 1811 1858: Greensward Plan for Central Park, designed by Frederic Law Olmsted and Calvert Vaux 1863 Plan for Upper Manhattan	Early 1980s: China inaugurates the development of Special Economic Zones (SEZs). 1982: Shanghai Master Plan proposes a multimode urban system to decentralise growing population. 1984: Pudong New Area (PNA) is conceptualised. 1990: The Central Committee and State Council announces opening up of Pudong, and sets up the Pudong Development Office. 1991: The comprehensive Plan of Pudong New District is published.
Format	First stage: Master Plan for large scale operations setting main parameters (program, densities, distribution, mix uses, control, urban edges and space characters) Second stage: Neighborhood detailed designs	Street layout pattern (Commissioners' Plan 1811), and different acts for block and plot regulations (Tenements Act 1901, Zoning Regulations 1916 & 1961)	-
Legal basis	VINEX-Report (4th National Planning Bill)	-	China Special Economic Zones (1980s)
Vision	VINEX-Report (4th National Planning Bill)	-	Pudong New Area
Objectives	(1) Create a new urban development close to Utrecht; (2) Create housing facilities to accommodate Utrecht population growth; (3) Create an urban development that will contribute to transforming Utrecht to a carbon neutral city; (4) Achieve a Master Plan resilient to future changes.	(1) Create a new extension for New York within Manhattan island	(1) Creation of a SEZ on the east bank of Huangpu River in Shanghai, a new extension for the city mainly oriented to economical activities
Led by	Utrecht Municipality	New York State Legislature	Pudong New Area
Drafted by	Utrecht Municipality/Maxwan Urban Planners	Commission (Morris, Rutherford & De Witt)	Pudong New Area
Discussed with	Local stakeholders	-	-
Revised by	Utrecht Municipality	1858: Greensward Plan for Central Park 1863: Plan for Upper Manhattan	-
Approved by	Utrecht Municipality	New York City Council	China Government

Implementation and Monitoring	Leidsche Rijn	Manhattan	Pudong
Specific Institutional Set-up	-	Expert Commission.	Pudong New Area Government
Specific Financial Arrangements	Out USD 4,100 million, the municipality of Utrecht did not pay the costs. Investments needed in public spaces, schools and sustainability were paid by house buyers, industrial and commercial investors, project developers and other partners. Sometimes, grants from third parties such as the EU was obtained.	(1) Street opening system: enabling the city to trade land destined for streets and public areas. (2) Assessment of the value of the properties adjacent new streets in order to calculate the increase in land value of these properties and charge landowners proportionally to this increase. This surplus was dedicated to street construction.	(1) The Government costed the main infrastructure (4 B USD) (2) Low-rate taxes for enterprises (with preferential rates for domestic investors) (3) Foreign investments allowed (4) Revenues of tax collection in PNA were retained to improve the neighborhood.
M&E Mechanisms	-	-	-
Uptake by sectoral Plans and lower spatial Plans	City-wide based initiatives Neighborhood Planning	Tenement House Act (1901) introduced height restrictions and hygiene regulations on residential buildings Zoning Resolutions (1916): Height and bulk of buildings, setbacks and uses regulations Zoning Resolutions (1961): Parking regulations and open space creation mechanisms.	
Key Results/Shortcomings	(1) Sustainable city extension, with energy management and environment protection; (2) Mixed use program (offices and industrial space); (3) The “phased” growth model produced a lack of facilities in early stages; (4) Variety of housing typologies realized; (5) Housing typologies selection (low-density) are encouraging car-dependency	(1) A simple, clear and flexible grid structure, (2) The grid has proved extremely flexible by accepting many variations to the original 1811 Plan without losing its essence (3) A global project understood at different scales: city scale and local scale. (4) The flexibility of the street pattern was defined by the generosity of the initial street and avenue dimensions. (5) Although the original plan did not regulate alignments, the pairing of block and plot sizes with common housing typologies ensured maximum land coverage and resulted in street frontage. (6) Although the initial plan didn’t regulate the image of the city, the city has produced a series of regulations to control the evolution of its image, hygiene and functionality. (7) The involvement of the private sector (property owners) in the economic field, through the imposition of charges to cover the cost of street urbanization.	(1) PNA catalyzed the development of Shanghai generating the 27% of Shanghai incomes. (2) Retain incomes generated in PNA in order to self maintain and improve in phases the extension. (3) The PNA is not addressing Chinese cities main problem (urban-rural linkages) (4) Inequalities are not adequately addressed (5) Emphasis on cultural facilities increased tourist attraction of PNA (6) Main challenge is to sustain its competitive edge (7) Managed to accommodate over 5 million residents.

Plan/Project basic data	Leidsche Rijn	Manhattan	Pudong
Land area	2,100 ha	4,036 ha	1,210 sq. kmts.
Population	28,711 (2014); 100,000 (final stage)	1,073,573	5.41 Million (2014)
Density	47 pop/ha	266 pop/ha	-
Budget	USD 4,100 Million		USD 4,000 Million

URBAN TRANSFORMATIONS



Street in Freiburg © Flickr/Lieven SOETE

FREIBURG, GERMANY

Vauban Sustainable Neighbourhood



Freiburg, Germany

Coordinates: 47°58'33"N 7°49'29"E

GDP: 3,425,956 M. USD

Area: 153.1 km²

Population: Freiburg-229,144 (2012)

Vauban District:

Area: 41 hectares

Population: 5000 Residents in 2,472 households (est. 2013)

Net Density: 134.9 residents per hectare

Car Ownership: 172 per 1000 residents

Brief History

- 1937** Construction of the barracks
- 1945** French troops occupy the barracks and cold war begins
- 1985** The Chernobyl nuclear disaster motivates the city to adopt environmentally-sound alternatives
- 1992** The French Military barracks are decommissioned, and the land is purchased by the city of Freiburg for housing
- 1993** City decides on a creating the new district with public participation
- 1994** City planning competition is launched
- 1995** The City of Freiburg sets up the Project Group Vauban, the City Council Vauban Committee and recognizes citizen's non-profit organization Forum Vauban e.V. as the official organizing body for participatory process
- 1998** Construction of 2000 dwellings begins on the first residential development
- 1999** First residents move in
- 2001** Second construction phase begins
- 2004** The European Union forces the Vauban Forum association into bankruptcy
- 2006** Build out is completed and streetcar line extends into Vauban
- 2008** The neighbourhood nears completion.
- 2009** Highly efficient generated combined heat and power plan is acquired
- 2013** Das "Hotel Vauban" opens



CONTEXT AND RATIONALE

The current site was a former French military base established in 1936. Vauban is located 3 km from the center of Freiburg; Germany's "ecological capital", which is in Southwest Germany. It is now 41 hectares of brownfield development of 2000 dwellings and 5000 residents. After the French barracks were decommissioned and the land purchased by the city, plans were initiated to put up a green neighborhood that is well integrated and connected to the existing urban fabric, through a public participation approach.

The main goal of the project was to "implement a city district in a cooperative, participatory way which meets ecological, social, economic and cultural requirements". This entailed: attaining an exclusively functioning settlement (with adequate and close access to services and amenities); with reduced car dependency and priority for walking and cycling; low-energy buildings; social mix; and job opportunities.



Cycling path in Freiburg © Flickr/Lieven SOETE

PROCESS AND SOLUTIONS

Vauban consists of the refurbishment of former barrack buildings and new buildings, of which approximately 80% are self-constructed buildings by community housing (co-housing), the Baugruppen. It is a model in green-led urban renewal; in-fill development, because of its innovations in low-energy buildings, maximization of green and open spaces, reduction of car dependency and its pedestrianized streets. Pedestrians and cyclists were the priority users of streets; hence, the land-use plan ensured that shops, work places and facilities were located within cycling and walking distances. To integrate the in-fill development with the wider and existing urban fabric, a decision was made to connect Vauban with the city center with a new streetcar line. The street planning and design also oriented the neighborhood in a manner that it fused with the existing network and character of the area. Buildings close and along the Merzhausertrasse Street were oriented to optimize on solar energy generation. The street level of these buildings (along the main street) harbor commercial activities.

The project was executed in 3 development phases- between 1993 and 2006- with land sub-divided into small parcels that allowed self-construction of dwellings by co-housing (Baugruppen). This also permitted architectural diversity, in design. The 3 phases are, a) 1997-2001; b) 1999-2005; and c) 2003-2008.



The overall planning and implementation was community centered. A multi-stakeholder structure was created, which comprised of:

- the Vauban Forum; consisting of the local citizens "association";
- the Community Council Working Group, a committee of the City Council with representatives of political parties, of the administration and consultative members such as the Vauban Forum; and
- the Project Group Vauban, the administrative coordination of City Council departments. It should be noted that future residents of Vauban were mobilized in advance to participate in the creation of the new neighborhood.

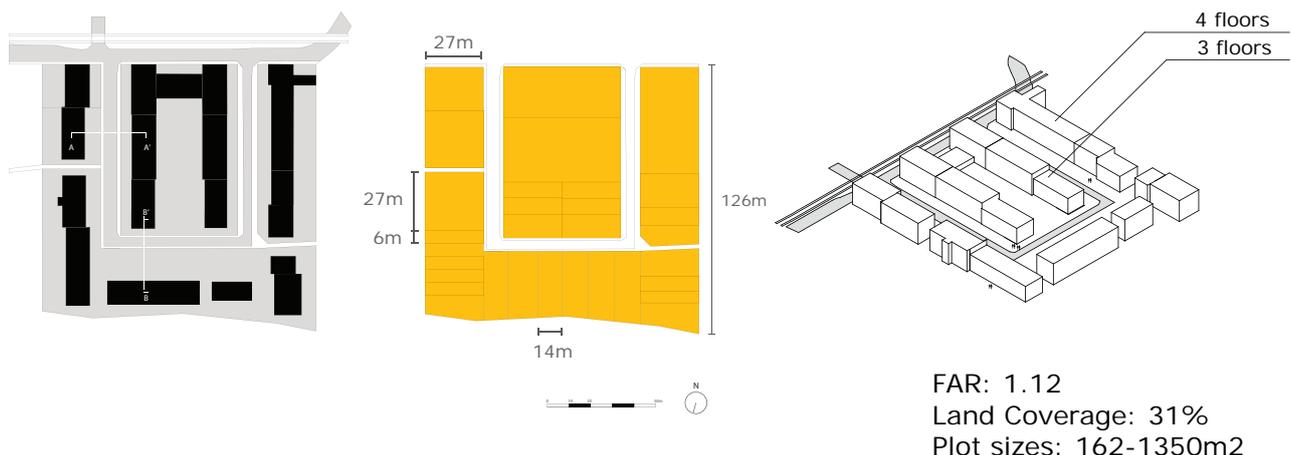
The key environmental and sustainability features incorporated in the development were:

- Energy Supply- solar hot water and photovoltaic panels are on most buildings. There is section called the "Solar Settlement", on the Western edge. Another significant energy solution was the construction of a district woodchip cogeneration plant, which supplies the buildings with room and water heating articulated by a local heating network.
- Transport-The residents have access to public transport services and they walk and cycle short distances to access shops and amenities. Car-free residences dominate the development, with central parking lots developed in specific areas for residents owning cars. There is a car-free living scheme, with members benefitting from discounted public pass.
- Low-Carbon Buildings and Use of Sustainable Materials-Planning regulations compelled developers to achieve energy efficient buildings. There are construction communities that utilized locally produced construction materials such as wood and clay.
- Social Capital-The involvement of future residents of Vauban in the planning and implementation of the project was the foundation for enhancing social sustainability of the project. This was enhanced by provision of community spaces that promotes interactions e.g. open green spaces, car-free streets etc.
- Sustainable Drainage Systems-this includes a vacuum sewerage system linked to a biogas plant, whose energy is used for cooking. The project also developed a ditch system that allowed storm water to soak and regenerate ground water.

Built up/public space:

- Built up area
- Public space - Streets

■ Residential, multi-family



FAR: 1.12
 Land Coverage: 31%
 Plot sizes: 162-1350m²



Land-use Planning and Spatial Layout

Vauban was designed as a family and children-oriented neighborhood, as illustrated by its provision of neighborhood aesthetics, including creative architecture, provision for walking and cycling. There is also a clear demarcation of the car-free residences and those allowing households owning cars. Driving within the neighborhood is restricted to most parts, with residences with parking provision strategically located to enhance quick access and minimize driving within. Also, large parking spaces were allocated at the entrance of the neighborhood to protect pedestrians and residents from car emissions pollution. At least, a maximum of 300 meters was attained as maximum distance from the large car parks to the homes, although mini parking spaces were allocated, but residents were discouraged from using them. Slightly more than a third (35-40 percent) of the households does not own cars.

Areas for open spaces and green belts, shops, employment centers and amenities (schools, health facilities, neighborhood centers etc.) are allocated. Greenery, as amplified by old trees-ageing decades – and the enhancement of green spaces and public spaces, define the distinct and the signature character of Vaubanallee area of Vauban. The development has a net density of 90 to 100 units per hectare and 134.9 residents per hectare, with typologies that consists of 2 to 4 storey row and apartment houses. A special category of housing is provided, that is a student housing village.

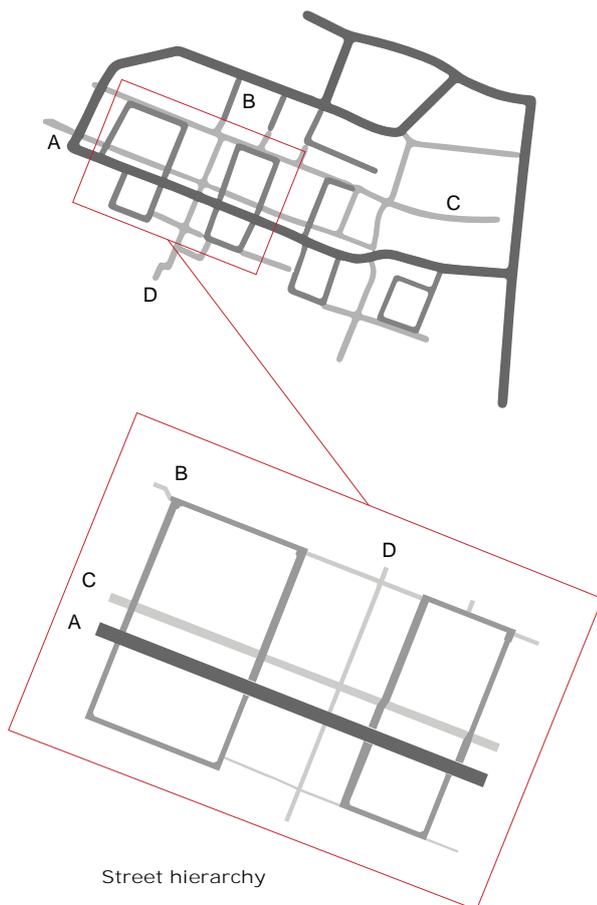
Area coverage of major land uses is as follows:

- Residential Area: 16.45 hectares
- Traffic Areas: 12.4 hectares
- Green Areas: 2.6 hectares
- Public Spaces: 2 hectares
- Industrial Areas: 1.6 hectares



Street Network and Patterns

The neighborhood is highly permeable, with restricted car use and streets modeled as social public spaces. The streets in the car-free sections have dedicated significant space to pedestrian and cycling use. For example, the Gerda-Weiler-Strabe has varied width sizes, with one of the sections of 24m wide having 75% pedestrian spaces and vehicular space of allocated 25%. An analysis of a section within the Car-free zones reveal an hierarchy of street network, with the major street measuring 10m wide; car restricted roads are 9m; pedestrian only are 6m; and the lowest level is the pedestrian only neighborhood scale that is 3.5m wide.



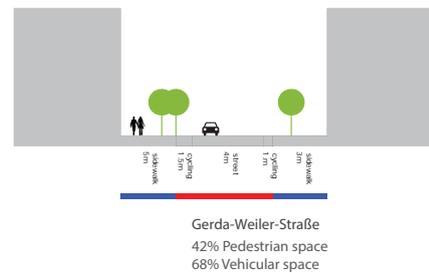
Street hierarchy

- A: Major street 10m
- B: Car restricted roads 9m
- C: Pedestrian only 6m
- D: Pedestrian only neighborhood scale 3.5m

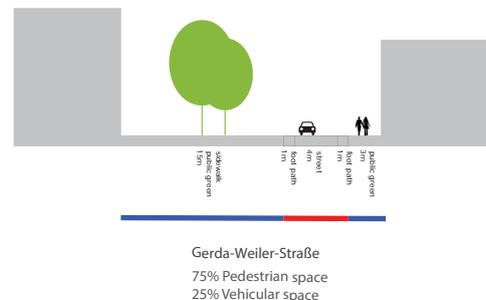
Financing the Development

This was a “managed market approach”, which entailed government control of the results and involvement of the private sector. The project adopted a multi-faceted financing model that saw the city funding the civil infrastructure, community groups that financed construction of various housing clusters and through the traditional development model in Freiburg then. It is notable that the European Union Life programme and the German Federal Environmental Foundation injected an investment of USD 55 million, mainly for transport and mobility. Also the utility companies invested in the network infrastructures; heating, water and energy.

A-A' Neighborhood street 14.5m



B-B' Neighborhood street 24m





RESULTS, IMPACTS AND SHORTCOMINGS

Overall, Vauban is reported to have met its technical objectives of sustainability; as witnessed by its success in energy efficiency and reduction of resource consumption; in waste water recycling and management; and having achieved a less car-dependency transport system; with reduced of ecological footprint, owing to an extensive green space/open space system and relatively high densities that enhance sustainable urban form. Socio-economically, it has resulted to a strong sense of ownership and community living, with creation of household assets (dwellings) and jobs. The key specific aspects are:

- The project resulted to a garden-type of suburb but with higher densities than would be expected of typical suburban forms of development. Its open space system integrates recreation, water management and biodiversity.
- Vauban was just not developed a usual in-fill development, but its focus on environmental sustainability resulted to it becoming a model for in-fill project. It is estimated that the average number of automobiles in Vauban is half the Germany's national average at 250 cars per 1,000 residents. This less dependency on car is related to the fact that about 84% of all trips in Vauban are less than 6Km resulting to walking and cycling. The neighbourhood's low-carbon buildings are estimated to cut carbon emissions by 2,100 tonnes, annually.
- The development resulted to delivery of 2000 dwellings and 600 jobs in the neighbourhood. 10 percent of these dwellings are social housing. All buildings meet the Freiburg Low-Energy Standard, which caps heating energy for new buildings at 65kWh per sq m per year, and also saved mineral resources to a tune of 1600 tonnes.
- The participatory approach to the project resulted to a strong sense of community, and support government policies and visions of sustainable neighbourhood developments. Vauban.
- The emphasis on car-free housing had a significant effort in releasing land to more valuable neighbourhood functions such as recreational open spaces. Indeed, the residents rank the neighbourhood highly, because of the development managed to achieve lower noise levels and air pollution, safer streets for children to play, shorter distances that favour the elderly and enhanced social relations through face-to-face interactions in the public spaces.
- Access to high quality public transport services, availability of walking and cycling streets, combined with local provision for shopping and amenities, enhanced the community support for car-free neighbourhood development. An estimated 64% of all trips in Vauban are made by walking. Surprisingly, car ownership is about 54 %; meaning that car-owners have been incentivised to alternative transportation modes. Actually, 57 % of those without cars had given them up, prior to settling in Vauban.
- However, the mandatory connection of the electricity grid has undermined some measures for reducing energy demand in Vauban. This is complicated by the electricity grid tariff structure;
- The implementation of the project was not without its delays. Although it was initially planned to be completed in 2006, this was to be attained 2 years later, in 2008; and
- Another shortcoming of the project is that it was unable to attain its target of 25% social housing, owing to government spending cuts on the social housing programme.

KEY LESSONS

The in-fill development of Vauban and its community offers critical lessons for undertaking in-fill developments that demand the addressing of vital brown and green issues. This is despite some weaknesses associated with the development.

Strengths

- Taking advantage of centrally located brownfields can enhance city's approach to sustainable urban development. Vauban development took advantage of the central location of the brownfield site. Now residents are able to access services and work places at close proximity; many by foot and bikes. In addition, its southern side offered a serene scenic landscape ideal for recreation.
- High densities, if well integrated with ecological and environmental imperatives for sustainability can result to sustainable neighbourhoods. The maximising on green spaces and open spaces, and enhancement of green building technologies made Vauban a model for "green" approaches to city in-fill developments.
- The involvement of construction communities saves costs. In Vauban it ended-up saving up to 25-30% on house production costs. In addition, the car-free households were not subjected to the financing of parking spaces and its associated costs.
- Restricting cars from neighbourhood public spaces and streets enhances the quality of life.
- The government control over the land, through having ownership, shields the target beneficiaries from externalities of the market, and enhanced attainment of the social sustainability objectives set for the project, as witnessed in Vauban.



Vauban, Freiburg © Flickr/Shannon Dyck



- The public sector, private sector and organised communities are able to reinterpret traditional roles of the developer to come-up with an integrated delivery model that enhances sustainability practices.
- Shared visions are vital for sustainability. The city of Freiburg set very ambitious sustainable development requirements, which resonated with the ambitions of the community. This prevented short-term financial returns of commercial interests from accessing development rights in the project.
- Presented with the right incentives, construction communities are capable of delivering housing at scale. The communities in Vauban were responsible for the design and building processes.
- Extension of existing connectivity networks is crucial in in-fill developments. Vauban’s site planning was approached with focus on the functional and spatial linkages of the resultant neighbourhood. Notably, the extension of high quality public transport system enhanced the connectivity of the in-fill development.
- It is possible to develop a community before actual development. Through public awareness and mobilising target beneficiaries to partake in the planning and implementation of the development, as witnessed in Vauban project.

Weaknesses

- Compliance to standards and regulations can undermine initiatives to attain sustainability, For example, in Freiburg; the regional legislation creates room for the provision of car parking spaces to be decoupled from housing projects. However, this is rarely undertaken.
- Failure to harmonise policies can undermine sustainability initiatives. The environmental sustainability of Vauban can be enhanced further, if the mandatory connection to the electricity grid is addressed, together with its tariff structure.
- Where regulations are not tied with efficient compliance systems, successes can be undermined. Occasional compliance problems, combined with inadequate enforcement by the municipality, undermine the effectiveness of the traffic management system in Vauban.



Housing courtyard © Flickr/geoterranaute

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Transformation Area Birketweg © maps.live.com / Dr. Gilgore

MUNICH, GERMANY

Central Rail Corridor



Munich, Germany

Coordinates: 48°8'35"N 11°31'35"E

GDP: 70.205 million EUR (Munich, 2009)

Area: 1, 73. Sq. km

Density: 9400 pop/sq km (approx.)

Projected Inhabitants: 16.000

Brief History

- 1991** The city council decides, after negotiations with Deutsche Bahn (Federal Railway Company), that the western railway area should be developed in order to fill social housing and quality open spaces gaps.
- Half 1990s** The Federal Railway Company transfers cargo activity from the inner city land close to the central station to the periphery.
- Late 1990s** The Habitat and Open Space plan for the area is prepared.
- 1998** The concept plan for the Rail Corridor is selected through a planning competition. The winning proposal splits the area in six sections along the 8 kilometres rail corridor: Pasing, Paul Gerhardt Allee, Nymphenburg/Laim, Am Hirschgarten/ Birketweg, Arnulfpark and Landsberger Strasse. A second competition for the six areas is also launched.
- 2004** Final land use plan for the Rail Corridor presented and approved by the city council. New 4 ha park in Arnulfpark sector is officially opened.
- 2006** Starting development of Am Hirschgarten district (Nymphenburg) and Pasing station sector (east and west)
- 2012:** Building of Am Hirschgarten Forum building starts



CONTEXT AND RATIONALE

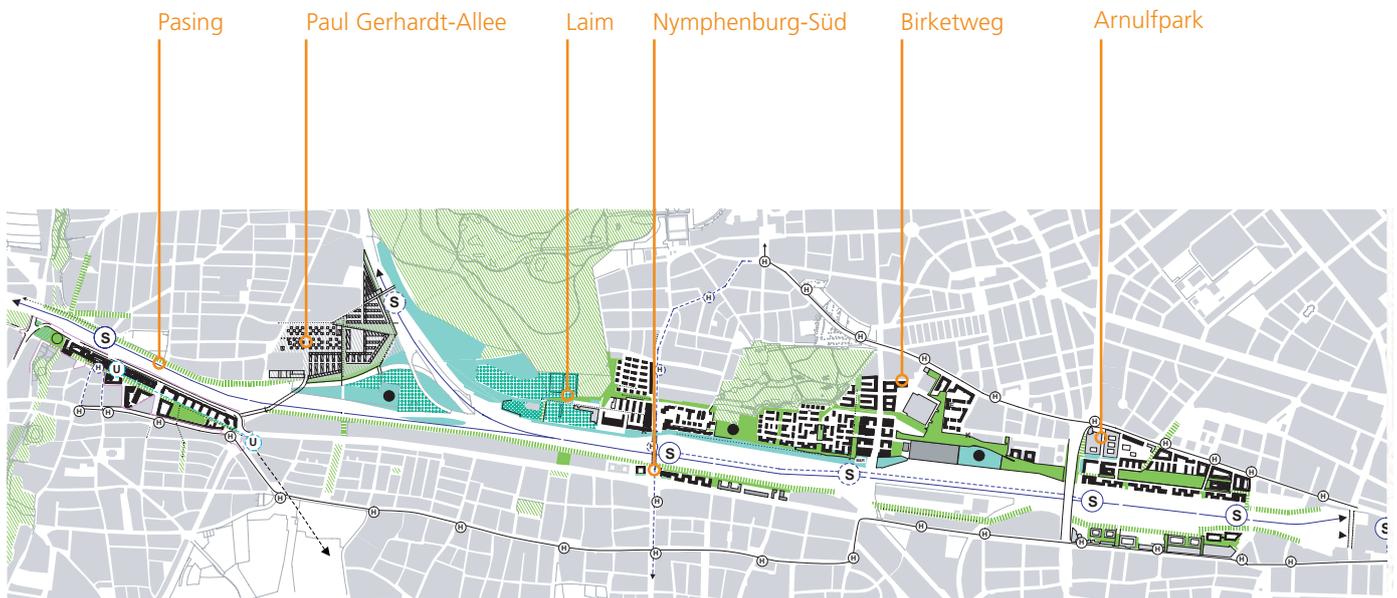
The Central Rail Corridor is the railway land situated between Munich main station (Hauptbahnhof) and Pasing's station. After Deutsche Bahn's cargo activity relocation, this abandoned railway and industrial land close to city centre and with big ecological potential became the perfect site to start developing new planning guidelines, recovered for the first time in the city's Perspektive München document of 1998.

The main objective was to create a new "compact, urban, green" neighbourhood on the former underutilized railway area, with mixed uses (residential, commercial and offices) in an interconnected green space based structure linking existing parks (Hirschgarten, Nymphenburger Schlosspark, and

Würmgrünzug), combining infill development, a priority action for the new Federal Building Act in Germany to reduce urban sprawl, and the protection of valuable environmental habitats. This strategy is also backed by the municipality's socially justified land use tax ("Sozialgerechte Bodennutzung"), which can levy up to two thirds of the private developer benefits to secure provision of public space and facilities in new housing developments.



Plan Birketweg © Landeshauptstadt München 2004



Central Rail Corridor © Landeshauptstadt München 2004 / edited by UN Habitat 2015

PROCESS AND SOLUTIONS

Since the 1980s, the City of Munich paid attention to the Rail Corridor renewal. Evident changes in transportation modalities and in freight management were the opportunity to rethink, from scratch, the entire area, moving large part of railway linked activities to less central areas and to free significant amount of urban spaces for more suitable access.

After negotiations with Deutsche Bahn (Federal Railway Company), in half 90s the entire cargo activity was transferred to more peripheral locations, and the area renewal process begun. The first planning competition process for the whole area in 1998 defined 5 separated clusters for the urban renewal: Pasing, Paul Gerhardt Allee, Nymphenburg Sud/Laim, Am Hirschgarten/ Birketweg, and Arnulfpark. In the same year, a second planning competition was launched for each of the clusters. The requirements for biodiversity were integrated in the competition, and all proposals had to refer to previously elaborated Habitat and Open Space plan guidelines.

The final land use plan for the Rail Corridor was finally approved, after a process that included public consultations-by the city council in 2004. This was accompanied by inauguration of the first building work: a 4 ha park in Arnulfpark sector.

The open spaces planning solution, which constitutes the priority objective for the Rail Corridor urban renewal, is based on:

- Densification of built up area in order to maximize the open space along the corridor and to provide more green space as possible for leisure activities and green corridors.
- Increase of social-oriented green space, to fill gaps in spaces for parks, sport games, recreational uses for children and young people.

- Development of a continuous green corridor, based on the “railway landscape concept”, linking together different city parks (Hirschgarten, Nymphenburg Park, Wurmgrunzug) and pocket parks along the railway with the surrounding green areas in the city periphery.
- The preservation of existing railway landscape conditions and flora/fauna. The Pionier park (Pioneer Park) along the corridor was proposed on one hand to preserve railroad habitats and on the other hand; to offer opportunities to nurture experiences. The park was conceived as a wild growing vegetation area, respecting original conditions and inviting the public to explore a less conventional urban park landscape.

This open space structure, supported by the construction of several new bridges along the railway, was also designed to enforce connections and use-based relations and interactions between different neighbourhoods formerly separated by the railway barrier.

In order to secure social mix, in all sectors, 30 percent of residential floor has been allocated to social housing (public subsidised) and targeted for families with preferably two or more children.



RESULTS, IMPACTS AND SHORTCOMINGS

- The process has been supervised since the earlier years by an advisory technical commission of planners, architect and landscapers, that discussed and controlled all different steps of the project, from the neighbourhood scale planning proposal to the single building projects. That approach, supported by a complete participative process and a set of different competitions organized both from the city of Munich side and the different private developers, assured an exhaustive quality control at the neighbourhood, sector and architectural scale.
- All planning decisions have also been made after thorough; demographical, housing market and needs, landscape, ecological and transportation analysis, and within a general concept of urban framework described in the Perspective Munich document. That ensured the coherence of the proposal, its feasibility and also ensured the understanding and involvement of the community and other stakeholders in the project.
- The Rail Corridor proposal also proposes a new model for the new urban landscape based on the compactness of the built environment through balanced densities, open spaces quality and quantity, car dependency reduction improving bicycles, pedestrian and public transportation modalities, social mix policies through effective social housing policies and a mixed use programme. All element these strategic and design issues are perfectly aligned with modern sustainable urban planning principles.
- The sector-by-sector approach to design realized through competitions, also effectively helped combining the Rail Corridor large scale proposal with sector different identities.



Hirschgarten © Flickr/Richard

KEY LESSONS

- Open spaces quantity and quality, compact city, alternative mobility, social mix and land use mix are the main objectives for the proposals, from the larger scale plan to the district and architectural solutions.
- The process linked together public authority, private developers and Munich's

community in all the main decisive steps.

- The engagement of the private sector is a major achievement of this project. The Rail Corridor implementation has been done under the city of Munich control, but with a joint effort that included also private developers.

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Newcastle © Hunter Development Company

NEWCASTLE, AUSTRALIA

Honeysuckle Renewal Project



Newcastle, Australia

Coordinates: 32°55'S 151°45'E

GDP: 1561 billion USD (Australia, 2013)

Population: 308,308 (Newcastle, 2011)

Area: 261.8 km²

Density: 1,103/km²

Brief History

- 1991** Building Better Cities Program, funded by the Commonwealth Budget, is initiated to promote improvements in the efficiency, equity and sustainability of Australian Cities.
- 1992** Honeysuckle Development Corporation is founded to prepare and market Honeysuckle sites and attract private sector engagement.
Building Better Cities funding for Honeysuckle is confirmed.
- 1994** Completion of 49 new fishing fleet berths at the Marina.
- 1995** New Cowper Street Bridge opened.
- 2001** First cruise ship visit to Newcastle at Throsby Wharf
- 2003** 167 homes transferred to community ownership as part of the corporation's commitment to provide affordable housing.
- 2007** Formation of Hunter Development Corporation through merger of Honeysuckle Development Corporation and Regional Land Management Corporation. Its role is to act as key driver in the development and to facilitate economic growth in the region.
- 2009** Unveiling of the Honeysuckle Heritage Trail.
- 2011** Newcastle Museum officially opens.



CONTEXT AND RATIONALE

The Honeysuckle Renewal Project is a good example of a city that manages to transform unused land and dilapidated structures around an existing port, into a vibrant and productive mixed-use development. Honeysuckle is now a 50-hectare site with a lively community. It enjoys five kilometers of harbor front, with a promenade that stretches along the waterfront, where the inhabitants use for recreation.

Newcastle had suffered 20 years of inner city decay and a range of problems related to urban sprawl and car dependency that pushed people, jobs and retail to the suburbs. The land was far from “market ready”: some areas required land reclamation, there was lack of sewage and electricity infrastructure, and industrial use contaminated much of the land.

There were six objectives for the Honeysuckle development:

1) To catalyze the economic revitalization of

Newcastle; and

2) Thus to revitalize the city and improve the quality of life in Newcastle;

3) To maximize the commitment by all three levels of government; and develop strong local community support;

4) Regarding the environment, the project aimed to contribute to the sustainability of the city by reducing forces of urban sprawl and by pushing for environmentally sensitive planning and design.

5) The city furthermore aimed to facilitate a more effective and efficient public transport system;

6) Finally, the city aimed to optimize returns on surplus government land; thus maximizing economic and social benefits.



■ New Business Centre

■ Cultural/Civic/University Precinct

■ Tourist/Residential/Retail/Heritage Precinct

CBD Strategic Plan © City of Newcastle

PROCESS AND SOLUTIONS

URBAN PLANNING APPROACH

The Honeysuckle development is an example in design innovation, delivery processes and urban planning frameworks. The project focused on holistic management of urban spaces, as opposed to isolated single solutions. This was achieved by integrating places within the development, recognizing the multi-dimensional, complex and interrelated nature of urban problems, and creating a place-specific rather than function-specific urban development. In doing so, the master plan was divided into seven precincts, each with its own characteristics, problems, and vision for the future. For example, the Marina had one of the most ambitious visions, turning a dangerous and contaminated harbor into a crowded boardwalk with luxury yachts and café's. Key to this project was to relocate a fishing cooperative, and to find investors. The Honeysuckle precinct aimed to connect the city's heritage, culture and waterfront to build community pride. Although the process in this precinct was characterized by a difficult process

and community resistance-against decisions made in Sidney- it is currently one of the liveliest parts of Honeysuckle and by many, and is considered by many the soul of the development.

FINANCING THE DEVELOPMENT

Overall, government intervention and funding was seen as the major catalyst for the first years of the project's lifespan, after which private investment took over the role. The government funding was important, because the basics had to be put into place for the private sector to invest in the redevelopment of inner city Newcastle. It turned out that the \$257.5 million spend by the government ended-up generating almost three times more investment from the private sector.



Lee Wharf, Honeysuckle © Wikicommons/Endacottmj



RESULTS, IMPACTS AND SHORTCOMINGS

- Currently, 1,200 residents live in Honeysuckle and the area harbours 170 community housing units.
- The project generated an economic impact of USD 1.33 billion and it is estimated that it will have an economic impact of over USD 2.16 billion when completed. The development has created over 4,800 direct and indirect jobs in various sectors.
- \$267.7 million in public sector investment has generated of \$767.7 million in direct private sector investment and flow-on investment of \$1.016 billion.
- The construction has added 69,000 square meters of commercial and retail floor space. Over the 20 year project, 7,507 feet have been created through direct investment and office accommodation for over 2,500 employees has been created. The development provided environmental benefits by the decontamination and remediation of the 38 hectares of land,

which has contributed to the betterment of the environmental health of the existing creek waterway.

- At the waterfront, extensive repairs have been carried out to several kilometers of seawalls and the relocation of port activities contributed to enabling a cruise ship industry.
- In addition, the provision of public waterfront access and tourism facilities is currently used as a base for harbor and whale watching tours.
- However, Honeysuckle remains isolated with only a few connections to the CBD, from which it has absorbed a significant amount of business and vitality. In particular, a railway line runs between the Honeysuckle precinct and the CBD, which provides valuable public transport access but may effectively reduce access between the two areas.



Crown Plaza Hotel, Honeysuckle © Hunter Development Corporation

KEY LESSONS

STRENGTHS:

- This project demonstrates that governments can take lead in initiating profit driven urban renewal projects. This acts as a precedent and serves as commitment to attract successive private sector investments.
- The division of the master plan in seven precincts has enabled a variety of visions, instead of one vision for the whole plan. The plans could thus be sensitive to the particular urban context, and have more chance of succeeding.
- The project also presents a good model for matching urban planning and design, with local economic development. This results to more sustainable urban renewal developments.

WEAKNESSES:

- Failure to optimize the connectivity of the urban renewal limits the full potential of the projects. It is evident that Honeysuckle success would be greater if the city enhanced its connectivity to the (CBD).
- In some of the precincts the urban design is not optimal as a result of national political intervention; moreover in these precincts inhabitants have felt the interests of large cooperation's trumped their concerns.

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#honeysuckle
HOTEL

URBAN TRANSFORMATIONS

Evaluation Matrix

Diagnostic and Formulation	Vauban Neighbourhood	Munich Central Rail Corridor	Honeysuckle Neighbourhood
Name of the Plan/Project	Vauban Sustainable Neighbourhood	Central Rail Corridor	Honeysuckle Renewal Project
Timeframe	1992-2013	1991-today	1991-today
History of Plans & Projects	1994: Planning competition 1997-2001: phase A 1999-2005: phase B 2003-2008: phase C	1991: The city council decides that the western railway area should be developed in order to fill social housing and quality open spaces gaps 1998: selection of the general concept plan and six areas (public competitions) 2004: final land use plan 2006: Starting development of Am Hirschgarten district (Nymphenburg) and Pasing station sector (east and west) 2012: Building of Am Hirschgarten Forum building starts	1991: Building Better Cities Program is initiated to promote improvements in the efficiency, equity and sustainability of Australian Cities. 1992: Honeysuckle Development Corporation is founded and Building Better Cities funding for Honeysuckle is confirmed. 1994: Completion of 49 new fishing fleet berths at the Marina. 2001: First cruise ship visit to Newcastle at Throsby Wharf 2003: 167 homes transferred to community ownership as part of the corporation's commitment to provide affordable housing. 2007: Formation of Hunter Development Corporation through merger of Honeysuckle Development Corporation and Regional Land Management Corporation
Format	Neighbourhood Plan	Neighbourhood Plan	Neighbourhood Plan
Legal basis	-	-	-
Vision	-	Perspektive Munchen	Building Better Cities Programme
Objectives	Implement a city district in a cooperative, participatory way which meets ecological, social, economic and cultural requirements, with reduced car dependency and priority for walking and cycling; low-energy buildings; social mix; and job opportunities.	Open spaces quantity and quality, compact city, alternative mobility, social mix and land use mix	(1) To catalyse the economic revitalization of Newcastle; (2) to revitalize the city and improve the quality of life in Newcastle; (3) To maximize the commitment by all three levels of government; and develop strong local community support; (4) contribute to the sustainability of the city by reducing forces of urban sprawl and by pushing for environmentally sensitive planning and design. (5) Facilitate a more effective and efficient public transport system; (6) the city aimed to optimize returns on surplus government land.
Led by	City of Freiburg	City of Munich	Honeysuckle Development Corporation
Drafted by	-	-	Honeysuckle Development Corporation
Discussed with	Forum Vauban Private developers	Deutsche Bahn Community participative process Private developers	
Revised by	-	-	-
Approved by	City of Freiburg	City of Munich	-

Implementation and Monitoring	Vauban Neighbourhood	Munich Central Rail Corridor	Honeysuckle Neighbourhood
Specific Institutional Set-up	The city of Freiburg set up the Project Group Vauban (administrative coordination between City Council departments) and the City Council Vauban Committee (political, administration and consultative members). Vauban Forum on the other side represented the local citizens association.	-	Honeysuckle Development Corporation
Specific Financial Arrangements	There was a multi-faceted financing model that saw the city funding the civil infrastructure, community groups that financed construction of various housing clusters and through the traditional development model in Freiburg then. In addition, the European Union Life programme and the German Federal Environmental Foundation injected an investment of USD 55 million.	-	Initial government investment of \$257.5 million that ended-up generating almost three times more investment from the private sector
M&E Mechanisms	City Council Vauban Committee Project Group Vauban Vauban Forum	Advisory technical commission of planners, landscapers and architects to discuss and control all different steps of the project.	Formation of Hunter Development Corporation through merger of Honeysuckle Development Corporation and Regional Land Management Corporation. Its role is to act as key driver in the development and to facilitate economic growth in the region.
Uptake by sectoral Plans and lower spatial Plans	-	-	-
Key Results/Shortcomings	(1) Taking advantage of centrally located brownfields can enhance city's approach to sustainable urban development; (2) The maximising on green spaces and open spaces, and enhancement of green building technologies made Vauban a model for "green" approaches to city in-fill developments; (3) The involvement of construction communities saves costs. In Vauban it ended-up saving up to 25-30% on house production costs; (4) Restricting cars from neighbourhood public spaces and streets enhances the quality of life; (5) Inclusion of private initiative in a shared sustainable vision, preventing short-term financial returns (6) Where regulations are not tied with efficient compliance systems, successes can be undermined. Occasional compliance problems, combined with inadequate enforcement by the municipality, undermine the effectiveness of the traffic management system in Vauban.	(1) Sustainability and quality of different neighbourhoods achieved, (2) The process linked together public authority, private developers and Munich's community in all the main decisive steps. (3) The engagement of the private sector is a major achievement of this project.	(1) The project generated an economic impact of USD 1.33 billion and it is estimated that it will have an economic impact of over USD 2.16 billion when completed. The development has created over 4,800 direct and indirect jobs in various sectors; (2) The construction has added 69,000 square meters of commercial and retail floor space; (3) the provision of public waterfront access and tourism facilities is currently used as a base for harbour and whale watching tours; (4) connectivity with CBD is not optimal; (5) in some precincts' design is not optimal.

Plan/Project basic data	Vauban Neighbourhood	Munich Central Rail Corridor	Honeysuckle Neighbourhood
Land area	41 ha	173 ha	50 ha
Population	5,000	16,000	1,200
Density	135 pop/ha	94 pop/ha	
Budget			257.5 M USD (public investment); 767.7 M USD (private investment)

NEW TOWNS



Almere Haven © winkelcentrumalmerehaven.nl

FLEVOLAND, NETHERLANDS

Almere



Flevoland, Netherlands

GDP: 800.2 billion USD (2013, Netherlands)

Coordinates: 52°22' N 5°13'E

Area: 248.8 km²

Population: 196,290 (2014)

Density: 1,515 persons per km²

Brief History

- 1967** Construction of dikes and canals.
- 1968** National government initiates construction of Almere, after the reclamation of a polder in IJsselmeer.
- 1976** Occupation by first inhabitants.
- 1977** Preparation of Draft Structure Plan for 250,000 population limit.
- 1980** First core: Almere Haven-Forests, lakes and infrastructure.
- 1984** Almere becomes an official municipality.
- 1985** Second core: Almere City-Expansion of lakes, forests and adding of facilities and infrastructure.
- 1990** Third Core: Almere Buiten-Public transport, expansion of lakes and forests.
- 1995** Dourth core: Almere Hout-Expansion cores, facilities and green zones. Almere signs contract with national government to deliver 30,000 dwelling units, within a ten year period.
- 1997** Construction of the New City Centre in Almere Stad begins.
- 2000** Expansion cores, facilities, landscape and green zones.
- 2001** Agreement to expand the growth of the city to 350,000 inhabitants by 2030.
- 2005** Fifth core-Almere Port. Expansion cores, facilities and green zones.
- 2007** Construction of New City Centre is completed.
- 2008** Municipality of Almere presents a manifesto defining basic principles for the realization of Almere 2 by the year 2030. A competition was held for housing associations to showcase proposals for socially sustainable neighbourhoods for Almere North developments.
- 2009** Sixth Core: Almere Pampus-Arrival of first settlers.
- 2014** Population reaches an estimated 200,000 inhabitants.



CONTEXT AND RATIONALE

Almere, the biggest new town in the Netherlands, and probably in Europe, is located 3 metres below the sea level, 20 km East of Amsterdam, with a population estimated at 200,000 as of 2014, 38 years after its establishment. Created from the reclaimed IJsselmeer polders, Almere was envisioned to have multiple cores, and it's located in the Flevoland province area, which is under an important water management and land reclamation project- the Zuiderzee project started in 1918. Part of this reclaimed land (of the IJsselmeer polders) became Almere and two other new towns; Emmeloord and Lelystad, and 18 villages, totally to 21 settlements. Almere was conceptualised after World War II, when the population of Amsterdam was increasing and the city was facing a housing shortage.

Meanwhile, the continued expansion of

Amsterdam to the mainland areas was a threat to agriculture and green areas. Consequently, Almere was designed specifically to address the growing housing shortage, and in doing so, adhere to strict environmental conservation measures. This way, additional 3000 dwellings were envisioned to be added annually in the market.

The vision to increase the size of Almere to 350,000 populations and to become the 5th largest city in the Netherlands is inspired by motivations of accommodating growing urban populations through planned and sustainable urban growth. Through its environment-driven design, the municipality and national government intends Almere to become a model for sustainability.



Almere Centrum © Flickr/ Christian van Elven

PROCESS AND SOLUTIONS

Almere was conceptualized as a poly-centred new town, with each centre comprising of neighbourhoods that connected through shared infrastructure to the city centre and having own facilities and identity. Initial plans for Almere were comprised of a 'flexible' structure plan that only emphasised vital elements: main infrastructure, built and unbuilt areas and density. This was formulated by the agency, IJsselmeer polders Development Agency (RIJP) in 1977. Almere ended-up being a suburban town. The early plans had envisioned a small city centre, whose land remained undeveloped for long, because of the dormitory/suburban nature of the town. In 1994, a new planning process was initiated. The motivation was to re-model Almere as self-functioning town, with less dependency on Amsterdam, and a town that advances towards sustainability. Rem Koolhaas of the Office of Metropolitan Architecture (OMA) ended up designing a new centre that accommodated 67,000 m2 of commercial spaces, 890 housing

units, 9000 m2 of leisure spaces and 3300 underground parking spaces, and social-cultural facilities. The plan was realised between 1994 and 2007.

Instead of embarking on a stringent phased implementation, the Almere municipality rather focused on enabling the town grow organically, through a pragmatic approach that allowed the gradual development of space, without emphasis on a pre-determined pace of implementation. Essentially, the municipality formulated rules that guide the realization of the desired urban development, as opposed to restrictive blueprints detailing the production of individual spaces. This provided room for flexibility. Furthermore, the approach to implementation was anchored on empowering the public to make the desired city; individually and as groups. Residents and potential home owners were and are allowed to design their own homes, or modify a home from a catalogue of housing models made available by the municipality. In addition home owners also have the option to choose the developer to work with for the construction.

Upon reaching the earlier planned population limit, the national government tasked Almere Municipality to develop plans for expansion, in order to provide 60,000 dwellings and 100,000 jobs by the year 2030. Consequently, Almere was projected to grow from its current 190,000 inhabitants to 350,000 inhabitants in 2030. The draft structural 'Vision 2' for Almere has pointed out that pressure from the Amsterdam area and Utrecht is once again catching up with Almere thus further emphasizing the need for a new plan.



De Citadel, Almere City © Flickr/Rory Hide



LAND USE PLANNING AND STREET LAYOUT

Almere aligns with the Dutch post-1960s efforts to create greener and more liveable urban places that emphasize the quality of green spaces, open spaces and environmental preservation. The poly-centric pattern and the provision of access to large open spaces are the most striking physical elements of Almere's spatial quality. Almost each of these centres is designed independently, and by a different designer(s) through a multi-disciplinary approach. These centres are:

- i. Almere Stad-the commercial, administrative and cultural centre;
- ii. Almere Haven-recreation activities;
- iii. Almere Buiten-strong suburban identity;
- iv. Almere Hout-strong suburban identity;
- v. Almere Poort-harbour identity;
- vi. Almere Pampus-similar urban character as

Almere stad.

Overall, the densities in Almere still reflect a suburban form of urban development, which attempts to the very highest degree to incorporate environment in design. However, the new city centre is a sharp contrast to the generally low density of Almere, as it offers high densities. The original plan created areas with varied sizes and densities (but generally low rise housing), and that will be developed in stages. Over two thirds of the planned housing typology was single-family dwelling and the rest apartments. To enhance employment and land-use diversity, small industrial sites and commercial land-uses were also incorporated in the plan. A railway line from Amsterdam to Lelystad was planned to cut through the core of Almere.



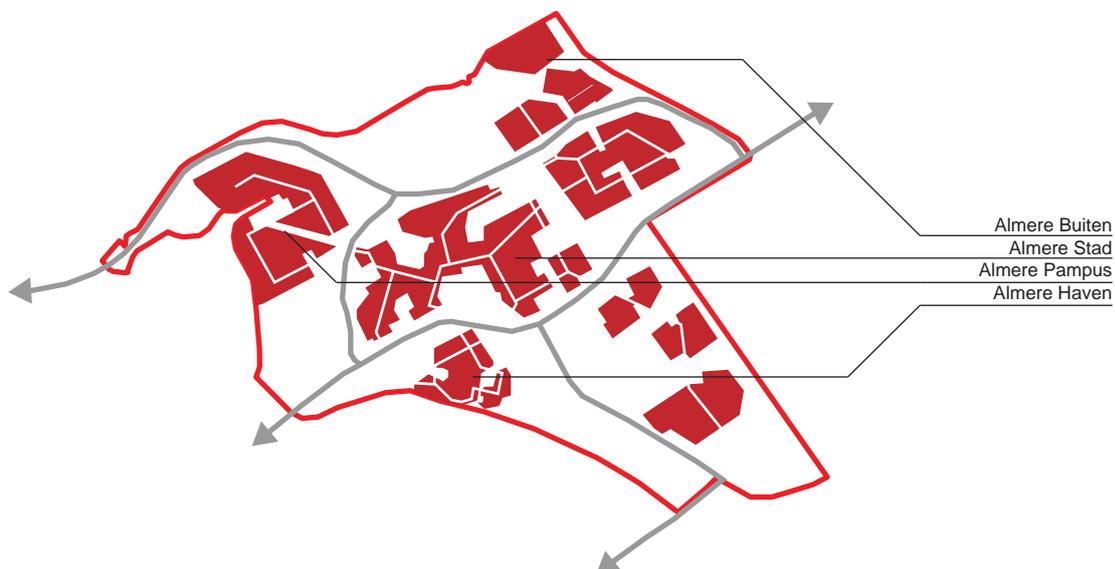
STREET NETWORK AND PATTERN

Almere has attempted to a large extent to separate car traffic, public transport, pedestrians and cycling. The new centre has in line with this separated its traffic by grade; the ground level is mainly infrastructure-roads and parking, while the upper level is mainly pedestrianized. There are dedicated bus lanes, pedestrian walkways and cycling lanes throughout the town. To enhance public transport access, bus stops were designed to be accessible at most 400 metres away from any dwelling. The town is connected to a motorway connection; A1-Amsterdam; A6-Lelystad, and A27-Utrecht, and has a network of local, collector and urban ring roads. All the centres are connected by this network. Owing to individual design of each centre, the street patterns vary, although cul-de-sac designs dominate most of the street layout. For example, in Almere Haven, the homes are clustered around a small park. Dubbed as the 'village' of Almere, its street design is characterized by "irregular, quasi organic structure", with a ring road linking these cul-de-sacs. Straight lines are rare in its design and work and living are mostly mixed. In Almere Stad, the houses are designed with a deliberate front (the public side) that opens to

a street or square and a rear side (the private space) with a garden. A 1 metre-wide marginal zone was introduced to the front side, to act as a separation between the public and private space. A common parking space is designed for a cluster of dwellings. The plan for Almere Buiten emphasised an effective design of 'outdoor'; larger gardens and more greenery. Cul-de-sacs organises the street pattern of Almere Hout.

FINANCING THE DEVELOPMENT

The new town is a product of public corporation; a combination of large-scale private developments and commissioning, where individuals design and build their own houses or commission them. In Almere Poort for example, private, collective and joint commissioning initiatives were used. It is estimated that about 61 percent of the residents benefited from a form of government subsidy. Under the contract signed with the national government in 1995, Almere was to provide the necessary facilities to the private sector, in order to facilitate the delivery of at least 30 percent of the 30,000 housing units by the private sector.





RESULTS, IMPACTS AND SHORTCOMINGS

- Through the development of Almere, the envisioned significance of the new town to increasing housing supply has been realised (now accommodates more than 200,000 inhabitants), and greater potential is projected for 2030. Even more important is that this planned development has been realised by integrating vital considerations of environmental sustainability, as observed through the attainment of an extensive open space and green space system in Almere. The greenspace in Almere constitute about 75% of the land.
- The development has achieved integration of land-uses: residential, commercial, industrial, recreational, green and open spaces, and agriculture. This is meant to be strengthened in the Almere 2 plan for 2030.
- The compact planned urban edge has limited urban sprawl; hence, enhancing environmental conservation and conservation of vital agricultural lands on the edge.
- To promote sustainability, Almere has a well-integrated public transit system, which has offered competition to car preference. This is reinforced by its achievement of integrating Non-Motorised Transport (NMT) infrastructure and facilities.
- Today Almere is a model for successful planned new towns. In addition to its environmental success, the town has about 14,500 registered companies and the New City Centre and smaller neighbourhood centres are projected to transform the town into a fully functioning town, beyond a suburban- dormitory role.
- Almere Solar Island provides heating energy to 2700 homes; offering quality housing that co-exist with “green infrastructures”.
- However, the initial plans have reached their limit of urban expansion, compelling the municipality to develop new strategy for managing planned growth towards 2030. Basically, this means upgrading of existing infrastructure; its expansion and enhanced environmental conservation efforts.
- It is also evident that Almere cannot be sustainable functioning as a suburb or dormitory town; thus, the need to implement initiatives that will enhance local economic development, including additional job opportunities. So far, the new city centre is a model initiative towards this inevitable transformation. Indeed, it is reported that social ills e.g. increasing crime rates have already caught up with Almere.
- The development of Almere presents infrastructural dilemmas at the national level, owing to its location in the national network. The expansion of Schiphol Airport has remained a hot topic in the area. It is also not clear as to how best to integrate national, regional and local systems of improving public transport, in the context of Almere.
- Although the poly-centric layout is flexible to expansion or addition of new centres, the town’s future development path remains somehow uncertain as to what direction is most ideal and sustainable for expansion of Almere. Such debates include possible impacts of connecting Almere to Amsterdam through a bridge across the IJmeer.
- Another shortcoming of the new town is that its suburban profile has contributed to low average of jobs per population, compared to other municipalities in the region. Closely related to this suburban character is the expensive real estate market, which tends to limit house affordability in the town.



KEY LESSONS

STRENGTHS

The fact that Almere was developed from reclaimed land and was fully implemented with its expansive green space system, offers critical lessons for planning and development of new towns.

- The poly-centric layout and emphasis on design diversity creates a flexible urban growth, and allows room for expansion such as addition of new centres. The plans to extend Almere by 2030 draws strength from this overall structure of the existing town. Adding new centres and densification of existing centres are among the feasible options for accommodating future growth.
- Such flexibility, combined with pragmatism in urban planning and design approach enhances participation of people in making their own city, and in the process creates a sense of belonging. The pride among Almere

home owners/residents fostered by this approach.

- Streets that offer separation of traffic and facilities for NMT enhances sustainable mobility modes. Public transport, walking and cycling are important transportation modes in Almere, although Almere's suburban profile still promote high car-use.
- Emphasis on adequate accessibility to open spaces and public transport and short walking distances has enhanced quality of living.
- The vision to transform Almere, from a suburb or satellite town to a self-functioning city is ideal for advancing sustainable urban development. The revitalisation of the town centre has set the stage for realising this vision.
- Planned compact developments are vital for reducing urban sprawl. The urban edge limits and rural/agricultural lands are well defined and conserved. The planned compact urban development and emphasis on regional importance of the city has reduced urban sprawl.
- Water and green zones enhances the



Kerkgracht, Almere Haven © Wikicommons / Marion Golsteijn



green infrastructure of cities. They are also important to the visual quality of the city. For example, Almere has countered the spatial impact of the A6 motorway by covering, tunnelling and “green infrastructure” (e.g. vegetation strips, water ways etc.) buffers.

- The urban planning and design have enhanced the separation of the “public space” and “private space”, but has overall contributed to community interaction through the provision of public space.

WEAKNESSES

- The failure to incorporate the right densities in new towns within metro regions fosters the creation of dormitory towns. Relatively low densities have further enhanced the suburban profile of Almere. This has resulted in comparatively low job generation, and made real estate markets expensive for a section of the population. This has in turn increased car

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International New Town Institute, n.d., Almere

ownership, as most households depend on long-distance travel for work.

- Highly specialised land-use allocation can accelerate neighbourhood decline or create imbalances. The development of the new city centre may result in concentrating people at the core for commercial, shopping and recreational uses while diminishing such roles within the surrounding suburbs.
- Cul-de-sac street layouts limit effective urban connectivity.
- Land reclamation and new urban development are capital intensive. Almere demonstrates that costs for land reclamation from polders and subsequent servicing of the land for urban development are significant.

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Panorama, 6th of October © WikiCommons/Alialaa

CAIRO, EGYPT

6th of October New Town



Cairo, Egypt

Coordinates: 29°57' N 30°56' E

GDP: 255,199 M USD (Egypt, 2013)

Area: 4,788 ha (original plan). 26,000 ha (approx. in 2008). 52,000 ha (current approx.)

Population: 500,000 (original plan previsions). 157,000 (2006). 306,200 (2011).

Density: 104 pop/ha (original plan previsions)

Brief History

1976 Sadat introduces the new town programme in Egypt. First generation of new towns (6th of October is one of these).

1977 The Government of Egypt introduces the New Urban Communities and Settlement Programme as a planned counter-measure to rapid urban sprawl.

1981 6th of October construction begins.

2007: Commissioned master plan to revitalize the city.



CONTEXT AND RATIONALE

In 1977, the Government of Egypt introduced New Urban Communities and Settlements Programme as a planned counter-measure to rapid urban sprawl and the emergence of informal settlements within the metropolitan cities. The New Urban Communities Authority, under the Ministry of Housing Utilities and Urban Development, spearheaded the implementation of this project. The programme targets approximately 20 towns nationwide (1st and 2nd generation new towns), including eight new town projects implemented in the desert area at the outskirts of Greater Cairo: Six of October, Tenth of Ramadan, New Cairo, Fifteenth of May, Al-'Ubur, Sheikh Zayed, Al-Shuruq and Al-Badr. More recently with the 3th generation of new towns, Egypt is proposing a set of satellite cities along the existing Nile Valley cities.

Greater Cairo's New Urban Communities are planned and implemented on government-owned desert land in the outskirts of the city. Vast public investments were made to develop the urban infrastructure – roads, electricity, water, sewers, public spaces and street furniture. Several participatory consultations were carried out to seek the community's views on the future of

Cairo and such extensions. The first generation of new towns (6th of October, 10th of May, Borg El-Arab, El-Sadat and New Domiat) were planned to create industrial sites and attract population and investment outside the Nile valley around Cairo City.

Until the 1980s, Egyptian new town strategy was based on the generation of new low-income population settlements around new industrial sites. With a significant focus on social-housing policies, from the 1990s, a new “capitalist” approach was introduced, extending the new towns boundaries in order to allocate land to private developers.

The 6th of October town represents one of the popular examples of the first generation Egyptian new towns. Located at the west of Cairo, about 40 kilometres from the centre of the city, close to Giza archaeological site, the town was originally planned in the 1980s for a population of 500,000 inhabitants in a 4,788 ha area. A decade after the new town was established, the boundary was progressively and massively extended, making it 26,000 hectares (2008) and currently estimated at 52,000 hectares.



Project Boundary 6th of October © Google Maps / UN Habitat 2015

PROCESS AND SOLUTIONS

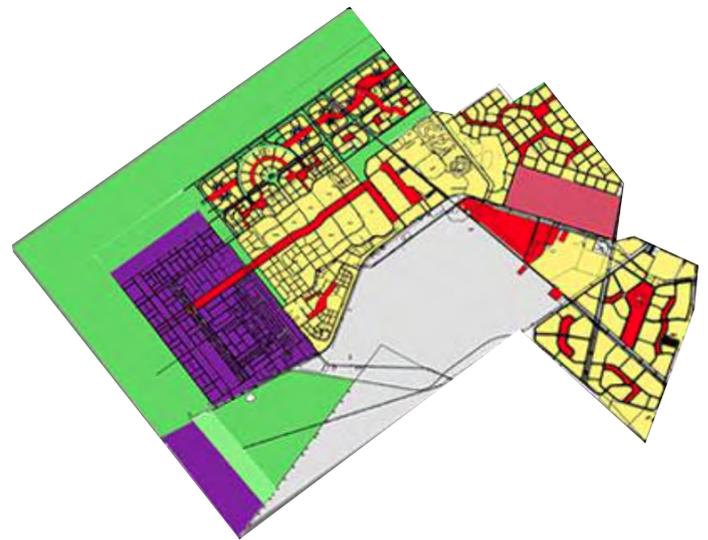
In 6th of October and others in the first generation of extensions, original investment was made in social housing, schools and other public facilities. Due to the size of Sixth of October, it contains areas with mixed use, but also has designated areas for large scale commercial, business and industries.

The government developed transport networks and a public transport connectivity for 6th of October with Greater Cairo; a local airport was recently opened, but is not fully functional. The transportation network-to and from-Cairo's city centre encouraged people to find job opportunities in this new town. However, this network recently became congested due to the increased traffic generated by activities in this new town. One of the key challenges in creating job opportunities was to attract and accommodate private enterprises. For this purpose, the government had offered reasonable land prices and a tax reduction scheme to private investors, all of which required enormous amounts of long-term public and private investment.

In 1981, it was projected that this new town would accommodate a population as large as 500,000. However, after 30 years, only 306,200 people live in Sixth of October. In 2011, Sixth of October had a 50 per cent housing occupancy rate in all income categories. That represented an improvement over a 25 per cent occupancy rate in 2008, which was mostly caused by

poor accessibility to the city center, relatively segregated housing and limited housing finance options. The improvement resulted primarily from:

- the construction of the 26th July Road connecting Sixth of October to the city centre and the Cairo ring road;
- the implementation of a diversified, affordable mixed-use housing programmes with public private partnerships; and
- the development of a new housing finance model for low income affordable housing through the Mortgage Guarantee Fund



Master Plan 6th of October © urban-comm.gov.eg/october_uses.asp



RESULTS, IMPACTS & SHORTCOMINGS

- The current population of New Urban Communities are still short of the targets. T
- The 6th of October new town clearly represents an example of a development that in terms of number of housing units can be considered relatively successful, but with limited provision for lower incomes.
- In that sense, the combined pressure of the housing market within the metropolitan area and the governmental support to developers through a special Mortgage Guarantee Fund and land tax reductions fostered land and housing speculation. 6th of October still is more a “real estate opportunity” than an effective low-income housing solution.
- Other experiences, such as the 15th of May new town, have in that area achieved better results. This new town is closer to the city centre, has a better access to infrastructure, includes public transport system, and is based on a diversified housing programme. In 15th of May new town the number of population actually

settled is around 120,000 people (2011), which represents the 75% of the original project target (180,000). This development was led by the public sector.



KEY LESSONS

STRENGTHS

- Large industrial area within the new town boundary, with both private and public initiatives, provided a sufficient job stock for the new town citizens.
- Large amounts of public funds were allocated to social housing programs, mainly in the early stages of the development.

WEAKNESSES

- Lack of phasing strategy in the development growth. Instead of enforcing strategies to densify already developed empty land, 6th of October new town extended its boundary from the original 4,788 in 1981 to actual 52,000 hectares, under the pressures of private developers. That generated a large amount of empty spaces within the city and contributed to a general waste of land.
- During the 1990s, 6th of October

transformed from a low-income social initiative into a capitalist development, mainly through Government special laws for new towns (suitable terms for land acquisition loans and land tax exemptions) that sparked huge private investments in housing and land acquisition. Private developers acquired and developed land within the boundary as an investment and not for housing consumption, which led to a large stock of empty housing.

- Lack of efficient transportation system from and to Cairo centre. Although the recent efforts to improve the connections through 26th July Road and the Cairo ring road, there is a general lack of public transportation services between Cairo and the new town.
- The strict plot size standards, generally too big, hinder the provision of affordable housing typologies. Originally conceived for low-income sectors of population, 6th of October new town remains unaffordable for the majority of population.

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الله أكبر
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Masdar Institute © Nigel Young / Foster+Partners

ABU DHABI, UNITED ARAB EMIRATES

Masdar



Abu Dhabi Emirate, United Arab Emirates (UAE)

Coordinates: 24°25'45"N 54°37'6"E

Area (Abu Dhabi emirate): 67,340 sq km

Population: Abu Dhabi city: 1.50 million (mid 2013 estimates).

GDP (Abu Dhabi Emirate): AED 707.5 billion (at constant prices)

Masdar City

Area: 700 hectares

Population (Planned-by 2025): 50,000 permanent residents and 40,000 daily commuters

Density (residential): 140 people per hectare

Projected Employment: Over 1,500 "green businesses" offering over 10,000 new jobs

Developer: Abu Dhabi Future Energy Company, subsidiary of Mubadala

Project cost: USD 22 billion

Brief History

- 2006: Masdar Initiative is launched by Abu Dhabi
- 2007: Construction works begin
- 2009: Photovoltaic solar power plant is commissioned.
- 2009: The Masdar Institute of Science and Technology is opened.
- 2015: 2015: Earlier estimated completion date
- 2025: New projected completion date.



CONTEXT AND RATIONALE

Masdar City is located in Abu Dhabi, the federal capital of the United Arab Emirates (UAE). It is a new urban complex being built as a sustainable city, whose site is next to the Abu Dhabi International Airport, and 30 kilometers East of Abu Dhabi city. Abu Dhabi's economy is heavily dependent on oil and gas (55% of the emirates GDP), a reality that the city and UAE has acknowledged as unsustainable, owing to the non-renewable nature of the oil and gas reserves. The Masdar City Initiative was, therefore, established as a showcase project that aims to diversify the city's economy by creating a robust clean energy industry. Hence, Masdar City is being developed as a "sustainable urban development and economic free zone".

In brief, the development was designed to meet 4 key objectives, as defined by the Masdar Institute in 2008:

1. To offer economic diversification in Abu Dhabi,
2. To enhance Abu Dhabi's position in the global markets,
3. To position UAE as a leading developer of sustainable technologies, and;
4. To contribute towards meaningful solutions to some of the challenges facing contemporary world.

Overall, the initiative will aim to commercialize sustainable energy, carbon management and water conservation technologies that are built around key foundations; in the areas of human capital, financing, technology and infrastructure that will enable Abu Dhabi transit from a technology consuming city to a technology producer.



PROCESS AND SOLUTIONS

The Abu Dhabi leaders launched the Masdar Initiative in 2006. The Masdar City, being a showcase, is designed to rely solely (100%) on renewable energy. The project is being implemented by the Abu Dhabi Future Energy Company, a subsidiary of government-owned Mubadala Development Company (Mubadala). The city will include commercial spaces, residential units, laboratories, factories, amenities and eco-friendly infrastructures. Renewable energy is already being produced by its 10 MW photovoltaic solar plant, is being produced. Commissioned in June 2009, this solar facility is the largest grid-connected, in the Middle East and North Africa (MENA) region.

INFRASTRUCTURE, PLANNING AND DESIGN SOLUTIONS

To enhance the environmental sustainability of the development, the city is designed with a north-east to south-west orientation that aims to create an optimum balance between sun and shade. The

streets are narrow-separately by only 23-39 feet; purposely to create a micro-climate effect that enhances shading and keeps the desert breeze moving. The streets are also designed in a manner that they encourage people's interaction-as social spaces. The environmental impact of the narrow streets is reinforced by the wind towers that are oriented strategically to tap in the cool ocean breeze while blowing the warm desert breeze out of the city.

To enhance the environmental sustainability on public spaces, the walkways and key public spaces have been designed with photovoltaic canopies with green roofs. This is supplemented by the emphasis laid on pedestrian friendly design and cycling provisions for the whole city; indeed, these two (cycling and walking) will be the popular modes of travel in the city. In addition, an electric transportation system will be developed to facilitate longer distance transportation. Two main systems of electric transportation will be a light rail that connects Masdar City and Abu Dhabi and a Personalized Rapid Transit System (PRT) that will be underground.



The buildings are designed to, probably because the entire development was led by the public sector, allow in air and keeps sun out during summer time. The materials for construction have high thermal mass, and during construction, recycling of materials is a priority. To meet her water demands, Masdar City will rely on desalination that is powered by solar energy. It is also planned that 80% of the waste water will be recycled and re-used in the households, as well as in agriculture. Cutting-edge waste recycling facilities and waste-to-energy plants will be developed, combined with compulsory and voluntary waste reduction measures and extensive re-use and composing to cater for 99% of the waste produced by the city. A green belt will surround the built-up area. This will be utilized for agriculture and green spaces for the population.



RESULTS, IMPACTS AND SHORTCOMINGS

Although Masdar city is behind schedule, the project has managed to accomplish some milestones, including the establishment of the Masdar Institute of Science and Technology, and the arrival of leading multinationals such as Siemens, General Electric (GE), Mitsubishi and SK Energy that has created a technology cluster-vital for innovations. The Masdar Initiative has built a portfolio of renewable energy operating assets and begun to encourage investments from high-tech companies and to develop renewable energy projects which include the following to date:

- The Masdar Clean Tech Fund of USD 250 million venture capital,
- The Torresol Energy project that is a joint venture between Masdar and Sener,
- Masdar is investing USD 170 million in WinWinD, makers of wind turbines; a joint venture with E.ON as an investment in the London Array, off-shore wind farm project;
- Shams 1, a flagship project, is a 100 MW CSP plant using parabolic trough technology that feeds green power into the Abu Dhabi grid; and the world's largest hydrogen-fired power plant of 500 MW will supply clean energy to meet Abu Dhabi's growing electricity demand with connection to the grid.

In addition, Masdar is building a 300 km CCS network in Abu Dhabi to capture and transport approximately 5 Mt CO₂ from three industrial sources. The CO₂ will be used for enhanced oil recovery (EOR) before being stored.

- Masdar is developing a solar manufacturing cluster to attract companies from the solar industry as well as from gas, glass and other industries. Masdar will provide the infrastructure and kick-start development of the industrial park concept.
- In addition "Masdar PV" is a wholly-owned thin-film PV company which, as an anchor client, will apply advanced semi-conductor nano-

manufacturing technologies to create PV modules with an annual manufacturing capacity of 210 MW.

- By design, the city will cut energy and water demand by 40% and reduce embodied carbon by 30%, compared to Business As Usual (BAU).
- The design will also see an urban development that accommodates walkability and cycling and offers plenty of public space for the inhabitants. Implementing the design that concentrates vehicles on the underground will make the streets car-free.
- Building designs, tree plantings and city infrastructure in general have been strategically designed to minimize the cooling demand by using natural processes wherever possible. However, the Masdar development has experienced various shortcomings, including:
 - Masdar City is already 15 years behind schedule. The financial means are unsure and the project management team has shifted from a zero-carbon project, to a carbon-neutral project.
 - The funding for the project has also been cited as unsustainable. Much of the revenue should come from oil and gas, whose generation entails environmental pollution from fossils. This makes it difficult for this model to be a replica in several parts of the world.
 - City planners had projected to have the city fully occupied by now. Currently however, the city's only residents are scholarship students at the Masdar Institute of Science and Technology.
 - The city designers have fallen short for accommodating low-income inhabitants, since affordable housing is lacking in the designs.
 - It is also likely that the city will draw significant resources for its sustainability, including an energy intensive desalination system.

KEY LESSONS

STRENGTHS

- Some of the green technologies and applications that are being used in Masdar City can easily be replicated in other cities, such as:
 - Energy efficient building designs that incorporate passive solar heating and cooling systems and innovative technologies to maintain low energy demand.
 - The Rapid Light Rail Transportation System.
 - The use of intelligent grids and smart metering.
 - The layout and the design of the city are embedded on the environmental and climatic conditions of the site. This is a vital design lesson that urban planners and designers can adapt towards developing more environmentally oriented urban developments that enhances environmental quality of place.
 - The political will of the government to invest in the Masdar Initiative is vital driving force for any new initiative of this scale.



Masdar Institute Campus Impression © Foster+Partners

WEAKNESSES

- Equity challenges-Although the designers promote the city is sustainable, there are doubts that the low-income will afford to reside in the city, in particular the migrant workers and laborers that the city will need. The housing designed for the city could be unaffordable to this group.
 - It is also argued that the city will demand massive energy, land, and water to construct and even sustain. This casts doubt on its model as a sustainable city. The production of the solar equipment will also entail energy consumption, from likely non-renewable sources.
 - Financing of the city-shortages resulted to delays; hence cost over-runs.
 - Although Masdar City is set to reduce the greenhouse footprint of UAE, its scale is still questionable whether its planned achievements will significantly offset the greenhouse impact of the rest of the urban developments in UAE. This raises debate on what scale is ideal to have significant impact on greenhouse impact of urban developments. However, its success will contribute to a paradigm shift towards smart city developments, globally.
 - The investment of USD 22 billion is not easily attainable, only a few cities in the world can afford this kind of investment to new city developments or for retrofitting their cities with green technologies. This limits the replicability of Masdar's initiative model.



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Masdar City Under Construction © Jan Seifert

NEW TOWNS

Evaluation Matrix

Diagnostic and Formulation	Almere	6 th of October	Masdar
Name of the Plan/Project	Almere	6 th of October	Masdar
Timeframe	1977-today	1982-today	2006-today
History of Plans & Projects	1977: Preparation of Draft Structure Plan for 250,000 population limit. 1984: Almere becomes an official municipality. 1997: Construction of the New City Centre in Almere Stad begins. 2007: Construction of New City Centre is completed. 2008: Municipality of Almere presents a manifesto defining basic principles for the realization of Almere 2 by the year 2030.	1976: Sadat introduces the new town programme in Egypt. First generation of new towns (6 th of October is one of these). 1981: 6 th of October construction begins. 2007: Commissioned master plan to revitalize the city.	
Format	New town	New town	New town-Special Economic Zone
Legal basis	-	New Urban Communities and Settlement Programme	-
Vision	Vision 2 for Almere 2030	Greater Cairo's New Urban Communities	Masdar Initiative
Objectives	(1) Almere was mainly designed to address housing shortage in the Amsterdam region (2) Almere 2 objectives are focused in emancipate the new town from Amsterdam (new centrality).	(1) New town system in government-owned land, with industrial areas around Cairo to attract population and investments outside the Nile valley.	(1) New town that champion renewable energy technologies (carbon neutral, zero waste, green buildings) (2) New attraction pole for sustainable energy researchers and high-tech companies
Led by	Government of the Netherlands Ijsselmeer Polders Development Agency (RUP)	Government of Egypt	Abu Dhabi Government Masdar Co.
Drafted by	Ijsselmeer Polders Development Agency (RUP)	-	Masdar Corporate
Discussed with	-	-	-
Revised by	-	-	-
Approved by	Government of the Netherlands	Government of Egypt	Abu Dhabi Government

Implementation and Monitoring	Almere	6 th of October	Masdar
Specific Institutional Set-up	Ijsselmeer Polders Development Agency (RUP)	-	Masdar Corporate
Specific Financial Arrangements	Public Development Corporation + large scale private developments. Government subsidization for residents. Government helps to private developers.	<ul style="list-style-type: none"> - Governmental Mortgage Guarantee Fund to support private developers - Tax reduction for landowners 	<ul style="list-style-type: none"> - Zero tax for companies - Zero import tariffs - Zero restrictions to capital movements - Intellectual property protection
M&E Mechanisms	-	-	-
Uptake by sectoral Plans and lower spatial Plans	Almere has been designed with polycentric neighbourhood plans that are following the main general plan (infrastructures, uses and densities).	Private developers are presenting neighbourhood plans for approval.	-
Key Results /Shortcomings	<ul style="list-style-type: none"> (1) A planned new town that successfully addressed to housing shortage in a environmental sustainable way (2) Integration of mix land use, that will be strengthen in Almere 2 (3) Preservation of agriculture at city edges limiting sprawl. (4) Well integrated public transportation system (5) Suburban character in the recent past 	<ul style="list-style-type: none"> (1) Actual population number are far from initial objectives (2) The new town real estate market is excluding lowest income population (3) The transformation of the new town in a “real estate opportunity” has generated some empty spaces and a huge stock of empty housing 	<ul style="list-style-type: none"> (1) Renewable energy new town (2) Walkable city design (3) Personal Rapid Transit: electric private transport system & Public Light Rail (4) Zero waste city through the “Waste2energy” programme

Plan/Project basic data	Almere	6 th of October	Masdar
Land area	248 sq km	4,788 ha (original plan) 26,000 ha (2008)	600 ha
Population	196,290 (2014)	500,000 (original plan previsions); 306,200 (2011)	40,000
Density	151 pop/ha	104 pop/ha (original plan previsions)	66 pop/ha
Budget	-	-	22 B USD

PUBLIC SPACES



Montreal Underground City © Flickr/Paul Lowry

MONTREAL CITY, CANADA

Montreal Underground City



Montreal City, Quebec Province, Canada

Coordinates: 45°30'N 73°34'W

Area: 365.13 km²

Population: 1,744,323 (2014)

Density: 4,774.3 pop/ sq km

Brief History

- 1929** Canadian National Railway Company (CNRC) receives a proposal of the underground corridor from Hugh Jones.
- 1958** CNRC decides to develop Place Ville-Marie over the railway tunnel.
- 1962-1967** Construction of the linkage to Place Ville-Marie Complex, the CNRC Central Station, the Queen Elizabeth Hotel, Place Bonaventure, the Chateau Champlain Hotel, and the Place Bonaventure, the Chateau Champlain Hotel, and the Place du Canada.
- 1964** Vincent Ponte, an American Planner designs a master plan for a 10 km walkway covering 7 ha area, north of the Place Ville-Marie-land owned by a private developer. This plan is closely prepared in consultation with the city, but was never fully realized, but existing underground network bares similarities. The city completes the subway station drawings, and starts process of land expropriation.
- 1976** Construction of Complex Desjardins, in preparation for the summer Olympics.
- 1980s** Connection to University of Quebec (UQAM) via Berri-UQAM Metro is developed.
- 1984** The preparation of a master plan by the staff of the Planning Department, which is never submitted to the City Council for approval, but becomes an important reference document.
- 1992** Adoption of the first city-wide Master Plan, which recognises the expansion of the indoor network, but fails to rank it as a priority.
- 1995** Completion of the tunnel between the McGill and Square-Victoria Metro Station linking the two "subsystems".
- 2002** The city-wide master plan is updated, with new guidelines that make pedestrian access and infrastructure a priority.
- 2003** Redevelopment of the 'Quartier International de Montreal' linking of Place Bonaventure and Square-Victoria Metro Station. At the same time FAR calculations are introduced for basement floor levels.

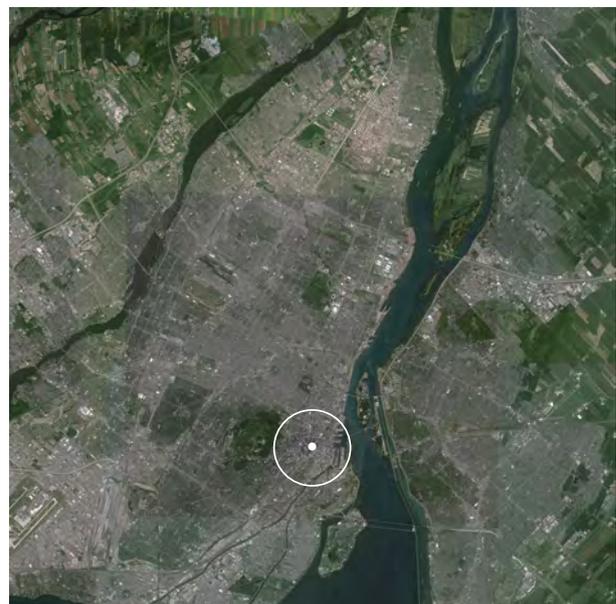


CONTEXT AND RATIONALE

Montreal's indoor pedestrian public space is arguably, the world's most expansive public space of this kind; covering 12km² of downtown area and stretching beyond 32 km. The underground city is located in the downtown area of Montreal; between two geographic features- St. Lawrence River to the South and Mount Royal to the North. The development of this underground is traced to 1929, when Hugué Jones presented a concept for underground developments to CNRC. This was largely attributed to visionary thinking at the time. Other factors that motivated the development of the indoor city were: climatic factors, where to create year round activity spaces shielded from extreme weather conditions; and the compactness of the city downtown area-resulting to high densities and congestions-compelled search for alternative developments. This compactness also resulted to increased pedestrian volumes, which informed the rationale for a metro system. At the same time, Montreal downtown was experiencing significant transformations in its real estate. Also the loopholes in the planning regulations combined with innovative planning tools and financing were instrumental in developing the underground city.

As this unfolded, an American developer, William Zeckendorf proposed a comprehensive development above the railway. The City would strengthen this idea by developing a boulevard towards Mount Royal. A metro system targeted at the built-up area was also initiated. This resulted to a large building with emphasis on basement spaces; a key milestone towards the development of the commercial underground. Later, the Place Ville-Marie, with space for more than 8000 office workers, and designed by Leo Ming Pei, was developed. Subsequent developments would follow, especially after the city expropriated land; targeting strategic

sites along the tunnels and stations. The acquired land was offered to developers for construction of the underground system. A Combination of developer Zeckendorf, with planner Vincente Ponte and architects Leo Ming Pei and Henry Cobb became the driving force of the underground city. Their efforts were complemented by collaboration of the City authorities and CNRC, as well as policies championed by political leaders: Jean Drapeau (focus on international events and megaprojects in 1954-57; 1960-86), Jean Dore' (focus on planning and coordination of the indoor city projects in 1986-94) and Jean Lesage. The underground was designed to function as a year-round commercial and pedestrian space that would offer tranquil interactive environment despite the prevailing weather conditions, and to take advantage of high pedestrian volumes to enhance real estate values in the downtown area.



Location Underground City © Google Earth



PROCESS AND SOLUTIONS

This 32 kilometer indoor pedestrian network consists of corridors, tunnels, and atriums linking 66 complexes, where there is access to a variety of spaces, outlets and services, including: residential spaces, recreational facilities, transportation services, retail businesses, hotels and restaurants, government offices, and cultural facilities. The underground is utilized by more than 500,000 pedestrians at any given day, with weekdays dominated by office workers in the area, and weekends mainly hosting visitors. This system connects over two thirds of the downtown office space, over 1500 housing units and thousands of indoor public spaces.

PLANNING AND CONSTRUCTION: PROJECT BY PROJECT APPROACH

There has been no comprehensive Master Plan for the underground. Its development stems from a series of development projects combined with creative application of development control and provision of incentives by the city authorities. At that time (1960s), development controls such

as zoning and regulations dominated planning. In 1964, Vincente Ponte developed master plan, whose implementation was never fully realised, but became influential in subsequent constructions. In 1984, 20 years after Ponte plan, the city initiated a Master planning exercise. This plan aimed to integrate pedestrian corridors, subway stations and key economic clusters (of the downtown). Yet, this plan was also never approved, partly because it was not aligned to a reference city-wide plan. Nevertheless, it became another important reference for guiding approvals of subsequent projects. Analysis of how the underground city has evolved indicates 3 major phases, namely: Conception (during the 1960s), Expansion (1970s) and Maturity (1980s to present).

The catalyst for the successful growth of the indoor pedestrian network was mainly the incentives, although planning and design also played a critical role. Attempts to develop a comprehensive master plan for the underground Approach to the underground has been managed through a combination of conditions, and or, guiding principles, with incentives to developers. A coordination committee was formed by the city to oversee the bidding processes, where developers were selected for the projects. The committee also evaluated the possible negative and positive impacts for each project. This process involved a combination of; a) land-use rights and incentives, and b) creative development control and regulation tools.



Montreal Underground © ecenglish.com

LAND-USE RIGHTS AND INCENTIVES:

- Long-term Leases-After acquiring land, the city offered the best preferred developer long-term leases (63 years in 1964) and incentives to undertake projects related to the underground.
- Floor Area Bonuses were used to enhance



indoor public space. Until 1990, the City never used to consider Floor Area Ratio (FAR) for underground constructions, which ended-up being an incentive for developers to maximise the floor area below.

- Granting Laneways-this involved the city selling the unused laneways to developers. By 2007, all unused laneways had been granted. This increased land available for private sector developments.
- Occupation of the public domain was allowed-This was achieved through special by-laws that facilitated agreements between the city and the private developers (technical and financial obligations) to occupy space under sidewalks, streets and lanes or parks.

DEVELOPMENT CONTROL AND REGULATION TOOLS:

The underground could not have been realised without the city relaxing its restrictive zoning codes, and adopting special by-laws for the underground. Through project by project basis, the city granted developers easements and entered into binding agreements, which enabled the gradual development of the expansive underground pedestrian network. The following were specifically instrumental in driving the process:

- Because developers were allowed to develop on public land on long-term lease

arrangements, this came with conditions, key among them to ensure access to the metro stations, and enhance public spaces, and to submit a monthly rent to the city.

- Basically, this meant that floor space density of the underground levels didn't count in FAR calculations; hence, developers had the luxury of higher FAR. This however, changed in 1992 when the City Master Plan introduced FAR for underground constructions. There was also a bonus on density for developers who enhanced public space-each extra square feet of public space accrued a density bonus of 4-6 square feet.
- The city adopted a policy which gave the city rights to dig tunnels under private property, as long as it had a depth of more than 10 metres. This enabled the city to avoid lengthy and expensive formalities of land appropriation.

FINANCING THE DEVELOPMENT

The developments were financed through public-private partnerships, where the city's main role was to avail land, grant building licenses and guidelines for development. Developers were required to pay rent for occupation of city space, depending on the surface land value. In addition, although the contracts stipulated the tunnels as public domain, the works related to their adjustments and maintenance was at the expense of the developers.



■ Underground □ Above Ground

Montreal Underground © Google Maps / UN Habitat 2015



RESULTS, IMPACTS AND SHORTCOMINGS

The development of the underground has resulted to significant enhancement of public spaces in the downtown area and overall, in the city. This has in-turn enhanced connectivity; commerce and increased real estate values in the area. But this has not been without various shortcomings. The specific results, impacts and shortcomings are outlined as follows:

- The major achievement of the underground city, of 32 kilometer in length, was the enhancement of indoor public spaces. The indoor pedestrian network covers 12 sq.km.
- The relatively stable and high-volume pedestrian flows have stabilized the commercial values in the down town area. The flow of weekday office workers and long distance commuting visitors, during the weekend, has contributed to this stabilization.
- Through enhanced connectivity with metro system, pedestrian flow has been directed to maximize interaction with the underground network. This has had overall improvement in the accessibility of the downtown area. About 500,000 pedestrians access the network every day, over 66 complexes are linked to the network, and access to the metro system is highly optimized.
- The underground have managed to produce a thriving indoor public space that is accessible throughout the year, as it shields users

from adverse weather conditions, especially in winter.

- Through maximizing on the underground floor area for commercial use by concentrating pedestrian traffic, developers managed to offset high costs associated with such type of constructions.
- There is emphasis on a vibrant commercial structure; hence promoting commercial activities at the core. This is achieved through lateral linkages of the underground and surface. Also the creative design to influence spatial behavioral patterns of visitors has enhanced the commercial thrust of the underground.
- However, the underground system is not easy to navigate, especially for visitors who find it difficult to orient with. This was complicated by new designs and constructions that introduced more than 2 underground floor levels, unlike the previous orientation that was limited to 2 floors.
- The FAR incentives encouraged more commercial use below ground, resulting to reduced retail activity from above ground.
- Parking and loading requirements have produced dull facades.
- There is growing transformation with downtown Montreal, led by the private sector, where residential space delivery is increasingly replacing delivery of office space. This will likely affect the usual dynamics of the underground.



Tunnels of Underground City © Flickr/GPS



CONTEXT AND RATIONALE

The underground city of Montreal is among the pioneers in influencing development of underground spaces and even above grade spaces. The case study offers vital lessons; both in terms of strengths and weakness:

STRENGTHS:

- The enhancement of the underground space system offers ideal alternatives for increasing availability of public space, at times of scarcity. This illustration by the Montreal Underground city that such developments can have economic feasibility is even more encouraging in enhancing underground public spaces. But such developments must be strategic and linked to all factors that will enhance the viability and vibrancy of the developed underground space.
- From the indoor pedestrian network, it is evident that shorter pedestrian distances are vital for enhancing connectivity, and especially where such distances are connected to the vital spaces e.g. shopping, amenities, and office/work space and transportation nodes.
- Underground systems are not only ideal for enhance public space systems in cities, but also are significant in increasing real estate values, by conceptualising public spaces beyond social spaces, but to constitute economic values.
- In areas that experience extreme weather conditions, the underground public space and commerce areas are ideal for ensuring sustainability of activities, all year round as witnessed in Montreal.
- Planning, rules and incentives, as well as political backing are prerequisites for underground developments. Innovative and non-restrictive regulatory tools are useful in attaining win-win situations in the context of public-private sector partnerships. For example, the

move by the city not to include FAR calculations for floor beneath, provided developers with an incentive to incur high costs of construction because connecting to the metro system and the pedestrian network would result to increased value and returns on their properties.

- By taking advantage of geography and compactness to optimise on connectivity and enhancement of public space system, combined with a reliable grid pattern and density, enabled Montreal to realise its expansive indoor network.
- The emphasis on weather protection in developing the underground can be interpreted as a vital incentive for commuters to use public transport, and also attract agglomerations in targeted areas, especially in cities that experience extreme weather conditions such as Montreal.

WEAKNESSES:

- The emphasis on underground city network and its activities have the threat of weakening surface activities. Already it is reported that the underground network of the downtown Montreal has contributed to less retail activities and pedestrian flow on the surface. This resulted to undermine the traditional qualities of the existing surface streets.
- Closely related to the above is the possibility of design flaws. For example, Montreal's city decision to place shopping on underground levels and parking on surface level has resulted to poor streetscape qualities on the surface.
- The development of the underground network is capital intensive. Failure to undertake thorough analysis, including future projections of possible risks is detrimental to its sustainability. However, such analysis may, after all, not fully address unforeseen externalities.



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COMPLEX
DESJARDINS

La Grande Place
La Grande Place



TORTOSA, SPAIN

Tortosa Historic Centre Renewal



Tortosa, Spain

Coordinates: 40°48'45" N 0°31'16"

GDP: 1,393,040 M. USD (Spain)

Area: 17.57 ha

Density: 174 pop/ha (approx.)

Budget: 22M USD

Brief History

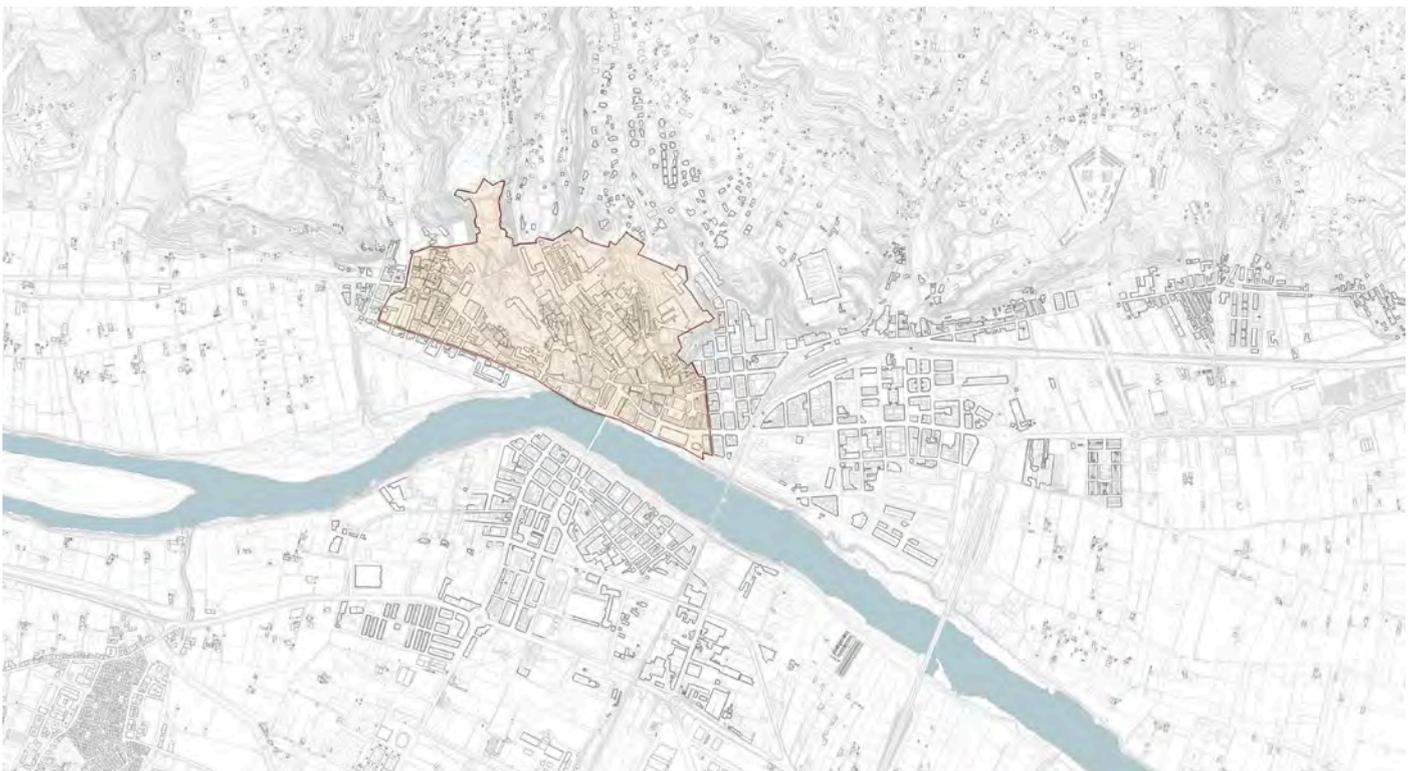
- 2003** High level of population ageing in the historic city centre, with high percentage of low-income and socially excluded citizens.
- 2005** Tortosa City Council approves the Pla integral del nucli antic de Tortosa (PINCAT).
- 2008** 12% of the total project is realized. The City Council approves changes to PINCAT in order to reduce its costs, eliminating some of the plan's proposals.
- 2009** Tortosa City Council opens a public competition for Sant Jaume neighbourhood urban renewal.
- 2010** The Catalanian regional government declares the historic centre of Tortosa "strategic renewal area".
- 2014** PINCAT realized at 83%, with additional 13% on going.



CONTEXT AND RATIONALE

Tortosa city centre, one of the biggest, the most interesting and important historical centre in Catalonia, has in the latest decades been subjected to a process of urban decay; losing the original central role within the city context. In 2005, citizens under social exclusion risk comprised 82% of the neighbourhood population, 42% of commerce spaces on ground floors were unused, and recent immigration was accounting for 22% of total neighbourhood population. The general situation of basic services in the historic centre was poor or inadequate, and there was a generalized lack of public space quality and adequate green spaces.

For these reasons Tortosa City Council started, in 2005, the process of formulating the city centre master plan, with the objective to rebalance the role and centrality of the area. This was within the context of the city, with special attention to renewal of the public space, improving basic services and public services, and historic heritage valorisation.





PROCESS AND SOLUTIONS

The proposal was based on 3 strategic components:

- Improving quality (public space, public services, basic services and built environment)
 - Concentrating in the area, in a determined period of time, economic investments in order to radically change the old neighbourhood dynamics.
 - Actions transversality, coordinating in the same space and time different actions, from urban renewal to economic impulse, from public space renewal to attention to private space improvement and regeneration, from public services creation to basic services improvement.
- The project was also based on 4 main structural objectives and intervention axes:

- Public space improvement, with interventions on historic centre main streets, squares and opens spaces.

The proposals were focused on the street section renewal, paying special attention to improving the pedestrian mobility (elimination of physical barriers for elder people) and improving the basic services infrastructure (water and energy supply, sanitation, public lightning). This objective, the most important of the renewal plan, would be financed with 45% of the total budget for the renewal plan. The plan individuated the 5 main public street axes in order to select priorities in investments. These activities were complemented with the "squares programme", based on the renewal of all the squares included in the intervention area, and with the creation of new small squares, through expropriation processes of selected plots.

The plan also provided general guidelines for the public spaces design, trying to achieve a homogenization and unitary image of the same, using materials and traditional technologies from the Tortosa's region. Other activities were

focused in improving the public lighting and potable water system, and modifying the waste management system through subterraneous containers.

- Public services improvement, proposing new facilities in the area, oriented mainly to provide social services to people in risk of social exclusion. Adding new facilities in the historic city centre will also help the area to recover the past centrality within the city context. The budget assigned to public services constituted the 23% of the total.

The public facilities improvement was based on two main objectives:

- Improving actual facilities, with priority to facilities designed for the most needy citizens (libraries, social centres focused on gender, elderly and infancy attention)
- Introducing new facilities that could become attracting poles for people from other neighbourhoods, in order to improve relations between the historic centre and the rest of the city and reducing the marginalization process of the area (local and regional government offices, Rovira i Virgili University campus) .
- Residential space improvement. One of the main pillars and objectives of the plan was to transform the city centre in a good location for its citizen's life. For that, the plan proposed a series of actions to acquire land and plots (expropriation) for new housing and new open spaces, and financing programmes to facilitate building renewal and investment in dwellings within the area. The budget destined to these activities was around 26% of the total.
- Social cohesion and economic regeneration.

The plan proposed new programs for commerce, cultural and touristic activity impulse, with special attention to programs oriented to citizens in risk of social exclusion. Around 6% of the total budget was destined to these activities. Most of



these programs were not strictly linked to the rest of urban renewal projects; hence they had different and faster time frames.

The plan divided these activities in 3 main groups:

- Programs for social improvement, such as the proposed new bus line within the area, a residential conditions observatory and activities directed to support women, elderly and young people.

- Programs for urban renewal, such as the redaction of the historic centre architecture guide, improvement of touristic routes signage and the new Historic Centre Office foundation.

- Programs for economic improvement, such as programs for commercial image improvement, commercial guide redaction and commerce assessment services.

RESULTS, IMPACTS AND SHORTCOMINGS

- The master plan proposal, presented in 2005, has been almost fully executed in less than 10 years. The urban renewal project, at the moment still in execution phase; it is just starting to give results.

- Therefore, more complete and coherent vision about the results of the same will likely be established in the coming years.

- Despite the fact that the master plan was executed in the content of an economic crisis in Spain, the plan has been successfully implemented. As of 2014, PINCAT was 83% implemented, and the rest was on-going, with the PINCAT Plan Office having been set-up to spearhead the implementation process.



Tortosa Centre © Flickr/jqmj

KEY LESSONS

STRENGTHS:

- The main objectives of the PINCAT plan did not only focus its proposals on the complete range of urban renewal aspects, such public and private domain; renewal, infrastructure and public facilities implementation. But also focussed its proposals on several activities and programmes that directly linked with the socio-economic sphere.
- Against that backdrop, all urban renewal proposals have been backboneed with several “soft” social and economic activities, like neighbourhood citizen’s job creation or gender and elder inclusion and youth education programmes.

WEAKNESSES:

- Failure to mobilise adequate funding (certainly) limits attainment of predefined targets. Some of PINCAT previewed actions, for example, the escalators between the lowest and the higher part of the historic centre, have been cancelled during the process because of budget shortage.

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Areal Green Line © Ags Prensa

AGUASCALIENTES, MEXICO

Green Line



Mexico

Coordinates: 40°48'45" N 0°31'16"

GDP: 1,259,201 M. USD

Area: 60 ha

Budget: 18M USD

Brief History

- 1980** Aguascalientes' Plan Director de Desarrollo Urbano prescribes new developments in the oriental part of the city.
- 1985** After Mexico City's earthquake, Aguascalientes begins receiving population from the region, fast increasing its population, and proportionally reducing the standard of life.
- 1990-2010** The eastern part of Aguascalientes suffers lack of infrastructure and public facilities.
- 2011** Aguascalientes' City Council starts the Linea Verde ("Green Line") project.



CONTEXT AND RATIONALE

After 1985 Mexico City's region earthquake, Aguascalientes, one of the 46 metropolitan areas in Mexico, experienced a fast increase of population. This urban growth affected mostly the eastern part of the city, from the north south railway line towards the eastern borders of the urban limits. This fast demographic growth in the east, not linked with proportional facilities increase, generated an urban tissue socially disconnected from the rest of the city, with the highest rate of criminality and the lowest average population age. The eastern part was also having only 20% of city public facilities, and an average

public open space per capita of 1 square meters, being the average in the west part of the city around 5.

It is to reduce these differences and general lack of facilities in the east that the City Council started in 2011 an urban renewal project for the semi-abandoned land strip on top of PEMEX (Mexican Petrol Company) oil duct.

The strip is 12 kilometres long and 50 to 60 meters width, interesting around 90 different neighbourhoods with a total population of 300'000 inhabitants.





RESULTS, IMPACTS AND SHORTCOMINGS

The “Green Line” project was established by the Aguascalientes City Council with the support of the Mexican Government and the District authority, and the support of the semi-public company, PEMEX.

The Instituto de Convivencia Linea Verde was established to manage the project and to secure its implementation and maintenance of open spaces and infrastructures. It also is the body in charge of promoting social activities, in line with the city master plan.

A Consejo de Participacion Ciudadana is the body that enhances the community participation in the new public space activities, facilitating the linkage between the institutional social programmes and the neighbourhoods’ populations.

The Green Line strip proposal resides on 6 main components:

- Green areas: 60 ha new green area, with new trees plantation, regeneration and renewal of 5 watercourses crossing the strip.
- Cultural spaces: new public facilities oriented to arts and culture, as the Oriente Cultura Centre, arts and crafts and arts initiation

centres, and spaces for open air theatre, dance, music and chess.

- Sport grounds: bike lanes all along the 15 kms strip, 10 new sport grounds and a sport centre.
- Leisure areas: recreation centres, public libraries, play grounds and small squares are distributed all along the strip.
- Hydraulic infrastructures: the Green Line is linked to the Purple Line (“Linea Morada”), a new hydraulic system at the city scale, with 4 new treatment plants and 5 new elevated water tanks. The Linea Morada project, within the “Plan de Recuperacion Hidrica para la Ciudad de Aguascalientes”, consists in a total renewal of the water capture and distribution network, with a second phase objective to interconnect, in one network, the 48 different water treatment plants within the municipality.
- Vehicular infrastructure: the strip is also a new north-south vehicular connection infrastructure, with 2 lanes in both directions, different bridges on the watercourses and at the intersection with regional roads. The street illumination is generated by solar panels.



Areal Green Line © Flickr/Ags Prensa



KEY LESSONS

STRENGTHS:

- Green Line initiative, that follows similar experiences in Latin America, represents an interesting way to link physical proposal with social challenges. The proposal challenges directly several physical city gaps, as for example public space deficiencies, water insufficiency, low income neighbourhoods spatial segregation from the rest of the city, with social actions in a framework based on participative process.
- It also represents an interesting example to rethink the management and use of infrastructure land within the urban context, transforming spatial obstacles into city assets.

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WEAKNESSES:

- The sustainability of the initiative may have been overlooked during design of the project. This particularly refers to the political sustainability aspect; as observed, the 2013 changes in local government stopped the initiative. This also casts doubts on the strength of the community participation, which one would assume would have pressured the local government to continue with the project.

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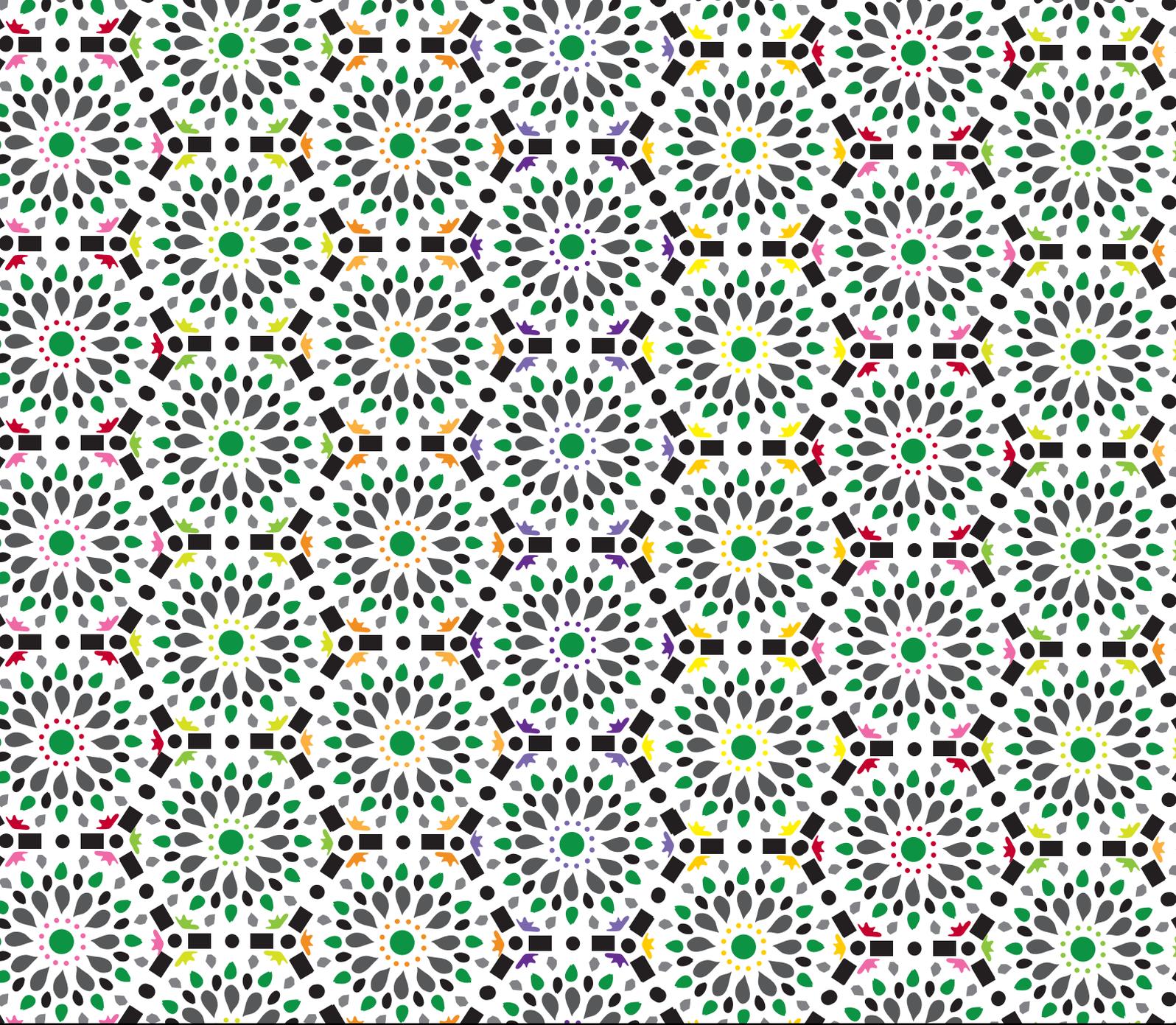
PUBLIC SPACE

Evaluation Matrix

Diagnostic and Formulation	Montreal	Tortosa	Aguascalientes
Name of the Plan/Project	Underground City	PINCAT (Pla Integral del Nucli Antic de Tortosa)	Green Line
Timeframe	1929-today	2003-today	2011-today
History of Plans & Projects	<p>1929: Canadian National Railway Company (CNRC) receives a proposal of the underground corridor from Hugh Jones.</p> <p>1958: CNRC decides to develop Place Ville-Marie over the railway tunnel.</p> <p>1962-1967: Construction of the first underground linkage</p> <p>1964: Private developers prepared a master plan for a 10 km walkway covering 7 ha area. In consultation with the City Council.</p> <p>1992: Adoption of the first city-wide Master Plan,</p> <p>1995: Completion of the tunnel between the McGill and Square-Victoria Metro Station linking the two "subsystems".</p> <p>2002: The city-wide master plan is updated, with new guidelines that make pedestrian access and infrastructure a priority.</p> <p>2003: FAR calculations are introduced for basement floor levels.</p>	<p>2005: Tortosa City Council approves the <i>Pla integral del nucli antic de Tortosa</i> (PINCAT).</p> <p>2008: 12% of the total project is realized. The City Council approves changes to PINCAT in order to reduce its costs, eliminating some of the plan's proposals.</p> <p>2009: Tortosa City Council opens a public competition for Sant Jaume neighbourhood urban renewal.</p>	<p>2011: Aguascalientes' City Council starts the Linea Verde ("Green Line") project.</p>
Format	Private initiatives in collaboration with Canadian Railway Company and City Council.	Neighbourhood Plan	Public space project
Legal basis	Zoning regulations	Llei de Barris (Catalonian law for incentives to urban renewal)	-
Vision	-	-	-
Objectives	Creation of underground public space that can be used all the year, also during winter climate conditions, and linked to city transport system.	Social and economic revitalization of the historic centre through a renewal plan for the old city.	Transform a semi-abandoned land strip of PEMEX oil duct in a new public space serving lowest income neighbourhoods within the city boundary.
Led by	City of Montreal special committee	City of Tortosa	Instituto de Convivencia Linea Verde
Drafted by	Private developers (project by project approach)	City of Tortosa	City of Aguascalientes
Discussed with	City of Montreal special committee	Generalitat de Catalunya	Consejo de Participación Ciudadana
Revised by	City of Montreal special committee	City of Tortosa	City of Aguascalientes Consejo de Participación Ciudadana Instituto de Convivencia Linea Verde
Approved by	City of Montreal special committee	City of Tortosa Generalitat de Catalunya	City of Aguascalientes

Implementation and Monitoring	Montreal	Tortosa	Agascalientes
Specific Institutional Set-up	City of Montreal special committee	-	Instituto de Convivencia Linea Verde
Specific Financial Arrangements	- Long term leases and incentives for privates to develop underground public spaces - Until 1990 underground FARs were not considered - Unused public laneways sold to private developers - Occupation of land under public space permitted	-	Public/Private Partnerships
M&E Mechanisms	The Special Committee control developments, providing guidelines for private developers. Master plans for underground public space were never fully implemented, but remained relevant guidelines documents	-	The Instituto de Convivencia Linea Verde managed the process, maintaining several participatory activities within different districts in order to establish with the community the programme and solutions.
Uptake by sectoral Plans and lower spatial Plans	-	Sant Jaume neighbourhood urban renewal	-
Key Results/Shortcomings	<ol style="list-style-type: none"> (1) 32 kilometres of underground public spaces realized. (2) High volume of users (3) Interaction with public transportation system (4) Public space that is working in adverse climate conditions (5) Incentives for underground development reduced the activity and the quality of city's ground floor spaces 	<ol style="list-style-type: none"> (1) The master plans has been almost fully implemented in less than 10 years (2) The renewal plan not only was focused in the urban design aspects, but was also completed by several social and economic activities and programmes. (3) Some of original previewed activities were finally not implemented for budget shortage 	<ol style="list-style-type: none"> (1) The initiative gave good results, providing good quality public spaces in the lowest income part of the city (2) Several social sub-programmes directed to communities have been successful. (3) The project can also become a model for other PEMEX ducts at the national scale

Plan/Project basic data	Montreal	Tortosa	Agascalientes
Land area	32 Kilometers	17.57 ha	60 ha
Population	500.000 visitors/day	3,000	-
Density	-	174 pop/ha	-
Budget	-	22 M USD	18 M USD



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