Integrated Urbanism

The Danish Architectural Policy: integrating environmental, social, cultural and economic aspects to create sustainable, high-quality environments

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Anita Morandini was awarded the Byera Hadley Travelling Scholarship in 2013
Cover image: St John's Eve – Danish tradition of celebrating the Midsummer with bonfires and speeches, part of Copenhagen's vibrant cultural life on the canals of Christianshavn.
Source: Anita Morandini

Integrated Urbanism

The Danish Architectural Policy: integrating environmental, social, cultural and economic aspects to create sustainable, high-quality environments

‘Sustainable, high-quality and people-centred architecture is a central focus of the Danish Government, including underlining the potential financial benefits of investing in architectural quality and sustainability in an environmental, economic and social sense.’

The Danish Government (2014)
Danish Architectural Policy – Putting People First

Introduction

In the early 1990s Copenhagen was characterised by a stagnating economy and lagging urban growth, a product of an ailing industrial harbour and planning system short of strategic foresight. Despite this legacy, over the past two decades Copenhagen has undergone rapid transformation and is today generally regarded as one of the world's most attractive and liveable cities. The transition has involved integrated economic and planning strategies coupled with an ongoing championing of good design, where design quality has been leveraged to reinvigorate the city.

Through the lens of the national Danish architectural policies, this study observes projects with the aim of understanding how integration has been used to create high-quality places. It explores the nature of the decision-making environment and architectural/ urban development projects which have collectively shaped and contributed to Copenhagen's growth and transformation to a city of high amenity.

From inception, *Danish Architectural Policy – Putting People First*, was formulated as an integrated policy, traversing government ministries to ensure the benefits of quality design are understood, valued, embraced and co-delivered by all sectors contributing to the built environment. It is in itself a demonstration of the government's commitment to 'Integrated Urbanism'[1] – the practice of integrating environmental, social, cultural and economic aspects to create sustainable, high-quality environments.

With the aim of analysing Integrated Urbanism in Copenhagen[2], this study surveys 13 development projects and identifies common principles contributing to the success of each. Studies encompassed site visits, desk-top research and interviews conducted with relevant development actors such as designers, planners, public and private developers, government authorities and agencies.

FOOTNOTES:

1. 'Integrated Urbanism' refers to the practice of integrating environmental, social, cultural and economic aspects to create sustainable, high-quality environments. Malcom Smith of Arup founded an Integrated Urbanism Unit 2008. The unit is a dedicated urbanism group bringing together multiple disciplines within the global Arup group. The unit provides integrated design services for complex development projects. Arup's integrated urbanism approach to master planning acknowledges the interdependence of urban systems and communities as well as the effects of global issues, such as climate change resilience and economic uncertainty on the future of our cities: http://www.arup.com/expertise/services/masterplanning.

2. My study tour also encompassed 12 case studies located in HafenCity and Wilhelmsberg, Germany. Undertakings included site visits and interviews with relevant development actors. In order to gain a more comprehensive understanding of context and its impact on integration, this report documents the Danish case studies only.

GULDBERGS PLADS IS A NEW URBAN SPACE IN COPENHAGEN'S NØRREBRO NEIGHBOURHOOD ACTING AS AN URBAN SQUARE, A PUBLIC PLAYGROUND AND A SCHOOLYARD FOR GULDBERG SKOLE.
The urban space is part of a neighbourhood renewal project with citizen involvement as a focal point. It is financed by the State, Copenhagen Municipality and The Danish Foundation for Culture and Sports Facilities and was designed by Nord Architects.

STUDY SCOPE

Initially, my investigations focused on architectural practice models and the architect's capacity to influence the strategic direction of a complex, integrated project. However, in the course of studies I realised these projects could not be viewed in isolation from the greater development context. Projects are subject to and shaped by a web of interdependencies and external forces, such as site, regulatory and market contexts. These extend well beyond the reach of an architect's influence.

The consolidated review of 13 projects revealed, in almost all cases, a degree of government influence facilitating integration. Underpinning the success of these projects, there is a holistic framework of public leadership, design policy and good governance. The Danish architectural design policies feature in this framework as an influencing force, fostering and facilitating the integrating of environmental, social, cultural and economic aspects for better place-making.

On the bases of these observations, the study focus has been broadened to include the relationship between project and external contexts impacting Integrated Urbanism.

The following case studies have provided valuable first insights to inform practice and have raised many more areas of enquiry: How does the public policy encourage integration for improved design quality and potential innovation? How does it impact decision environments of designers and developers? How does it encourage investment in integrated solutions which advantage urban design quality?

INTEGRATED URBANISM

'Integrated Urbanism' is the practice of integrating environmental, social, cultural and economic aspects to create sustainable, high-quality environments.

Borrowing from George's (1997) procedural explanation for contemporary urban design, Integrated Urbanism may be understood as the outcome of a *decision-making environment* and a *project environment*.

The *decision-making environment* is the context which shapes the formulation of a development project. It consists of site, regulatory and market forces which influence the feasibility of a development project and the developer's behaviour.

The *project environment* is a discrete development project, such as a building, public space, urban renewal development, which is designed and delivered within the limits of the decision-making environment.

In a regulatory planning context, a *decision-making environment* may take the form of design policies, frameworks, strategies, plans, incentives and disincentives, such as financial subsidies, discounted land or infrastructure provisions. This regulatory context is generally formulated by the public sector. It proactively shapes the design and development processes, creating a frame for the *project environment*. By setting design constraints and potentials, these *decision-making environments* can have significant influence on the *project environment*.

The two environments are intrinsically linked. Project delivery in such contexts may be challenged by issues which are:

- difficult to define, quantify, and imperfectly understood
- unstable and continue to change while the design team is attempting to anchor the solution
- not easily contained to the task of a single expert, involving non-traditional disciplines expanding the web of coordination (i.e. demographers, urban informatics, cultural strategists, etc.).

Complex in nature, these projects may not be readily resolved through traditional linear design practices but, instead, require a collaborative, interdisciplinary and integrated approach.

Tackling the challenges of Integrated Urbanism requires development actors to operate in more innovative ways. Processes and governance systems need to be sufficiently flexible to negotiate change and support collaboration without compromising the strategic overview nor quality of outcome.

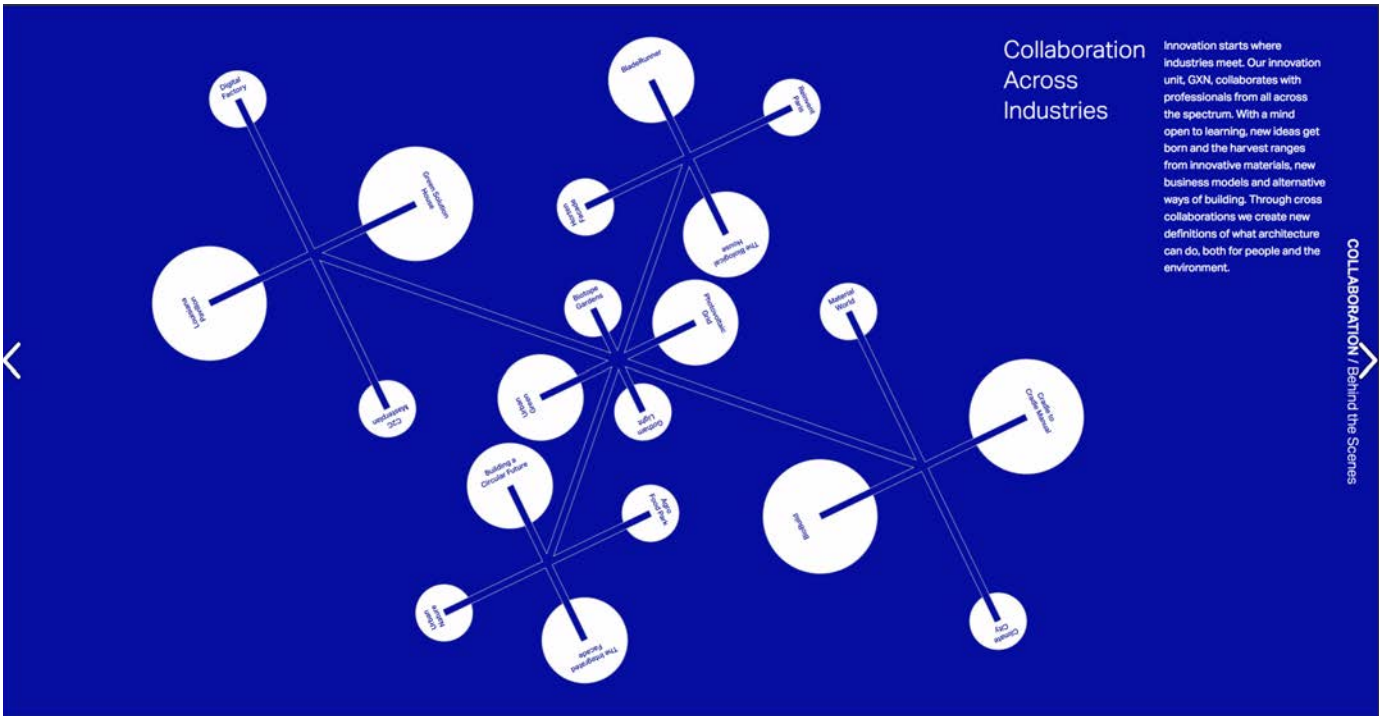
SUPPORTING RADICAL INNOVATION

The Ørestad Gymnasium was the result of a design competition, won by 3XN Architects, who carried architectural services through to the completion of the building. The project has been widely awarded and acknowledged as a radical innovation in the design of schools, integrating new spatial strategies, pedagogical, social and technological aspects.

If viewed in ignorance of the greater context, the opportunity for the project's radical innovations may appear to have been carved out entirely by the architect's design ingenuity and negotiating skills. There is no doubt the design is spatially innovative, however, as Kim Herforth Nielson, Director of 3XN explains, the potential for the most radical innovations was affected by the Danish Government's 2005 educational reforms. This is a regulatory decision-making environment situated well outside the architect's remit or influence.

A bold departure from the traditional reproduction of established knowledge, the reforms promoted a new pedagogy of self-directed learning. Embraced by the client - City of Copenhagen – these shaped the formulation of the design brief. Programmatic terms were expressed as aspirations and objectives, rather than the imposition of traditional empirical requirements for rooms and learning spaces, hence leaving much to the architect's interpretation.

Neilson notes that the competition brief had a twofold effect upon the project and studio practice. Firstly, architectural and spatial explorations unprecedented in traditional school architecture were enabled by



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INTERDISCIPLINARY PRACTICE
and its value-add to the studio of 3XN were celebrated and featured in the recent 3XN exhibition 2016 Berlin Behind the Scenes – The Simplicity and Complexity of Architecture.
Source: 3XN

the brief. Secondly, this necessitated 3XN working in close collaboration with educational and technological experts to explore the new pedagogy and ensure end-user needs and behaviour were appropriately supported by the architecture.

The project was pivotal in 3XN's development, seeding a legacy of now habitual collaborative design practice and appetite for early engagement in formulating briefs with an end-user focus.

At the time of interview, 3XN was undertaking post-occupancy studies on their built projects to understand how architecture might influence user behaviour. In collaboration with the studio research team, a behavioural psychologist was establishing a metric by which to assess user behaviour in built environments and collating data to inform the studio's practice.

The more advanced a project, the less chance there is to create radical innovation. Typically, on the back of established strategic objectives, an architect receives a pre-defined brief and designs in response. At this late stage, possibilities are curtailed and limited to incremental project innovations. Ørestad Gymnasium illustrates an alternative scenario where, through policy reforms and a sophisticated design brief, government has stimulated improved design and innovation.

COBE COPENHAGEN OFFICE AT WORK
'Cross-disciplinary teamwork is central in our working method and each project team cooperates with a wide range of external experts in order to obtain the best opportunities and potential towards finding innovative solutions in each particular project.'
COBE
Photo source: Anita Morandini

Integration and Opportunity

The motivating forces driving integrated approaches in decision-making and project environments create potential opportunities for the architecture and urban design professions.

Worldwide, government and industry are evolving practices in a bid to address contemporary challenges, such as climate change, rapidly shifting demographics, urban densification, global competitiveness, technological advancements and the consequential time pressures in addressing these issues. As new strategies and practices evolve, gaps in capabilities are identified, thus creating opportunity for the architecture and urban design professions to develop service offerings to fill these gaps.

DRIVERS

The following outlines some of the principle drivers compelling an integrated approach to city-making.

Urbanisation and Densification

Cities are expected to accommodate over two-thirds of the world's population by 2050. In the next decade, it is expected that 1 billion people will enter the global middle class and elect to live in the city seeking work, social opportunities and a good quality of life.

With rapid urbanisation come the challenges of increasing demands for resources, amenities, infrastructure, housing and jobs in a safe, vibrant, interconnected cityscape. Densification requires good design to ensure amenity and smart utilisation of spaces to support multiple, overlapping uses and intensification of activities.

UN 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

Source: United Nations, 2030 Agenda for Sustainable Development, 2015

Sustainability, Climate Change and Resilience
Sustainability is high on most government agendas and climate change is generally acknowledged as a catalyst for extreme heatwaves, earthquakes, flooding and other natural disasters. The economic and societal impacts of climate change incidents are driving governments to improve the resilience of cities.

Creating sustainable and resilient cities requires significant investment in infrastructure, including transport, energy, water and sanitation. Governments, seeking to convert these cost drivers to value-add drivers, i.e. creating attractive cities, are reliant on design experts capable of operating collaboratively and leveraging interdependent issues for multiple benefit.

Globalisation and Competition
Cities are the engines of national economies and the centres of global trade and investment. In a global context they compete to attract investment and skilled labour to drive local economic growth. In this pursuit, governments are tasked with identifying and unlocking the economic assets, physical attributes, and accessibility advantages that will continue to drive growth.

Good urban design creating vibrant, accessible and highly liveable cities underpins a city's competitive advantage as the skilled workforce chooses to locate where they may conveniently access the amenity of the city, and companies situate where there is ready access to a range of key customers and skilled labour.

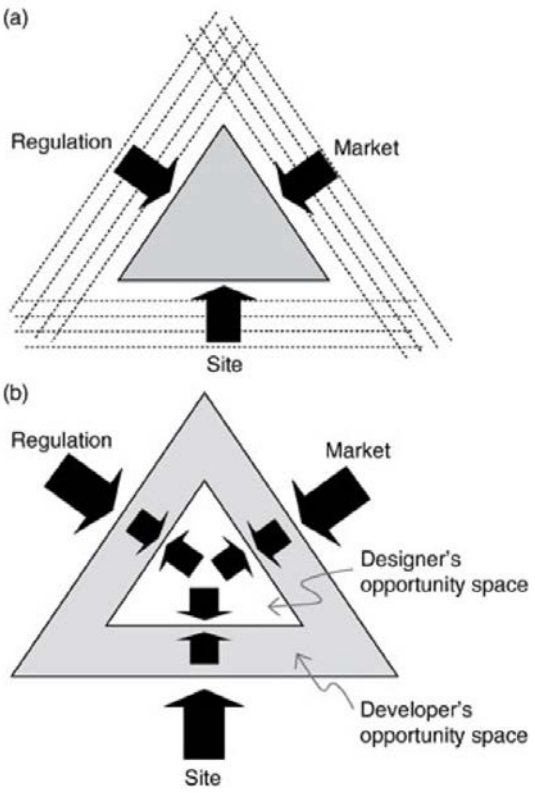
Shifting Governance
Cities are facing a devolution of federal and state engagement. Both large and small cities are largely left to their own devices, requiring city leaders to design, finance, and deliver multisector economic development initiatives which were once seen as the responsibility of higher levels of government.

In this context, governments are increasingly deploying public–private partnership models to deliver public infrastructure and facilities and urban renewal. These partnerships rely on the combined acumen of private enterprise and public governance and development actors equipped to bridge both interests.

Technological advances
Development projects are now subject to unprecedented levels of public scrutiny brought about by modern technology and interconnectivity. The management of public expectations and extended stakeholder participation challenges the development industry to find new ways of working.

In building, technological advances have enabled the disaggregation of construction with specialisation in the production of discrete building components – thus placing greater emphasis on the coordination and collaboration of specialist designers and works contractors.

Scale and Speed in Delivery
Confronted by the urgencies of housing over two-thirds of the world's population in cities by 2050, the sheer scale of urban renewal, infrastructure, and speed by which it is to be delivered, is testing the capacity of government at all levels. These demands necessitate cooperation and efficiencies gained through combined public and private action.



OPPORTUNITY SPACE
(a) Developer's opportunity space
(b) Developer's and designer's opportunity space
Source: Tiesdell & Adams, 2011, Loc.480

OPPORTUNITY SPACE

Developers are increasingly dependent on an expanding battalion of consultants to attend to complex projects. In these circumstances the developer requires much more expertise in order to resolve multifaceted issues and unlock development potential. Issues could include extremely constrained sites, changing market demands, elevated community expectations, challenging regulatory conditions, etc. Here exists an opportunity for architects.

Operating in such complex environments, to exert influence, drive innovation and superior design solutions means not only being equipped with design skills but also having the knowledge to negotiate effectively. Understanding the development decision-making environment and its impact on key actors can empower an architect in protecting or expanding design opportunities.

An architect is well-placed when design expertise is complemented by knowledge in real estate and development processes, the risk and reward which drives them, and the impacts of regulatory conditions.

The developer's and designer's opportunity space is described by Bentley (cited in Tiesdell & Adams, 2011, Loc.480):

'The developer's opportunity space (room for manoeuvre) is constrained by three forces or contexts:

- *Site context* – the more problematic, difficult or constrained the site the smaller the developer's opportunity space.
- *Regulatory context* – the more demanding the regulatory context the smaller the developer's opportunity space.
- *Market context* – the more demanding or competitive the market context the smaller the developer's opportunity space.

A larger opportunity space gives the developer more autonomy to carry out development in his/her own direct interests – a situation of producer sovereignty. If external forces eradicate the opportunity space, then development is not feasible or viable at that particular time. The designer's opportunity space is contained within the developer's opportunity space and is constrained by the same forces constraining the developer's opportunity space, by how the developer filters those forces and by the other development actors' agency.'

CO-PRODUCTION – PUBLIC + PRIVATE

'In recent years, the neat separation between public and private-sector development has … begun to break down: very few development projects occur entirely within the private sector, unmediated by any form of public regulation and intervention, and development is

'Design is invariably considered to be the wild card in the project management pack because its values are poorly understood and its methods are difficult to explain, even by designers. In the first place the concept is hard to define.'

Allinson, 1997, p.v

increasingly a process of co-production between public and private sectors.' (Tiesdell & Adams,2011, Loc.406)

As governments have been faced with dwindling resources to make direct capital investments, pay for the update of out-graded public infrastructure and facilities, or revitalisation of languishing urban areas, they have been compelled to look for alternative funding strategies. In the Danish context, this has led to various public–private partnering models having a transformative effect on urban landscapes such as Copenhagen.

Katz and Noring (2017, p.5) explore the public–private corporate model utilised by City & Port Development Corporation (By & Havn) in the realisation of urban renewal areas such as Ørestad and Nordhavn. Combining 'the efficiency of market discipline and mechanisms with the benefits of public direction and legitimacy. The model enables large-scale regeneration to be conducted in a more efficient and streamlined manner than can be done by public authorities alone.'

The strategy contributes to the revitalisation of the city and finance of large-scale infrastructure by increasing the commercial yield of publicly owned land and buildings, without raising taxes. 'The approach deploys an innovative institutional vehicle – a publicly owned, privately run corporation – to achieve the high-level management and value appreciation of assets more commonly found in the private sector while retaining development profits for public use.' The public sector participates for the long term, exerting control over design quality and reaping significant benefits as development value naturally appreciates from smart public investments.

This model affords the public agency long-term control over design quality and developers must adhere to standards elevating the overall quality of development. Planning and buildings must conform to sustainability standards and meet Copenhagen's ambitions of integrating environmental, social, cultural as well as economic aspects in creating sustainable development. Within this framework, multipronged initiatives support good design, encouraging developers to engage skilled architects, where in other circumstance they may have not elected to do so.

Open competitions for both master plan and individual development lots are undertaken with a commitment to balancing public and private interests. The benefits of comparative assessment yield the best possible design solutions to inform development plans as well as individual building projects. Opportunities for young design firms are also created through this process. In the case of the Nordhavn master planning competition, the winning consortium included the emerging architectural firm COBE with Polyform & Ramball (Engineers) and SLETH Modernism.

DESIGN MANAGEMENT

Complementary to the planning and control mechanics of project management, design management has, over the past 10 years, rapidly developed with a focus on steering design, the least predictable process in project implementation. In response to increasing project complexity, more stringent legislation, rapidly changing technologies, evolving procurement systems and greater responsibility for design quality, many contracting organisations have recognised the value of design (Emmitt & Ruikar, 2013). Design is understood

as a means to negotiating complex circumstances and unlocking development potential.

The advent of design management might be taken as an indication that project management alone is not enough to adequately address project complexity and ensure quality. As design management involves coordinating a set of relationships between the client, specialist design consultants, vendors, manufacturers and constructors, it may significantly affect design outcomes which were traditionally the domain of the architect.

Dumas and Mitzberg (cited in Gray & Hughes, 2001, p.9) refer to an inherent danger embedded in the idea of design management. 'Although design is primarily undertaken by designers, decisions made by design managers may have a profound influence on what the designers do. This they call silent design development.'

Architectural skill in synthesising complex, interconnected issues to a holistic design resolution is an invaluable asset in unlocking development potential in this space. However, in the conception of design management, it is the project management consultants, development and construction companies, rather than design consultancies which are taking charge.

Design management is still in its infancy and little understood (Gray & Hughes, 2001), and is potentially an opportunity space for the architectural profession. As practices and services evolve, there is scope for architects to shape process, establish leadership and reclaim a position of influence.

In the Danish context, design management techniques are routinely employed by organisations such as By & Havn, Copenhagen Municipality and Realdania, to assist in the execution of projects with multiple stakeholders and development actors. As Rahbek, Head of Communications and Horizontal Services, Realdania explains (Rahbek & Ravn 2015), Realdania is constantly refining and exploring improved models of management to ensure the highest possible quality design of its various projects, from the scale of urban renewal to individual buildings.

Design team activities, output and management of external influences affecting the team are stewarded by processes, generally including:

- establishment of a matrix for managing the multiple stakeholders and actors involved in the design process
- setting of goals, strategies and policies for good design and coordination between all contributors
- creating operational structures to support good design and establishment of expert and integrated teams
- monitoring design progress and facilitating collaboration to assist in streamlining the delivery program
- evaluating and assessing design quality against project objectives and design criteria.

EVOLUTION OF PROJECT MANAGEMENT

The following brief history of project management serves to contextualise the changing role of the architect and the erosion of services once conventionally provided by the profession.

Contemporary project management evolved in the 1950s with an agenda to deliver a specified level of quality, on time, to budget, within finite resources while managing out risk. Today, in project execution it is part of routine business, assisting organisations to deliver effectively and competitively, thus resulting in better value for clients. However, employing project management does not automatically guarantee success. Discounting qualitative objectives to advantage timing and budget is likely to diminish project success, particularly in the complex environment of Integrated Urbanism.

The practice of separating responsibilities in the management of project delivery is firmly entrenched in the development industry (Emmitt & Ruikar, 2013, p.5) constituted of:

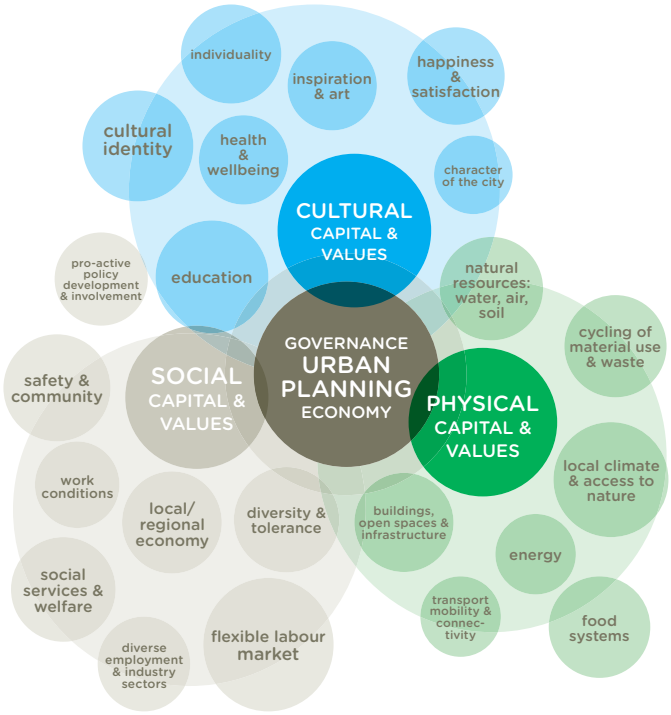
'Project Management – In the majority of contracting organisations, it is the project manager who has ultimate responsibility for the project. Typical performance criteria relate to the completion of the project on time, to budget and to specified quality. Although design should feature strongly in the quality criteria it has not always been a major concern of project managers, the majority of whom are not educated in design, often leading to criticism of the design quality of the finished projects.

Design Management – The design manager is responsible for all aspects of design, be it pre-contract or post-contract. Although the role encompasses many project management skills, a passion for design quality makes the role unique. It is the design manager who provides leadership in design.

Construction Management – Construction managers are concerned with realising the design safely and efficiently on the construction site. The concern is with the effective management of resources such as planned people and materials. Their task is to translate the design, codified in drawings and specifications, into a physical artefact, thus their attention is on the accuracy and completeness of the information provided to them, not on the quality of the design per se. Requests for design information and requests the design changes will be channelled through the construction design manager.'

Project management gained prominence in the 1950s when military and manufacturing industries applied management techniques in an attempt to address complex projects with high uncertainty, large budgets and pressures of speed-to-market delivery. By the 1960s, various defence departments, large engineering and construction companies worldwide were regularly applying its principles and tools. By the 1980s, facilitated by the advent of the personal computer and inexpensive project management software, it became common practice within the construction industry.

Coinciding with development in project management were changes in project procurement, whereby project managers have come to overwhelmingly dominate project implementation, usurping architects as leads in the process. Shifts from the traditional Fixed Time/Cost Contracts (of allocated risk) to Design and Construct Contracts, where risks (time, cost, quality) are fully borne by the contractor, means the architect no longer has a direct contractual arrangement with the client. The contractor is now at the helm of the process and the architect devoid of any direct path to the client.



CREATING LIVEABILITY
Creating an integrated and balanced approach to city-making
Source: Ramboll – Living Cities Brochure

COMPETITION IN THE DESIGN SPACE

Designing complex projects requires the expertise of multidisciplinary teams and increased complexity often necessitates a further expanded field of skills. In addition to consultants such as landscape, structural, and building services who routinely share the design space, the capabilities of non-traditional disciplines are also being more regularly sought to address contemporary challenges. These other disciplines may include, for example, change managers, urban informatics, cultural theorists, branding agents, social media imaging, all of whom compete for a share of the designer's opportunity space.

Each discipline brings different strengths and filters to the design process; 'design quality' may be interpreted differently and achieving 'better' design may not be an objective shared by all participants. In the development of the project, their input may curtail the role of the architect and influence which design concepts are considered to be feasible.

The design industry is witnessing the rise of interdisciplinary consultancy firms, offering a one-stop-shop for property development. Notably leading this trend are the engineering firms such as Arup, Aecom, and Ramboll. As Tristum Carfrae, Arup Fellow, explains, integrating design services under the one umbrella leverages the benefits of collaboration. Teams practised in working together are more likely to reveal latent opportunities as one discipline's issue is converted to another's opportunity. The potential to yield innovation amplifies the adding of value to a development's bottom line.

Within the design context an advantage lies in understanding the potentials of integration. The more an architect knows the constraints of another discipline's opportunity space, the more effectively they can influence the design outcome to create viable or more profitable development.

Architectural firms are exploring ways of commercialising integrated design service models. Several of the case studies included in this report demonstrate models based on interdisciplinary practice, such Lundgaard Tranberg's student housing, NORD's Cancer Centre and COBE's Nordhavn master planning undertaken in conjunction with Polyform & Ramboll (Engineers) and SLETH Modernism.

DESIGN POLICY

By setting design benchmarks and objectives for improved design quality, policy may create de facto stimulus in the investment in good design. Where planning authorities express elevated design

expectations, developers may be more likely to engage skilled designers to satisfy objectives and so streamline time and cost in obtaining regulatory approvals.

Rather than reliance on market-led outcomes, governments are increasingly deploying policy as a form of intervention to shape property development in pursuit of better design. When integrated with other policy platforms, such as economic, health, education, infrastructure, there is the potential to drive innovation and generate public benefit.

Conducted by The European Forum for Architectural Policies (EFPA)[1], a Survey of Architectural Polices in Europe 2012 confirmed, of the 33 European countries surveyed, 50% had and 37% were in the process of adopting an official government policy on architecture. Since 2012, further representations by the EFPA indicate the trend in policy adoption is continuing (Bentoon, 2012).

Policies are diverse and particular to each country's cultural, constitutional, administrative and political framework, and attributes which constitute 'good design' and 'better places' are subject to differing opinions, negotiation and agreement by key stakeholders in response to the local context.

A number of design policies have attempted to set out general qualities of 'good' urban design and of 'better' places; for example, places where people want to live, work, play and invest. While there may be no consensus on definitions, the integration of environmental, social, cultural and economic considerations is generally recognised as fundamental to the delivery of better places.

The national Danish Architectural Policy is an example of government intervention positively influencing decision-making and project environments in the promotion of good design and creation of better places. The case studies presented in this report are testament to policy contributions in the making of Copenhagen's reputation as a highly attractive and liveable city.

FOOTNOTE:

1. The EFPA is an international body which disseminates knowledge and best practice on architectural policies. It evolved from an international gathering of government, cultural and professional organisations in response to a growing recognition of the importance of architectural quality as prerequisite for creating sustainable environments, hosted by the Dutch EU Presidency 1997.

SLUSEHOLMEN, SYDHAVNEN
Sluseholmen demonstrates how public–private cooperation can unlock the value of underutilised public assets to finance the regeneration of the harbourside district.
Source: Anita Morandini

Observations

The context for contemporary development in Copenhagen is the result of a holistic, integrated approach to city-making that embeds good planning and architecture as fundamental elements of sustainable, liveable environments.

The following observations, in no way exhaustive, highlight some of the principal components in contributing to Copenhagen's success:

- good governance
- public–private corporations
- planning for flexibility
- guidelines in pursuit of good design
- infrastructure as place-making opportunity
- public realm as value-adding
- citizen participation versus engagement
- driving integration and quality
- quality above price
- capacity building
- collaborations, partnerships and collective impact
- design advocacy, knowledge sharing and networks.

GOOD GOVERNANCE

Good governance is fundamental to ensuring account-ability and the success of a project. There are many diverse governance models which have guided the fruition of Copenhagen's built environment.

Notable are those which have stewarded Ørestad and Nordhavn urban renewal areas, where governance networks are vertically coordinated across all levels of government, local and state, and horizontally coordinated across public realm issues.

Realdania has also evolved models to address complex public–private projects exposed to changes in government with extended delivery timeframes, such as Køge Kyst, a large-scale urban renewal project. Public–private partnerships are structured to secure bipartisan cooperation, with development boards constituted of the incumbent and opposition government in equal representation, thus mediating shifting interests over the long-term duration of a project.

'... the reason for Copenhagen's success runs deeper than having progressive ideas. Rather, it is rooted in fundamentals of sound governance. Copenhagen's municipal government is powerful, and that enhances the city's ability to make strategic decisions that span decades and mayoral terms. The capacity of the public sector is strengthened by an educated workforce with deep technical knowledge. And collaboration across political parties, levels of government, and sectors of society is common and consistent.' (Katz & Noring, 2016)

See case studies:
- *Realdania*
- *Nordhavn*
- *Sluseholmen, Sydhavnen, Copenhagen*

PUBLIC–PRIVATE CORPORATIONS

Public–private corporations are a mechanism for cities to fund infrastructure and government services such as transport, health and education, enabling urban areas to undertake improvements without raising taxes.

'... the reason for Copenhagen's success runs deeper than having progressive ideas. Rather, it is rooted in fundamentals of sound governance.'

Katz & Noring, 2016

Copenhagen is deploying innovative models, creating new, special-purpose public, quasi-private and civic institutions, to unlock the value of underutilised public assets and finance infrastructure, and regenerate urban districts. The model combines the capacity of both state and city government with the agility and effectiveness of private solutions to leverage public assets and optimise market opportunities.

By & Havn is using such a model. As a company jointly owned by the municipal and national governments, it is tasked with developing areas along the waterfront to include Nordhavn, Ørestad and Sluseholmen.

'Copenhagen's success as an innovator is grounded in its ability to leverage this local power and capacity in long-term planning, in collaboration with the national government and the private and civic sectors. This ability reflects a gradual shift in urban politics and governance in Copenhagen from a predominantly inward-looking to an outward-looking approach. Since the 1990s, the city's strategic plans have focused on people-centred planning and sustainable solutions and on creating a foundation for creative businesses and innovation to grow. To achieve these goals, it was clear that the relationship between the public and private sectors had to evolve. Today, as one critique of the city's plan noted, 'private enterprises are to a greater extent included in decision-making, while the public sector has embraced entrepreneurial forms of organisation and behaviour.' (Lund Hansen, Andersen & Clark, 2001, p.852)

See case studies:
- *Nordhavn*
- *Sluseholmen, Sydhavnen, Copenhagen*

GUIDELINES IN PURSUIT OF GOOD DESIGN

Design guidelines which describe the qualities and principles for sustainable and 'good' design can be effective tools in enhancing the value of a development. Developers discount site value commensurate to risks, such as protracted planning approvals, causing a developer to miss the peak market affecting increased holding costs.

When government clarifies design expectations early in the process, the developer at the outset of the business case accounts for 'good' design. The uncertainty, attributed to convoluted design processes is potentially reduced and the path to development approval streamlined.

Standards for quality design must be appropriate to context and build in sufficient flexibility to negotiate changing market conditions.

See case studies:
- *Køge Kyst (Coast) Urban Redevelopment Master Plan*
- *Sluseholmen, Sydhavnen, Copenhagen*

INFRASTRUCTURE AS PLACE-MAKING OPPORTUNITY

The provision of transport and utility infrastructure significantly impacts city-making. If treated as a mere engineering exercise it may be at detriment to the urban quality of a city. Copenhagen has harnessed infrastructure as a large-scale opportunity to compel integrated and better design solutions. Strong civic leadership, effective financial mechanisms, development plans and design codes focus on city-wide place-making transforming Copenhagen for the better.

See case study: Climate Adaptation Plan
Bryggervangen & Skt Kjelds Square

The installation of infrastructure and potential associated development uplift can be leveraged as a powerful incentive and vehicle in commanding good design. For example, public–private profit-sharing mechanisms are structured to secure long-term participation in development projects. Both public and private parties reap benefits as value appreciates from smart investment and good design.

See case study: Nordhavn

PUBLIC REALM AS VALUE-ADDING

Copenhagen uncompromisingly prioritises public space. The Danish design policy emphasises its importance in enhancing the city's liveability and the wellbeing of citizens, by providing spaces for interaction, recreations and retreat.

It is assumed that public space and amenities will yield returns to developers. Many of the case studies in this report confirm well-designed public space enhances the economic value of adjacent, privately held lands. Most of the water projects were predicated on the realisation that improved public space makes surrounding lands more marketable, attracting people to the area and reinvigorating the city and harbourside.

Copenhagen Municipality is collecting evidence about how much the public realm contributes to the wellbeing of its citizens and economic value of the city. The Urban Life Account establishes criteria for assessing attributes of the public realm. Notwithstanding the difficulty in making comparisons of unique situations with widely varying characteristics, a picture is beginning to emerge about the dimensions of value creation.

See case studies:

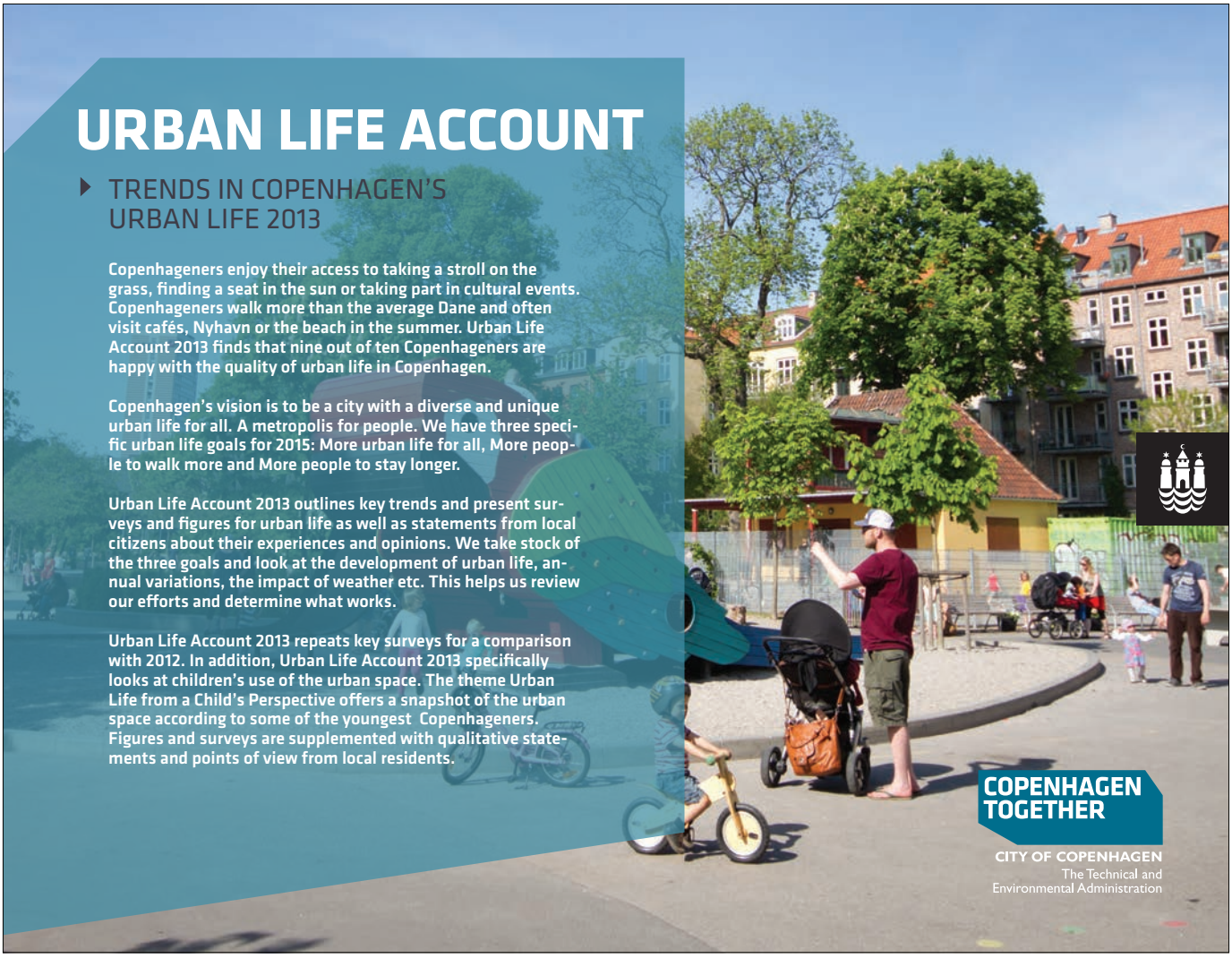
- *Water Projects*
- *Climate Adaptation Plan Bryggervangen & Skt Kjelds Square*
- *The City Dune – SEB Bank Copenhagen*
- *Islands Brygge Harbour Bath*
- *Kalvebod Wave At Kalvebod Brygge*
- *Nørreport Station*

PLANNING FOR FLEXIBILITY

Complex development projects are often delivered over a very long period and exposed to changing market conditions. Overly prescriptive and rigid master plans, codifying an end state, may fail to accommodate shifting circumstances. Copenhagen planning is focused on setting out broad design principles and form controls capable of accommodating flexibility within the parameters of the master plan framework while maintaining high-quality design outcomes.

Lessons learnt through development projects, such as Carlsberg Brewery, have informed more recent urban renewal projects. The Brewery master plan is characterised by fine-grain development lots, integrating a mix of uses, adaptive re-use of heritage buildings, generous landscape, streets and public domain to create a high-quality urban environment.

The plan sets out built-form controls with specified uses allocated floor by floor: retail at ground, commercial at midrise and residential at the upper stories. However, when Copenhagen's buoyant market declined, these controls proved too prescriptive to accommodate subsiding demand for commercial and retail uses. The plans locked in the use; its specified quantum and



URBAN LIFE ACCOUNT
Urban Life Account 2013 outlines how Copenhageners use, spend time in and move around the city.
Source: City of Copenhagen

location thus inhibited alternative designs responding to market. The outcome: stalled investment curtailing the progress of the development.

Falk (cited in Tiesdell & Adams, 2011, Loc.1115) points out the inherent dangers in master plans which primarily focus on formal resolution without comprehension of the development context, noting: 'inevitably circumstances change, and plans need to be flexible. So, a master plan should not be seen as a blueprint (after all a new community is not a machine), but as a trellis, which will help guide the community's growth.'

See case study: Nordhavn

CITIZEN PARTICIPATION VERSUS ENGAGEMENT

Danish government has historically demonstrated a firm commitment to citizen involvement in the development of the physical environment. The Architectural Policy further evolves this commitment, with an entire section devoted to 'Architecture and Democracy', emphasising the government's role in ensuring democratic process. It promotes ongoing civic participation rather than momentary engagement.

The Policy acknowledges a shift in government's primary role as regulator to one of facilitation in creating cohesive communities. Within a context of increasingly market-led development, strategies are devised to guide civic involvement and find balance between competing interests. Initiatives include the early involvement in planning processes through to building legacy projects such as community-operated facilities. Funding incentives are also offered to further encourage comprehensive engagement.

Digital communication technologies are also empowering stakeholders with new avenues for information sharing and dialogue. The capacity of diverse groups of stakeholders to scrutinise development proposals, advocate differing agendas and effect change has escalated with the convenience of these technologies. In response, both public and private sectors are investing in new approaches to better negotiate citizen involvement in this complex and unpredictable space.

The *Urban Renewal Act* (2005) is a good example of Danish government instituting involvement of the

CARLSBERG BREWERY POP-UP ADVENTURE SPACE
The winning competition master plan envisaged activity being encouraged into the area before the building phase begins. Copenhageners have been invited to take over the area's open spaces and existing buildings, with the intent of building citizen participation and a strong community.
Source: Anita Morandini

many different stakeholders in the decision-making and planning process regarding urban development. Municipalities may apply for state funds for urban renewal of degraded neighbourhoods or new developments with social challenges. A precondition for awarding funds is the requirement for local stakeholders, i.e. citizens, companies and organisations, to be involved in the planning and implementation of the projects. By including these private and civic competencies early in the process, a sense of shared responsibility and ownership may be instilled and ongoing community building generated as a legacy of the development project (Danish Energy Agency, 2014).

See case studies:
- *Køge Kyst (Coast) Urban Redevelopment Master Plan*
- *Nordhavn*
- *Centre for Cancer and Health*
- *Ørestad Upper Secondary School*
- *Tietgen Hall of Residence*

DRIVING INTEGRATION AND QUALITY

The Danish design policy assumes the integration of environmental, social, cultural and economic aspects as imperative to creating sustainable, high-quality environments. Government has devised various strategies and mechanisms operating throughout the development process to promote, facilitate and require developers to deliver good design and built outcomes.

LONG-TERM POSITION STEWARDING QUALITY OUTCOMES

Investor-developers, who have a long-term interest in the developments they create, are likely to regard the imposition of design quality standards more positively than trader-developers, whose intentions are to sell out once development is completed. Copenhagen government agencies capitalise on this understanding to steward good design.

The public–private corporation model adopted by By & Havn is an example of long-termism pursuing the value of smart investment in good design. The corporation as asset manager, staging and sequencing the sale of its property to maximise value, takes a long-term position and is able to exert ongoing control over quality with the cooperation of its development partner. Both parties have a vested interest in the development's quality which is seen as a contributing factor to the attribution in value over the long term. This approach has resulted in the high-quality urban environments of Sluseholmen, Ørestad and Nordhavn.

INCENTIVES FOR QUALITY

Incentives are used to require delivery of Integrated Urbanism. Increasing the amount of building allowed on a site is a means to create value that can be tapped to offset the cost of public benefits and exert control for delivery of quality design. Public benefits may take the form of improved design quality, creating public open space, improving transport infrastructure, incorporating affordable housing, preserving a historic building, providing community facilities, among others.

These schemes offer the opportunity to elevate good design. In the case of Køge Kyst, the incentive of development uplift created the opportunity to require developers to meet elevated standards in sustainable design and adopt an integrated approach to addressing environmental, social, cultural and economic aspects in the development.

QUALITY ABOVE PRICE

Government agencies have adopted the practice of selling public land not to the highest bidder but rather through allocation processes based on an elaborate set of quality criteria.

The sale of real estate by public landowners is an important management tool for delivering higher quality. It constitutes a qualitative assurance process as certain standards are required in terms of architecture, intended use and timing. The process is based on a strategy of bidding and contracting focusing heavily on competition among smaller-size developers in order to obtain a large variety in terms of concepts and architecture. Regular design competitions are held and implemented for master planning and individual buildings, ensuring the best possible design outcome.

See case studies:

- *Nordavn*
- *Køge Kyst (Coast) Urban Redevelopment Master Plan*
- *Ørestad Upper Secondary School*
- *Tietgen Hall of Residence*

DAC – DANISH ARCHITECTURE CENTRE, SNOHETTA EXHIBITION 2015

DAC promotes architecture as a broad concept, facilitating an exchange of ideas which traverse traditional boundaries and demonstrating how design creates cultural and economic assets for society.

Snøhetta is an integrated design practice of architecture, landscape, interiors, furniture, graphic and brand design, with offices in Oslo, Norway, and New York, USA.

Source: Anita Morandini

Capacity Building

A predominant feature of the 2014 national architectural policy is capacity building on all fronts: in civil society, government and industry. Around 75% of the policy is invested in this task.

The opening theme *Architecture meets People – Children, Youth & Adults* significantly focuses on evolving architecture/urban design literacy in all citizens from early childhood. Development of local government and citizens' capabilities feature in *Architecture and Democracy – Involvement of Local Authorities and Citizen Participation*; and finally, the closing theme *Architecture's Contribution – Quality, Innovation and International Potential* announces the benefits of fostering and leveraging design industry capabilities to drive growth and value creation.

All four policy areas devote substantial content to elevating design literacy and competencies. In advocating for Integrated Urbanism, the policy supports all stakeholders in acquiring capabilities to negotiate and participate effectively in shaping complex circumstances. It assumes that a well-informed society and government capable of assessing and demanding design quality, plus industry highly skilled in delivery, are all prerequisite in achieving desirable environments.

Policy initiatives which involve multiple ministries, local government agencies and private sector partners are aimed at developing capabilities in each sector:

Citizens' literacy and engagement in architecture and urban design through:

- Awards such as Architecture Awards – People at the Centre, rewarding good design of the physical environment
- Teacher training packages made available through the Ministry of Education to ensure access to materials to develop design literacy in primary schools
- Conferences and public workshops on architecture and design for all ages, young and mature
- Educational programs in architecture targeting secondary education and interdisciplinary teaching, delivered by the Danish Architecture Centre in collaboration with the Architectural Association
- Interdisciplinary schooling in the construction sector with the aim of bridging planners, architects, engineers, builders and developers
- Promotion of architecture on new digital platforms
- Citizens' participation in public forums and presentations in open design competitions.

Government competencies through:

- Lead public projects demonstrating the value of good design and architecture policy
- Development of new concepts of citizen involvement with government
- Supporting architectural policy objectives incorporated into municipal development plans
- Integration of cultural planning with architecture
- Demonstration catalogues featuring projects which show how the architectural policy provides solutions in sustainability and cultural development
- Learning programs for politicians and civil servants on architectural policies
- Research projects on focus areas such as conservation values and sustainability.

Design, development and construction skills through:

- Development of a construction policy strategy that promotes a holistic approach to sustainability in construction
- *Denmark 2050*, a national platform for dialogue on how Denmark can meet sustainability targets
- Educational programs and knowledge-sharing networks on cultural heritage, building conservation and sustainability to raise competency within the construction sector
- Demonstration projects which upgrade existing buildings for energy efficiency while preserving the building's original qualities
- Architecture competitions demonstrating strategies to address major urban challenges such as population movement away from regional towns
- Research exploring value creation in the construction industry
- Architectural policy for The Danish Building and Property Agency to ensure the architectural quality of the physical public environment
- Strategy for construction to facilitate cost efficiencies and productivity in construction while delivering high-quality design and finishes
- Guidelines on public–private partnerships and overall economy in public sector construction projects to ensure quality
- Strategy and advisory bodies on smart procurement for achievement of high-quality architecture and urban design
- Public tender act focusing on simplifying procurement processes and fostering opportunities to apply tender forms that enhance innovation while managing cost e.g. 'competitive dialogue' tendering methods
- Working groups establishing government and private sector expertise in specialist areas such as hospital and healthcare design
- Arts strategies in public projects to strengthen interdisciplinary involvement between arts and property development and civil engineering projects
- Wildcard system in design competition processes to nurture new design talent and growth of the industry
- Development of a new Danish Architecture Centre as an international beacon for architecture, construction, development and design
- Participation in international design events and forums, such as the architecture biennial, Sustainia, C40
- Framework for trade promotions around the globe in cooperation with Danish embassies
- Ministry of foreign affairs simplified visa arrange–ments to enable foreign companies to more easily engage with Danish enterprises
- Marketing consortium to conduct events and delegation tours for foreign journalists and opinion makers
- Export of goods and services through developing networks, knowledge sharing and cooperation with foreign companies on demonstration projects abroad e.g. sustainable urbanisation in China.

These multipronged initiatives drive at developing a framework of competencies to facilitate:

- sophisticated dialogue between all vested stakeholders, civilizing competing public and private interests
- design literacy and potential to manage pursuit of economic gains without forgoing social equity and environmental sustainability
- industry skills to ensure delivery of good design in balance with costs
- development of local expertise and exportable services to contribute to economic growth.

The process is understood not as a one-off intervention but as an ongoing, long-term program of cultural development across all sectors.

CAPACITY BUILDING MODELS

The term 'capacity building' emerged in the realm of international development during the 1990s. It formed one of the five pillars of the Habitat Agenda adopted at the Habitat II Conference in 1996, with commitment to capacity building strategies at national and local levels to create the basic conditions to foster broad-based civic participation in human settlements development, improve land delivery for housing and sustainable urban development and improve the liveability and sustainability of the built environment (Habitat-II Agenda, 1996).

Habitat III 2016, with the vision of inclusive cities fostering prosperity and quality of life for all, further promotes 'capacity development as a multifaceted approach that addresses the ability of multiple stakeholders and institutions at all levels of governance, and combines the individual, societal, and institutional capacity to formulate, implement, enhance, manage, monitor, and evaluate public policies for sustainable urban development.' (Habitat III Agenda Draft 2016)

Models of capacity building have been developed with application to projects of complex interdependent issues such as water management. In the Australian context Clearwater[1], a capacity building program, provides customer-driven programs that equip the water industry with the skills, knowledge and networks to drive the implementation of Integrated Water Management practices.

Clearwater (2016) uses a model defining capacity building as:

- **individual capacity** – the technical and 'people' knowledge, skills and expertise
- **intra-organisational capacity** – the key processes, cultures and resources within the organisations
- **inter-organisational capacity** – the agreements, relationships and networks that exist between organisations
- **institutional rules and incentives** – the regulations, policies and incentive schemes. Capacity building is a process of **change**, it is about managing transformations.

Capacity building is a **long-term** process, not a once-off intervention (but there can be short-term results).

Capacity building is an **internal** (endogenous) process, meaning that change needs to be **driven** from within an

3XN ARCHITECTS INNOVATION LAB, developing sustainable material technologies for commercialisation
Source: Anita Morandini

individual and/or organisation to build a self-sustaining model.

Capacity building involves **all stakeholders** (across organisations and hierarchy).

Capacity building **measures** obstacles, progress and outcomes.

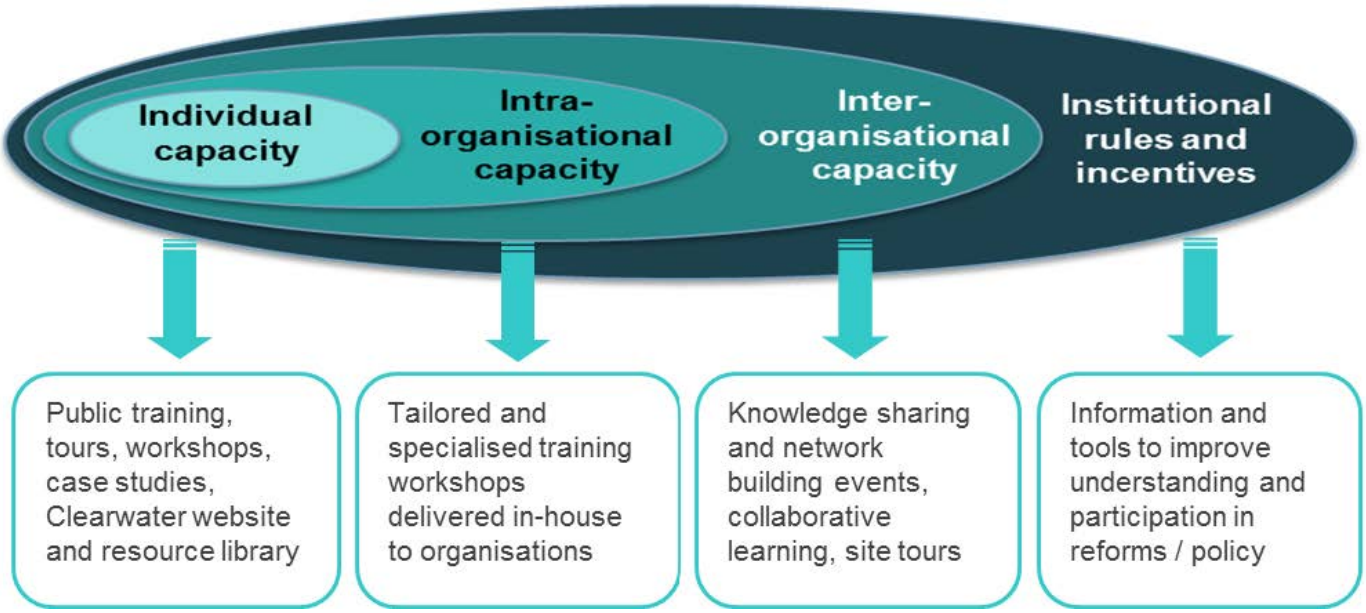
Capacity building goes beyond improving the human resource capacity to encompass the organisational and institutional contexts.

CAPACITY BUILDING BY EXAMPLE: DANISH WATER MANAGEMENT PROJECTS

The Water Project case studies presented in this report manifest the benefits of capacity building and value in overcoming challenges of integrated water management. The interdependent nature of these projects demands inter-disciplinary frameworks to successfully coordinate city planning, construction, environmental issues, financing mechanisms and stakeholder relations stewarded by good design. The Danish experience of capacity building to support successful collaboration represents a shift from the traditional linear approach where different parts of the water cycle and associated development are managed separately by 'silo' organisations.

'Rainwater crosses both administrative and geographical borders. Danish experience shows that collaboration across disciplines and institutions can create valuable synergies, resulting in greener and more liveable cities with a higher degree of recreational value for the local community.' (State of Green, 2016) A framework for terms of cooperation has been established, as have financing mechanisms to allow for municipalities, water utility companies and private property owners to co-finance in-ground and above-ground (surface) stormwater infrastructure.

Rather than routine engineering exercises, these infrastructure projects are converted to opportunities for the creation of parks and landscaped streets. Improved water quality and greening of the city have contributed



CLEARWATER CAPACITY BUILDING MODEL
Source: Clearwater 2016

to Copenhagen's transformation from an industrial port to a recreational harbour. Increased amenity in the form of green parks, streets, and a harbour made fit for swimming has attracted new property development reinvigorating the city.

Expertise in water management, sustainability and green urban development are viewed by the government as valuable assets in the export market. Increasing global action in mitigating climate and energy challenges provides international opportunities for export of these capabilities.

FOOTNOTES

1. Clearwater was established in 2002 as part of the Victorian Stormwater Action Program. Clearwater was initially funded by EPA Victoria, Municipal Association of Victoria (MAV) and the Stormwater Industry Association of Victoria (SIAV). The program was created for the purpose of building capacity of local government and industry professionals in best practice stormwater management.

COPENHAGEN CLIMATE ADAPTATION PLAN
Source: European Climate Capital 2014

COLLABORATIONS, PARTNERSHIPS AND COLLECTIVE IMPACT

The Danish architecture policy's human-centric focus, coupled with sustainability, forces those engaged with delivery of the built environment to take a much broader, collaborative and inclusive view of who should be involved and the scope of needs to be addressed in the process.

The policy itself is an unequivocal demonstration of collaboration. It was co-authored by 10 ministries and announces 64 initiatives, many of which require ongoing inter-ministerial cooperation. Models of collaboration and partnerships permeate the policy, encompassing all phases and scales of development from large urban renewal to one-off architectural projects.

The government acknowledges that alone the welfare state nor public sector has neither the scope of expertise necessary to solve complex challenges nor resources to fully fund delivery of public infrastructure. Hence the focus on leveraging collaborations and partnerships. Policy, planning regulation and financial incentives are devised to induce collaborations and partnerships across ministries, private industry and research sectors.

Public-Private Partnerships (PPP)

The Danish Building & Property Agency is the state's property enterprise and developer, responsible for creating quality design and cost-effective frameworks for important government institutions, such as universities, police, law courts and government department facilities. The Architecture Design Policy establishes initiatives for improved PPP processes, with the Agency providing new guidelines and information on PPPs and overall economy in public sector construction projects, which include the architectural quality.

One of the core objectives central to the PPP is quality for investment and mitigation of risk. A PPP project involves a tender inclusive of financing, construction, ongoing operation and maintenance of the facility. Significant investment is made by the private party while the public party makes an ongoing financial contribution, typically between 10 and 30 years.

The Danish Government's *Strategy for Smart Public Procurement, 2013* guides these processes and, with long-term perspective, commits parties to a holistic approach and requirements to address quality, economic and social considerations.

'Copenhagen is known by many for our integrated planning and efforts to combat climate change. But going forward we need to find new ways to engage city stakeholders in cross-sector innovation and partnerships that will drive an even more liveable, diverse and responsible city.'

Brian Hansen, Head of Department City Strategies
City of Copenhagen (Climate-KIC [1] Nov 2015)

Several of the case studies presented in this report are the product of PPP and testament to the government's commitment to ensuring quality for investment.

Project Collaborations
Government initiatives and strategies are devised to encourage collaborations and partnerships in research, design and delivery of Integrated Urbanism at all scales.

Art and Cultural Strategies
Examples of such initiatives include the application of art strategies and cultural planning in building projects with the aim of interdisciplinary collaborations in urban development and civil engineering projects.

The urban renewal of Køge Kyst exemplifies the application of such strategies. The Danish Arts Foundation support of 300,000DKK and private partner investment sees implementation of long-term programs in combination with short-term impermanent installations aimed at building cultural, social cohesion and ultimately a sustainable environment. In order to ensure high standards of artistic practice, innovation and dynamic development in the area, Køge Kyst has set out a number of eligibility requirements and guidelines. These involve, among other things, interdisciplinary collaboration as a prerequisite for those applying for support for artistic projects.

Strategy for Sustainable Urbanisation
Denmark's environmental, social and economic sustainability ambitions and pursuit of green growth are implemented via a suite of interdependent policies which heavily rely on collaborative practices across sectors and stakeholders.

The architecture policy directly intersects with environmental planning policies, and seeks to catalyse investment and innovation which will underpin sustained growth. Central to this objective is ensuring social and environmental assets are protected and enhanced while enabling new economic opportunities. Urban spatial planning, development, new and renovation building projects have a major role in affecting sustainability targets and the goal of a fossil fuel-free economy by 2050.

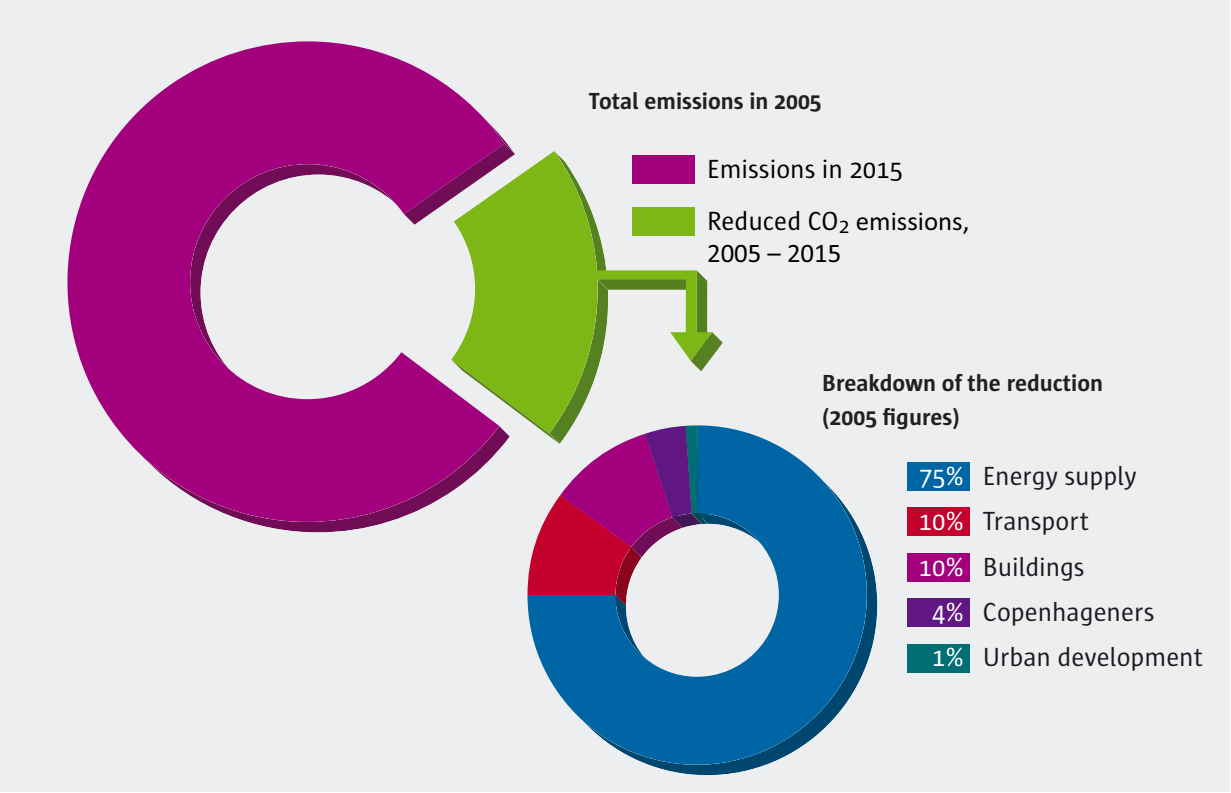
To address these complexities of climate change, increasing urbanisation and finite resources, the Ministry of Environment is developing spatial planning strategies which require specific collaborations and partnerships across sectors. Authorities, market research and knowledge institutions, plus civil society, are tasked with agreeing to and solving a specific environmental issue which the Ministry of Environment will oversee.

Government policies are devised to compel collaborative practice and the evolution of tools to achieve sustainability. The outcome of these policies is evidenced in case studies such as the urban developments of Nordhavn and Køge Kyst, the Climate Adaptation Plan project of Bryggervangen & Skt Kjelds Square and Water Projects.

FOOTNOTE:

1. CLIMATE-KIC is Europe's largest public–private innovation partnership focused on climate change, consisting of private companies, academic institutions and the public sector. It is one of three Knowledge and Innovation Communities (KICs) created in 2010 by the European Institute of Innovation and Technology (EIT). The EIT is an EU body whose mission is to create sustainable growth by addressing climate change mitigation and adaptation.

DISTRIBUTION OF THE TOTAL CO_2 REDUCTION, 2005 – 2015



COPENHAGEN CLIMATE PLAN
2015 Goals
Source: Copenhagen Municipality 2009, p.5

These projects are guided by Copenhagen's 2025 Climate Plan. It is a holistic plan to address climate mitigation, with specific goals and initiatives within four areas: energy consumption, energy production, green mobility and the City Administration. Rather than simply reducing mitigation to an engineering and utilities exercise, the government has seized the opportunity to convert potential imposts to advantaged environments. In addition to addressing mitigation, government spending is focused on effecting multiple benefits which contribute to better quality built environments, quality of life, innovation, and generating employment and investment. Cooperation between traditionally independent stakeholders and disciplines is fundamental to successfully implementing the plan.

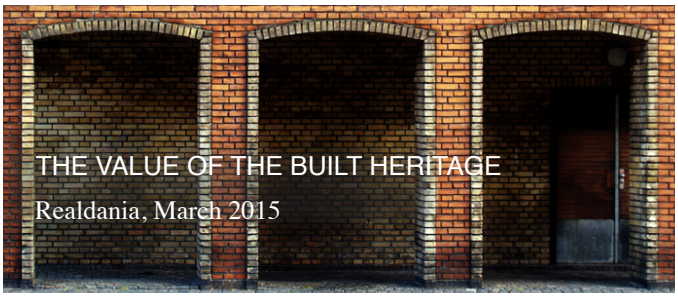
The government's commitment to sustainability has gained international recognition, with Copenhagen designated as one of the world's most liveable cities and awarded the European Green Capital 2014 by the European Commission.

Collective Impact

Government, in partnership with the philanthropic organisation Realdania, has in recent years commenced exploring models of 'Collective Impact'. The model has been adopted in an effort to manage highly complex projects which intersect with the need for social change.

'Our collaborative approach ensures that our contribution has a catalytic effect that exceeds what we could have achieved on our own. Large-scale change requires collective impact. We encourage broad cross-sector coordination and collaboration in order to find shared solutions to shared problems.'

Anne Skovbro, CPO (Realdania 2015, pp.10-11)



REALDANIA – COLLECTIVE IMPACT
The Value of the Built Heritage
Source: Realdania 2015; Kania & Kramer 2013

In 2016 Realdania was leading this charge with three projects in early phases of execution, including *Built Heritage in Rural Areas*.

Modeled on Collective Impact (CI) theories (Kania & Kramer 2011) Realdania has established five principles which underpin these projects:

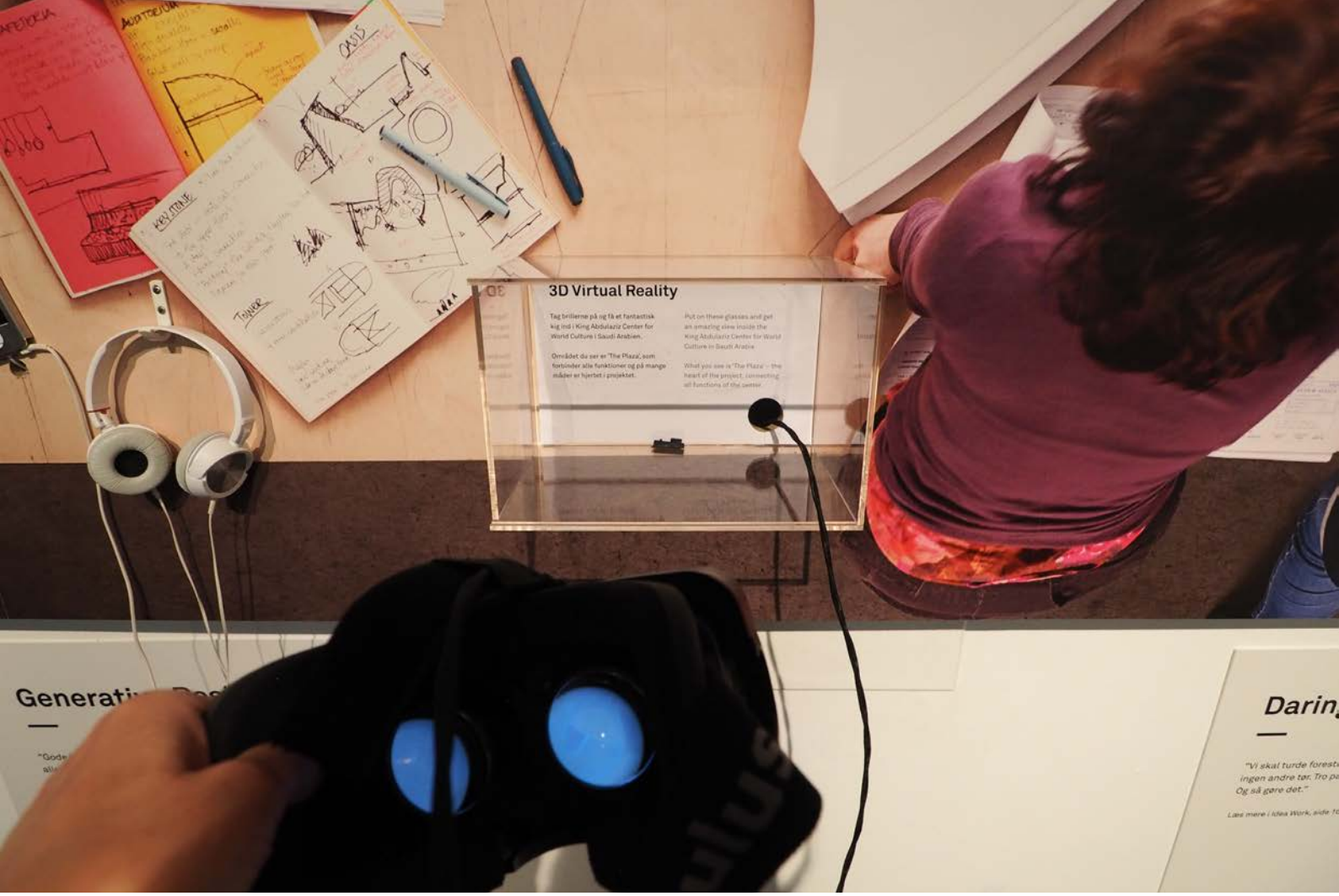
- All parties must have the same agenda and common, specific and measurable goals which all the parties work together to reach.
- There must be shared measurement methodologies supported by all parties.
- There must be binding activities that contribute to reaching the shared goal.
- There must be frequent and open communication based on trust and knowledge sharing.
- There must be a common secretariat, which facilitates the process and sets the work direction of partners.

Kania and Kramer (2013 p.3) posit 'the rules of interaction that govern collective impact lead to changes in individual and organisational behaviour that creates an ongoing progression of alignment, discovery, learning, and emergence. In many instances, this progression greatly accelerates social change without requiring breakthrough innovations or vastly increased funding. Previously unnoticed solutions and resources from inside or outside the community are identified and adopted. Existing organisations find new ways of working together that produce better outcomes.'

COLLECTIVE IMPACT
Cascading Levels of Collaboration
Source: Kania & Kramer 2013

At the time of preparing this report, initial assessment of *Built Heritage in Rural Areas* indicated key early lessons learnt (Margrethe 2016), were :

- Invest in problem definition and set boundaries for CI through research and stakeholder dialogue before launching CI groups.
- Gaining a more thorough understanding of the problem before initiating a CI group will help in convening the right co-champions with the same urgency and commitment to results.
- Carefully select the chairs of CI groups and better tailor the backbone support to the problem and objectives. Expect the backbone structure to evolve over time.



THE DANISH GOVERNMENT AIMS TO PROMOTE ARCHITECTURE TO A WIDER AUDIENCE THROUGH TECHNOLOGY with the Danish Agency for Culture (DAC), Realdania and Ministry of Culture collaborating on development of various digital projects.
Source: Anita Morandini

DESIGN ADVOCACY, KNOWLEDGE SHARING AND NETWORKS

An aggregated network of agencies in design advocacy and knowledge sharing reinforces the value of good design and integration across sectors in the Danish context. With the limited resources of the welfare state, collective knowledge sharing fills the gap where the government may once have led the charge in disseminating information and research.

Both the national and Copenhagen architectural policies announce the importance of expanding and developing local, national and international networks, inclusive of industry and academic/research institutions. Networks underpin capacity building at a local level and internationally serve as vehicles in generating export demand for Danish design expertise.

Knowledge-sharing Projects

Many of the case studies in this report have benefited from public–private knowledge-sharing projects such as *Building Culture 2015*. The initiative, a collaboration between Realdania and The Danish Agency for Culture has launched eight research projects aimed at creating new knowledge on the conservation, use and development of building heritage. The research focuses on three main themes: supporting conservation and preservation values, recycling and activation of the building culture, and sustainability and the building heritage. Research outcomes are published and distributed for the use of local municipalities. The projects are being implemented by the Royal Academy of Fine Arts, Schools of Architecture, Design and Conservation in Copenhagen, Aarhus School of Architecture, and the University of Copenhagen.

Innovation Centre – Bryghus

Bryghus is an innovation centre for architecture, construction, urban development and design currently being developed on Copenhagen's waterfront. The centre will house the new Danish Architecture Centre as well as businesses and organisations working with architecture, construction, urban development and design. It will provide an international hub where companies and

THE DANISH ARCHITECTURE CENTRE is Denmark's national hub for the development and dissemination of knowledge about architecture, construction, and urban development. The centre hosts professional cultural activities, exhibitions, instruction and guided tours.
Source: 2014 Danish Architectural Policy, p.20.
Photo: Jakob Galtt

researchers network and share knowledge about the built environment, sustainability, smart cities and innovative building technology. The centre is to be a gateway between Denmark and international business, with opportunity for sharing and promoting Danish expertise in the built environment. Bryghus is funded by Realdania and forms part of an ambitious plan to establish a collective of museums as a cultural destination. The initiative is a collaboration between DAC, Realdania, Agency for Palaces and Cultural Properties, and cultural institutions in and around Slotsholmen.

Facilitating International Networks and Service Exports

The architectural policy builds and supports international export of Danish capabilities, leveraging the Ministry of Foreign Affairs *Red Carpet Program*. The initiative simplifies procedures for obtaining Danish business visas. It is devised to enable ease of international trade and exchange of expertise, such as streamlining the exchange of staff in architectural firms in cooperation with foreign companies.

NETWORKS

In undertaking case study research and compiling this report, the extent and convergence of Danish and international networks became increasingly evident. The most prominent are featured below.

Danish Architecture Centre (DAC)

http://www.dac.dk

DAC promotes architecture as a broad concept that embraces the creative process, planning and urban development, construction and built spaces. Its goals include creating a general interest in architecture, facilitating an exchange of ideas which traverse traditional boundaries and demonstrating how design creates cultural and economic assets for a society.

It offers a range of professional and cultural activities, including exhibitions, seminars, guided tours in the city, with Danish and international partners who share DAC's vision. The basic financing of DAC is provided by a partnership consisting of Realdania, the Danish Ministry of Culture and the Danish Ministry of Economic and Business Affairs.

The Danish Agency for Culture

http://english.slks.dk/english/about-the-agency/

The Agency for Culture and Palaces was formed in January 2016 in a merger of the Danish Agency for Culture and the Agency for Palaces and Cultural Properties. The agency provides advice to the Danish Minister of Culture and is involved in setting and achieving the government's cultural policy goals.

It also allocates funds to individuals, organisations and institutions as well as collecting, processing and disseminating information and findings to promote cultural development. The agency is responsible for managing and maintaining state-owned palaces and castles, gardens and cultural properties.

Realdania

http://www.realdania.org

Realdania is a member-based philanthropic organisation that supports projects in the built environment: cities, buildings and built heritage. Its goal is to create value through development and change, dialogue and knowledge, partnerships and networks, initiatives, and proactive efforts in the context of the built environment.

It acknowledges that complex and large-scale problems cannot be met with simple solutions. They require full-scale actions that target the issues on all relevant levels: from the operational project level – for example in partnership with local enthusiasts or researchers – to the strategic level in partnership with decision-makers and thought leaders.

State of Green
https://stateofgreen.com/en
Denmark has decided to lead the transition to a green growth economy and will be the first country in the world to be independent of fossil fuels by 2050. As the official green brand for Denmark, State of Green gathers all leading players in the fields of energy, climate, water and environment and fosters relations with international stakeholders interested in learning from the Danish experience. State of Green is an online entry point for all relevant information on green solutions in Denmark and around the world.

State of Green is a public–private partnership founded by the Danish Government, the Confederation of Danish Industry, the Danish Energy Association, the Danish Agriculture & Food Council and the Danish Wind Industry Association. H.R.H. Crown Prince Frederik of Denmark is a patron of State of Green.

Sustainia
http://www.sustainia.me
Sustainia is an international sustainability think-tank and consultancy working to accelerate action towards a sustainable future. To realise this, it works with companies, cities and organisations to map their position, navigate the changing landscape, and communicate with impact.

Over the past five years, Sustainia has tracked more than 4500 solutions from all over the world through its flagship *Sustainia100* publication. It is a digital platform which offers direct access to some of the most innovative solutions and emerging market opportunities for achieving the sustainable development goals. Sustainia specialises in creating sector-specific studies, analyses, trend reports, visual conceptualisation and strategic communication campaigns, such as Eat in Sustainia and The State of Healthcare.

C40
http://www.c40.org
C40 Cities Climate Leadership Group

C40 is a network of the world's megacities committed to addressing climate change.

C40 cities aim to affect global impact in reducing both greenhouse gas emissions and climate risks. It offers cities a forum where they may collaborate, share knowledge and drive meaningful, measurable and sustainable action on climate change.

Covenant of Mayors
https://www.globalcovenantofmayors.org/
The Covenant of Mayors is the world's largest coalition of city leaders addressing climate change by pledging to reduce their greenhouse gas emissions, tracking their progress, and preparing for the impacts of climate change.

Launched at the 2014 United Nations Climate Summit, the coalition has grown to unite close to 400 city governments and their network partners with a common aim: to share the impacts of city action with the global community to both inspire and catalyse action. The covenant recognises how much cities are already doing, highlights ongoing efforts, and complements existing initiatives by using consistent, transparent and robust reporting and measurement standards and platforms.

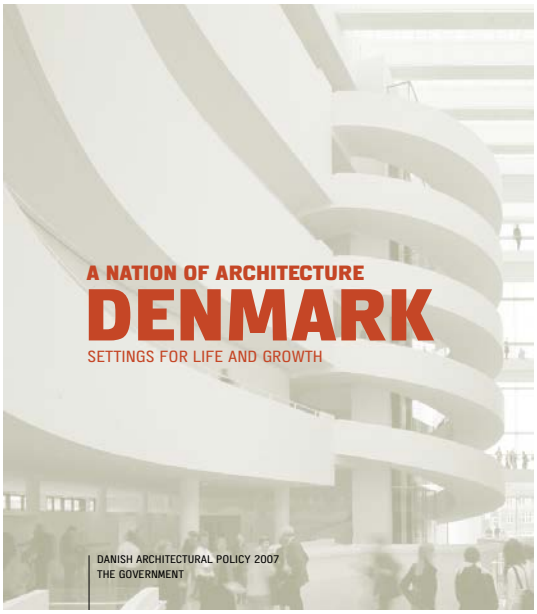
Ultimately, the Covenant of Mayors provides hard evidence that cities are true climate leaders and that local action can have a significant global impact.

National Danish Architectural Policy

DANISH ARCHITECTURAL POLICY

Danish architectural policy has been developed in three sequential government programs dated 1994, 1996 and 2007. The first program, suggested by Danish Ministries of Culture, Environment and Finance, manifested in the Danish Architecture Policy [Dansk Arkitekturpolitik] (Kazemian & Rönn 2009, p.3). Expanding on the earlier policy themes, the 2007 *A nation of architecture – Denmark – Setting for Life and Growth* sets out a visionary framework for the championing of design quality. From inception, it was formulated as an integrated policy, traversing government ministries to ensure the benefits of quality design were understood, valued, embraced and co-delivered by all sectors contributing to the built environment. Cooperation between ministries involved authoring the policy and subsequent development of strategies and action plans for its implementation. Ministries included Culture, Economic and Business Affairs, Social Affairs, Foreign Affairs, the Environment and Transport and Energy as well as the Danish University and Property Agency, the Danish Defence Estates and Infrastructure Organisation, and the Palaces and Property Agency.

It was the government's intention that the architectural policy would contribute to the development of



DANISH ARCHITECTURAL POLICY
A NATION OF ARCHITECTURE – DENMARK – SETTINGS FOR LIFE AND GROWTH
Source: Danish Government

architecture as a Danish stronghold and create an increasing awareness and debate about the significance, conditions and possibilities of architecture in Denmark. The policy intended to foster broad dialogue and debate on how to retain and further develop architectural quality as a central conduit of culture – with local, national and global perspectives for growth and welfare in Denmark.

The two principle visions announced in the policy are:

High Architectural Quality to Create Good Settings for our Lives
The life of Danes will be richer, enhanced by inspiring architecture, good design and planning of the physical environment to create functional and attractive settings for living.

Good Danish Architecture to Create Growth and Prosperity
Denmark becomes a richer nation if the architectural sector can utilise its potential for national and international growth – also as an engine in relation to innovation and demand in other sectors. If Danish wealth is to be retained and developed, Denmark should focus more on knowledge and innovation. Architecture is precisely one of the industries that can strengthen Denmark's position in the global economy.

The policy describes challenges, goals and a series of 10 specific target areas with initiatives aimed at fulfilling these visions. The 10 target areas include:

- greater architectural quality in public construction and development
- promoting private demand for architectural quality
- architectural quality and efficient construction must go hand in hand
- innovative architecture must create healthy, accessible and sustainable buildings
- greater architectural quality in subsidised housing
- high priority on architectural quality in planning
- the architectural heritage must be maintained and developed
- better conditions for exports of Danish architecture
- Danish architecture must have a strong growth layer
- Danish architectural education must be among the best in the world.

Architecture is for people. It sets the framework for our lives and it affects us with its values and ideals.

Danish Government 2014

2014 DANISH ARCHITECTURAL POLICY – OVERVIEW

In February 2014, the Danish government launched the new national *Danish Architectural Policy – Putting People First*, replacing the 2007 policy. The new policy fortifies the principles of 2007, amplifying inter-ministry initiatives to foster integration, building capabilities among all stakeholders engaged with the built environment and most fundamentally re-emphasising that 'architecture is for people', setting the framework for quality of life.

New policy areas were introduced to address Denmark's most current and evolving challenges of rapidly changing demographics, urbanisation, welfare reforms, climate change and effects of digitalisation.

With the depopulation of rural townships and rapid urbanisation of cities, good design is valued as a means of reparation in managing depletion of rural townships and densification of urban centres. Retaining identity, preventing social and functional segregation, and creating equitable living circumstances for all citizens are major focuses of the policy.

Upgrading development of the welfare state and providing new hospitals, schools, universities and infrastructure are seen as a critical opportunity for demonstrating the benefits of good design and consequent contribution to growth and value creation that is needed to finance the welfare state. For example, the Danish Building & Property Agency has used architecture very strategically in its development of new research facilities in order to attract the best talent to Danish universities.

2014 DANISH ARCHITECTURAL POLICY – PUTTING PEOPLE FIRST
Source: Danish Government

Billions are being invested in construction and infrastructure installations to protect Danish society against anticipated climate change impacts. The policy elevates what might be reductively treated as an engineering exercise to a potential for creating quality urban environments, integrating solutions to address multiple design challenges. The Water Plus project is an initiative of the Ministry of the Environment, in collaboration with Realdania and the Foundation for Culture and Sport Facilities. The initiative has delivered sporting facilities combined with flood management systems, demonstrating advantages of integration to solve multiple issues.

An expanded field of stakeholders, enabled with ready access to technology and social media has changed the way urban projects are presented and scrutinised. The policy recognises the impact of these media and encourages the development of communication platforms as vehicles for educating, promoting public dialogue and managing stakeholder expectations in the delivery of urban projects.

Building on the foundation of the 2007 policy, the network of inter-ministerial corporation is in 2014 further extended with collaboration between 11 ministries: the Ministry of Culture; the Ministry of the Environment; the Ministry of Climate, Energy and Building; the Ministry of Business and Growth; the Ministry of Housing, Urban and Rural Affairs; the Ministry of Transport; the Ministry of Foreign Affairs; the Ministry of Higher Education and Science; the Ministry of Education; the Ministry of Children, Gender Equality, Integration and Social Affairs; and the Ministry of Health.

The policy launched 64 specific initiatives in different ministerial fields of responsibility. To ensure coordinated implementation, ministries participate in a program of reporting, evaluation and feedback and meet in biannual conferences.

Four key themes of the 2014 policy continue to reinforce the value of high-quality design in creating advantaged environments:

Architecture Meets People – Children, Youth & Adults

- Introducing and communicating the value of architecture, urban design, and developing design literacy in all citizens.

Architecture and Democracy – Involvement of Local Authorities and Citizen Participation

- Fostering local government capabilities and dialogue with citizens, developers and builders to develop capacities in delivery of high-quality physical environments.

Architecture and Sustainability – Environmentally, Socially and Culturally

- Creating sustainable developments while boosting economic growth without compromising the environment.

Architecture's Contribution – Quality, Innovation and International Potential

- Leveraging the potential of the creative industries to drive growth and value creation for the benefit of all citizens.

AERIAL VIEW COPENHAGEN
Source: Copenhagen Municipality

2014 DANISH ARCHITECTURAL POLICY PRIMARY THEMES AND OBJECTIVES

Architecture Meets People Children, Youth, And Adults

Objective:
Promote all citizens' understanding of, and access to, the experience of architecture from child to adulthood.

Focus Areas:
Dissemination of architecture
Promote architecture to all citizens through critiques, reviews, exhibitions, tours, competitions, digital platforms, books, debates, films or television.

New digital opportunities to engage, visualise and create participation
Harness new digital modeling and visualisation tools coupled with digital media and communication platforms to reach and involve citizens in the design process. Streamline communications with relevant authorities in the development sector through new digital platforms.

Introduction to the architecture's creative method
Encourage children's early introduction to architecture and develop their ability to observe and assess their physical environment and recognise good design.

Architecture as part of the teaching in secondary schools
Continue to include architecture in secondary school curriculums addressing themes such as urban planning, urbanisation, sustainability, climate change and the built environment to nurture an appreciation of quality environments and creation of place identity.

Architecture and Democracy
Municipalities and Citizen Participation

Objective:
Offer general support to and motivate municipalities to develop capabilities in establishing their own local architectural policy tailored to specific area needs and context.

Focus Areas:
Architectural policy related to municipal planning
Encourage local architectural policy integrated into municipal planning to facilitate a bridging of expectations between stakeholders, citizens and business.

Municipal challenges: urbanisation, social imbalance and emigration from rural areas
Mitigate imbalance of areas subject to pressures of concentrated growth or conversely depopulation and slowdown. Preserve and foster culture heritage and identity.

Civic involvement and democracy early in the process
Bring into action early and continuous citizens involvement, rather than limited short-term participation to nurture understanding and a joint sense of ownership of project and place.

Cultural institutions' contribution
Utilise the potential of culture, cultural institutions and architecture to contribute to creating a dynamic place with a strong identity and quality of life.

Active spaces – renewal, movement and art in public spaces
Ensure city spaces are active with urban life, with citizens, architects and artists working together to serve local needs adding to the quality of the public realm.

Area renewal
Capitalise on the renewal of the public domain as a vehicle for cultural change fostering urban life which is socially diverse, equitable and inclusive.

Architecture and Sustainability
Environmentally, Socially and Culturally

Objective:
Future architecture must integrate sustainability in an environmental, social, and cultural sense to boost growth and increase employment without compromising the environment.

Focus Areas:
Cultural heritage as a springboard for new qualities and sustainable solutions
In urban transformation, cultural heritage is a valuable resource; include and enhance existing conservation assets and heritage to add identity and value to development projects.

Renovation and transformation
More than half of all construction projects consist of renovation and restoration projects. Upgrade existing building functionality and energy efficiency, the Danish government leading in providing demonstration models.

Rural and urban development – two sides of the same coin
Town and country are complementary. Coordinate and balance the development of both in order to leverage potential synergies addressing duel challenges most effectively.

Sustainable urban development
Provide appropriate diversity and mix of urban functions located in proximity to public transport to conserve resources and create sustainable development.

Life cycle perspective on buildings
Address whole-of-life project issues and provide flexibility in building use to optimise opportunities for adaptive re-use, recycling and energy efficiencies.

Adaptation of architectural value
Leverage climate change adaptation as an opportunity to create integrated solutions with multiple benefits to enhance the urban environment.

Social sustainability
Develop and strengthen Denmark's humanist tradition, focusing on the development of urban environments to support community, social equality and democracy.

Architecture's Contribution
Quality, Innovation, and International Potential

Objective:
Sustainable, high-quality and people-centred architecture is a principle focus of the Danish Government; harness the potential financial benefits of investing in architectural quality and sustainability inclusive of environmental, economic and social aspects.

Increase productivity and the international export potential of the architectural and creative industries.

Focus Areas:
Demonstration of architecture's value creation
The government has undertaken qualitative and quantitative studies on the social significance of architecture. Support further development of study methods and metrics to assess results which qualify architectural value creation.

Education and Innovation
Enable better interaction between research-based knowledge institutions, companies, public authorities, and include artistic skills and practical experience to generate innovative and high-quality architecture.

Public building projects of high quality
Public buildings and facilities, such as schools, nursing homes, hospitals, cultural institutions, roads, bridges and railways, form part of a community's everyday environment. These public works, accessible to all citizens, are to be leading demonstration models of good design, functional integration and holistic investment in environmental, social and cultural aspects to create quality places.

The overall economy in public procurement
The Danish government's 290 billion DKK annual spend is focused on promotion of efficiency, innovation, quality development and sustainability. The *Strategy for Smart Public Procurement* requires public purchasers to consider functional requirements in balance with business requirements.

Hospital building projects
Capitalise on developing industry expertise gained in the course of delivering the government's comprehensive construction program for new and renovated hospitals.

Clearer rules on tendering
Simplify and strengthen tendering and procurement procedures for developers and consultants to advantage the delivery of good design, for example, include quality as a selection criteria for value-add building processes.

Architecture as an innovative growth industry with a focus on new businesses
Integrate the various building stages and make evident the contributory value of architecture in the entire value chain of project planning, construction and civil engineering projects.

Continue to develop architectural talent and facilitate less experienced architectural studios access to new markets.

Export and international marketing
For international export, grow architectural industry expertise to address climate change and energy challenges. Showcase Danish industry expertise in sustainability, energy conservation, green urban development and welfare.

Copenhagen Architectural Policy

COPENHAGEN SETTING

'In the mid-to-late 1980s, Copenhagen experienced 17.5% unemployment, a growing elderly population, and an annual budgetary shortfall of $750 million. De-industrialisation and economic restructuring partly explained Copenhagen's predicament. Yet many economic and financial challenges faced by the city were self-inflicted: To raise funds in the early 20th century, local government purchased land adjacent to the city, which it developed into suburbs consisting of primarily private family homes. As many families moved to the outskirts of Copenhagen, the city's tax base dried up. The outward migration coincided with more individual ownership of private vehicles and greater public subsidisation of road infrastructure, both of which enabled people to commute longer distances. As a result, the city became overrepresented by pensioners and young people attending public universities, neither of whom contributed greatly to the city's tax revenue.'
(Katz & Noring, 2016, p.9)

In 1993, Copenhagen municipality was close to bankrupt and the City was placed under the administration of the central government. Following this economic crisis, the City of Copenhagen and the Danish state agreed on several strategic long-term development projects to attract and secure strong capital growth. The agreement included strategic investment in projects of a national, regional and local scale.

A series of major infrastructure projects followed, including the connection of Denmark and Sweden by bridge, the expansion of Copenhagen airport, and the construction of a metro. At a local level, the early 1990s saw the relocation or closure of a large number of Copenhagen's industrial activities, making way for large urban renewal projects such as Brygge, Ørestad, Sydhavnen, Nordhavn and Carlsberg. These projects provided opportunities to deliver city infrastructure, green open space, public access to the harbour edge, community facilities together with new housing and commercial builds.

A series of long-term regeneration projects were also launched in mid 1990s to address languishing urban areas and degrading building stock consisting of predominantly small apartments with a lack of housing options for families. The projects aimed to deliver diverse communities by encouraging families into regeneration areas and so balancing once monolithic demographics.

In the 1990s there were no long-term plans for the city's development which made the city unattractive to investors. The first municipal plan was launched in 1989. Then in 2000 came the Harbour Plan, in 2007 the comprehensive architectural policy and, by 2015, it was decided that Copenhagen should be CO_2 neutral by 2025. Strategic planning combined with long-term vision has established a context for city officials to set joint political goals across municipal divisions and for public and private investors (Leaderlab, 2016).

In 2008, Copenhagen was nominated the most liveable city by the lifestyle magazine *Monocle*, a nomination which was repeated in 2013 and again in 2014. Copenhagen has managed a significant transition to a highly desirable and liveable city in a relatively short time frame. High-quality design in the public realm, government and private sector development is evidenced throughout the city.

2010 COPENHAGEN CITY OF ARCHITECTURE
THE ARCHITECTURE POLICY OF THE CITY OF COPENHAGEN
Source: Copenhagen Municipality

Good design is the product of a sophisticated confluence of governance, policies, strategies, design advocacy, delivery agencies, knowledge-sharing platforms, legal and financial structures. While Denmark's architectural policy extols bold objectives in delivery of good design, it is contingent on these interdependent relationships. Policy impact would be significantly diluted without the reinforcement of the government's multipronged activities, clearly committed to the long term and delivering on its promise.

'Buildings, urban spaces and urban landscape elements should be developed sustainably and with an insistent focus on creating a setting for an urban culture characterised by diversity, activity, motion and experiences – a meeting place for people.'

Copenhagen City of Architecture – The Architecture Policy of the City of Copenhagen (City of Copenhagen 2010)

2010 COPENHAGEN ARCHITECTURE POLICY

Copenhagen City of Architecture – The Architecture Policy of the City of Copenhagen is founded on and develops particular themes of the national architectural policy to respond to the specific context of Copenhagen. Four primary themes are established: character, architecture, urban spaces and processes.

The main objective of the architecture policy is to facilitate dialogue with development clients, architects, planners, landscape architects and citizens of Copenhagen in reference to plans and projects which fulfil the vision of a world-class city of architecture.

The document operates within a coordinated framework of policies, strategies and plans which are complemented and elaborated upon through guidelines. Primary plans and policies that form the framework for the architecture policy include:

- *Den tænkende storby – Københavns Kommuneplan 2009*
- *Copenhagen Carbon Neutral by 2005 – Copenhagen Climate Plan,* published 2009
- *A Metropolis for People – Visions and objectives for Copenhagen urban life 2015,* published 2009
- *Eco-Metropolis – Our Vision CPH 2015,* published 2007.

In addition to setting out qualities which constitute good architecture, the policy notably devotes 75% of its content to identity building, the primacy of the public realm, and capacity building.

The following table outlines the terms of the policy guided by the overarching principle – 'Consider urban life before urban spaces, and urban spaces before buildings'.

2010 COPENHAGEN ARCHITECTURE POLICY – PRIMARY THEMES, FOCUS AREAS AND INITIATIVES

Theme	Focus Area	Initiatives
CHARACTER Strengthen the character of Copenhagen by means of both preservation and development	Urban transformation Cultural heritage city on a human scale The city's skyline City on the waterfront City lights	Development and preservation through local planning Collection of examples of cultural environments Urban renewal Integrated urban renewal Design policy - lighting **ACTION:** Method for analysing and describing the character of Copenhagen – used to assess future projects
ARCHITECTURE Promote sustainable architecture that adds new qualities to the city's connectivity and environments	The city on every scale Buildings and places Urban density Urban openness and flexibility Urban diversity Environmental solutions Urban connectivity	Local planning and the processing of building applications Flexible architectural solutions Architectural quality in housing High-rise buildings Evaluations **ACTION:** Develop a collection of examples of sustainable architecture in Copenhagen including neighbourhoods, urban spaces, buildings and landscape architecture
URBAN SPACES Create urban spaces and urban landscapes of a high architectural quality to encourage diversity in urban life	Urban life Urban spaces Urban landscapes Urban water areas Urban development areas	Urban space planning Urban life scoreboard Lighting strategy New parks Pocket parks and green links **ACTION:** Evaluate and learn from the potentials of the landscapes and urban spaces of the existing development areas
PROCESSES Develop and facilitate processes that ensure architectural quality and sustainable solutions	Urban sustainability Architectural challenges Urban architectural competitions Architectural advisors Architectural debates Networks and cooperation	Sustainability in construction and urban development programming Competitions The talent base Architecture awards Theme booklets on architecture policy Copenhagen Networks and cooperation **ACTION:** Architecture policy will be specified through additional strategies and guidelines for specific topics and through the ongoing dialogue about specific projects as we reach the goals together.

Case Studies

"Tick box" approaches and itemised checklists of so-called "aspects of good design" which neglect the totality of the design product ... reduce design thinking to formula thinking.

What really matters in design is less the individual design components and more their combination into the greater whole.

Tiesdell & Adams, 2011, Loc.8231

PLAN OF COPENHAGEN HARBOUR, DEVELOPMENT AREAS WHERE PORT OF COPENHAGEN LTD (NOW KNOWN AS CPH CITY & PORT DEVELOPMENT, OR BY & HAVN) ARE INVOLVED IN VARIOUS PROJECTS

Source: Port & City Development Corporation 2007, p.8

1. Søndre Frihavn

1.1 Langelinie

1.2 Amerika Plads

2. Nordhavnen

2.1 Kalkbrænderihavnen

2.2 Indre Nordhavn

2.3 Øvrige Nordhavn

3. Inderhavnen

3.1 Kvæsthusbroen

3.2 Christiansholm

4. Sydhavnen

4.1 Havneholmen og Gasværkshavnen

4.2 Enghave Brygge

4.3 Teglholmen

4.4 Sluseholmen

4.5 Havneparken

4.6 Havnestaden

4.7 Islands Brygge Syd

4.8 Karens Minde

5. Østhavnen/Prøvestenen

CASE STUDY

THE PORT OF COPENHAGEN

Since the mid 1980s, Copenhagen commercial harbour activities have been concentrated in Nordhavn and at Prøvestenen in Østhavnen. With the introduction of modern environmental requirements and new port management, many of the harbour facilities have been rendered superfluous and sites and warehouses vacated, providing opportunities for extensive redevelopment.

Since 1992 the Port of Copenhagen Ltd (now CPH City & Port Development Corporation – By & Havn) has been responsible for the management of Copenhagen's commercial harbour and urban development of government lands. In 1999 a comprehensive general plan was prepared for Copenhagen Harbour. Driven by the City of Copenhagen, the plans were the result of cooperation between Port of Copenhagen Ltd, the City of Copenhagen, the Ministry of Environment and Energy, and Freja Ejendomme A/S.

The plan was developed in response to lessons learned from rapid building development in the mid 1990s, which had raised debate and criticism about the way the unique public assets of Copenhagen's harbour were planned and managed. Much of the rapid development was devoted to commercial use and failed to address much-needed supply of modern housing to retain young families and a diverse social mix within Copenhagen.

The intent of the general plan was to preserve the amenities of the harbour, protect the special characteristics of the individual areas and deliver attractive, versatile, new neighbourhoods for living, work and recreation. The precise object of the cooperatively developed plan, was to define the guidelines for the future development of Copenhagen Harbour to ensure a vibrant multipurpose waterfront and sustainable transit-connected environment.

Insights and lessons gained from the urban renewal experience of Paris, Hamburg, Amsterdam and other modern western ports informed the development plans.

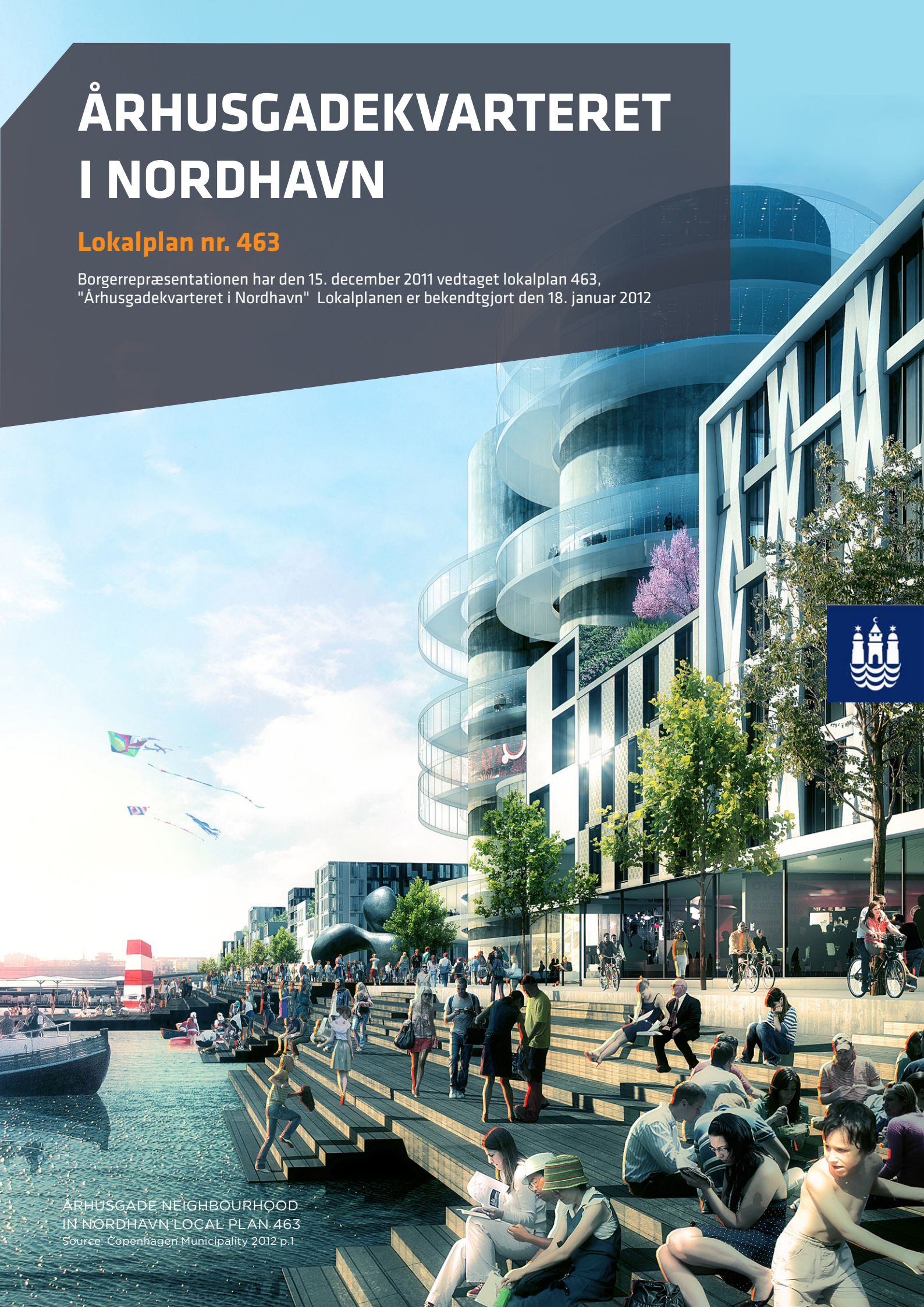
By & Havn operates as a public–private corporation which has successfully regenerated areas of Copenhagen such as Ørestad, Sluseholmen and Nordhavn. The model combines the efficiency of market discipline and mechanisms with the benefits of public direction by transferring public land to a new publicly owned, privately managed corporation. The land is rezoned for residential and commercial use. Then the revenues projected by smart zoning and asset management (not taxes) is used to finance city transit infrastructure, thereby spurring the regeneration of core areas of the city (Katz & Noring, 2017).

The following case studies on Sluseholmen, now complete, and Nordhavn, currently under development, are just two of 16 major redevelopment areas which constitute the harbour transformation.

ÅRHUSGADEKVARTERET I NORDHAVN

Lokalplan nr. 463

Borgerrepræsentationen har den 15. december 2011 vedtaget lokalplan 463, "Århusgadekvarteret i Nordhavn" Lokalplanen er bekendtgjort den 18. januar 2012



ÅRHUSGADE NEIGHBOURHOOD IN NORDHAVN LOCAL PLAN 463
Source: Copenhagen Municipality 2012 p.1

Over the next 40–50 years, the former industrial area of Nordhavn is being redeveloped as a new sustainable, multipurpose harbourside community. The finished area of Nordhavn will total approximately 300 hectares and will accommodate 40,000 residents and provide an equal number of jobs.

Clients CPH City & Port Development (By & Havn)
The City of Copenhagen
Architects COBE
Polyform & Ramboll (Engineers), SLETH Modernism
Timeline 2008: Master plan competition
2009: COBE, Sleth, Ramboll and Polyform selected as winners
2010: Preparation of district plan
From 2011: Construction commences
Area Approx. 300 hectares
Plot Ratio 1.8:1
Building Heights Generally 3 to 6 storey plus towers
Land Use Mix Overall goal is 40% residential facilities, 40% commercial facilities and 20% flexibility.

CASE STUDY

NORDHAVN

Nordhavn is an extensive and ambitious urban renewal project, transit-connected to Copenhagen city centre. It is envisaged to become a sustainable district characterised by a network of waterfront inlets, green spaces and a diverse social mix. Building development will total a floor area of up to 4 million square metres, providing living space for 40,000 people and workspace for another 40,000. Located on the Øresund coast, the district will offer direct access to the sea as well as a multitude of recreational spaces and public facilities. The new district will be developed over the next 40–50 years.

Subject to changes in environmental requirements, and the modernisation of port management, many of the industrial working port facilities of Norhavn were vacated, making way for new harbourside development. The former industrial area is undergoing transformation guided by the master plan vision of a 'Sustainable City of the Future', described as an environmentally friendly waterside city: vibrant, dynamic, socially inclusive and connected by a sustainable transport system. The development is to lead efforts in addressing climate change, and demonstrate mitigation strategies which contribute to (not adversely impact) the quality of life, welfare and democracy within the city.

The master plan for Nordhavn development was the result of an open international ideas competition which concluded in March 2009. The consortium of COBE, Sleth, Polyform and Ramboll was responsible for the winning proposal, which is now in the process of being realised.

Development of the master plan proposal has been carried out in close collaboration between CPH City & Port Development, the City of Copenhagen and consultants. In parallel, a number of public meetings, open house events and exhibitions were undertaken to involve local residents.

INVOLVEMENT OF RESIDENTS AND STAKEHOLDERS

The development of Nordhavn is based on a close dialogue between the developers, local and future residents and other stakeholders to ensure a sense of joint ownership. Dialogue was initiated early in the process informing the competition brief. Citizens of Copenhagen were invited to contribute their visions and ideas; this dialogue is planned to continue throughout the life of the development.

THE BRIEF

The competition brief presents a vision for Nordhavn as a sustainable city district of the twenty-first century, one that will serve as an exemplar of innovative and future-oriented solutions to meet Copenhagen's challenges, not the least being climate change and resource consumption.

Competitors were requested to describe how their proposals articulate the vision of a sustainable city, utilising the potential of Nordhavn's existing fabric, and incorporating input from workshops and citizen meetings.

The brief refrained from specifying a planning metric such as building floor space, height, mix of use etc. It was largely left to competitors to formulate the planning metric reflecting their proposed design vision.

CITIZEN INVOLVEMENT
Source : CPH City & Port Development 2012, p.8

The brief required competitors to provide a spatial concept, structure and development plans which would inform the development of statutory plans following the competition.

Spatial concept
The spatial concept for the district was required to be sufficiently robust, flexible, and able to adapt to unforeseen conditions and new trends in urban development over a 30-year plan.

Design proposals were to present an overall urban and spatial concept for each precinct.

Structure plan
The structure plan, providing the planning framework for the entire Nordhavn area, would be adopted as the basis for the City of Copenhagen's municipal plans for the area.

The structure plan was to present proposals for transport infrastructure connecting with the centre of Copenhagen. The focus was on designing a first-class public transport network prioritising pedestrian and bicycle activity, while minimising the use of private vehicles and delivering a high-quality public domain of streets and pedestrian connections.

Development plan
The development plan was to provide detailed planning parameters setting out the public open space and street hierarchy, building envelopes and the metric for floor space area, building height, the allocation, mix and location of various uses such as housing, commercial, recreational facilities and public functions, to deliver total floor area of approximately 900,000 square metres.

STRATEGY
The strategy was to define opportunities and constraints in the delivery of the 30-year project plan and to ensure the management and gradual release of development supply in balance with market demand. Construction phasing which addressed the amenity of neighbouring residents during construction works was also a significant aspect to be addressed.

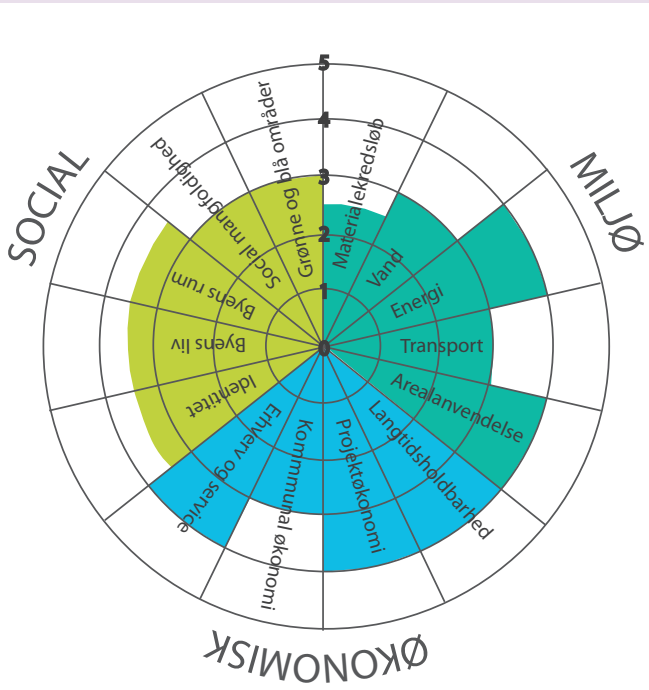
Public infrastructure, including street networks, open space and other community facilities were to be delivered in coordination with discrete development phases. The completed phases were to establish urban life unburdened by adjacent ongoing disruptive construction works, or vast areas of vacant land.

SUSTAINABLITY TOOL
Proposed development sustainability initiatives were assessed and benchmarked using the Copenhagen Municipality sustainability tool, confirming plans for Århusgade, Nordhavn, achieved and in several areas exceeded local policy goals for sustainability.

See diagram page 55, illustrating sustainability test ratings of social, environmental and economic aspects of the Århusgade district plan.

The tool establishes 14 criteria by which developments are assessed. A rating score of 3 indicates initiatives satisfying policy objectives and a score of 5 indicates innovative and optimal solutions.
Source: Copenhagen Municipality 2012. p.1.

WINNING COMPETITION PROPOSAL
by COBE, Sleth, Ramboll and Polyform
Source: CPH City & Port Development 2009, p.18

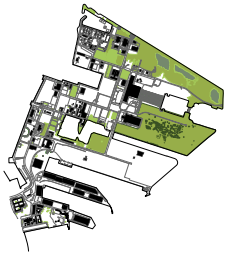


SUSTAINABILITY TEST	
Danish translation	English translation
MILJØ	ENVIRONMENTAL
Materialekredsløb	Material lifecycle
Arealanvendelse	land use
Transport	transport
Energi	Energy
Vand	Water
ØKONOMISK	ECONOMIC
Erhverv og service	Business and service
Kommmunal ø	Communal island
konomiw	Business Development
Projektøkonomi	Project Economy
Langtidsholdbarhed	Long-term Durability
SOCIAL	SOCIAL
Identitet	Identity
Byens liv	City life
Byens rum	Public Space
Social mangfoldighed	Social Diversity
Grønne og blå områder	Green & Blue Areas

ISLETS AND CANALS
HOLME OG KANALER

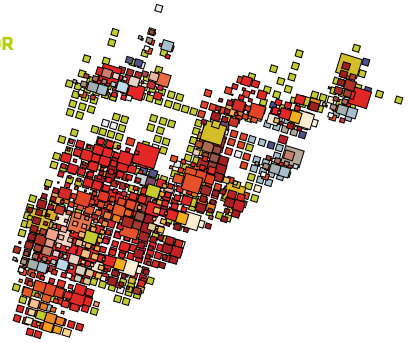
CO2 FRIENDLY CITY
CO2 VENLIG BY

FIVE-MINUTE CITY
FEM-MINUTTERS BY

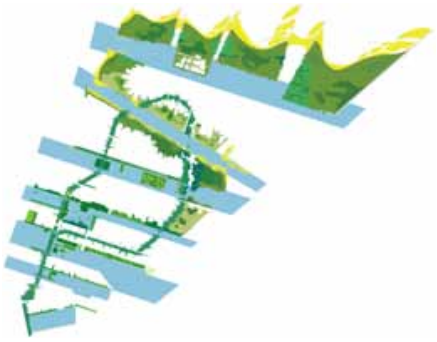


IDENTITY AND HISTORY
IDENTITET OG KULTURSPOR

6 THEMES
6 TEMAER



INTELLIGENT GRID
INTELLIGENT GRID



BLUE AND GREEN CITY
BLÅ OG GRØN BY

MASTER PLAN PRINCIPLE THEMES
Source: CPH City & Port Development 2009, p.21

THE COMPETITION

A total of 180 competition submissions were received from around the globe.

The competition embodied the classic dilemmas of urban development processes: high ambitions that were to be realised within a framework characterised by great uncertainty. The brief required detailed submissions in the form of spatial concept, structure and development plans to permit comprehensive assessment of each proposals design and technical feasibility. Proposals were assessed in terms of environmental, social, cultural and economic criteria. Of particular focus was a scheme's capacity to accommodate change in response to market demand over the 30-year project life.

The jury was comprised of design professionals and representatives of CPH City & Port Development and the City of Copenhagen. In assessment of the entries, no single entry stood out, resulting in the selection of three equal winners. The three winning entrants were subsequently provided two months to further develop their entries in response the jury's assessment and comments.

This further design work was carried out in consultation with a steering panel set up and managed by CPH City & Port Development, including representatives of the City of Copenhagen and two design professionals nominated by the jury.

This eventually lead to the formation of a consortium consisting of the three equal winners working in collaboration: COBE, Sleth, Polyform and Ramboll designed the winning proposal for Nordhavn, which is now in the process of being realised.

In an interview with COBE, the architects acknowledge the combined three winners collaborative approach. Each practice advertises their working methodology as highly interdisciplinary. Familiarity gained from working together on previous occasions further enhanced the ease in collaboration. (Interview: Boserup 2015).

NORDHAVN MASTER PLAN – SIX THEMES

The winning proposal is based on principles which respond to the six vision themes established in the brief. Together, the proposed schemes provide a robust yet flexible framework for future sustainable urban development.

The six principles include:

- islets and canals
- identity and history
- five-minute city
- blue and green city
- CO_2-friendly city
- intelligent grid.

Islets and Canals

The main structural concept in the Nordhavn scheme is to cut through the harbour space with intersecting canals and basins, dividing the area into a number of small islets. Such a layout respects and interprets Nordhavn's past, in which reclaimed land areas created an easily recognisable rational structure.

Urban areas rich in identity

The islets act as identity-creating units that ensure

- proximity to water
- varied spatial experiences attributed to differing canal widths
- accommodation of a mixture of housing, retail, business, commercial, public spaces, natural areas.

Manageable development progress

The division of Nordhavn into islets enables development staging, with development taking place islet by islet.

Identity and Cultural Traces

The industrial history of Nordhavn and its cultural traces persists and informs the conversion of Nordhavn.

Existing buildings, road structure and natural environment

Distinctive buildings will be retained with new building zones specifically based on the current plot divisions avoiding conflicts with the existing structure. The strategy includes:

- retaining existing road patterns to avoid complex relocation
- new natural landscape enhancing the existing landscape.

Five-minute City

The 'five-minute city' is a reference to the time it takes to walk 400 metres. The concept is to promote sustainable modes of transport in Nordhavn, including walking, cycling and using public transport in lieu of private cars

The green loop

The green loop is a unifying element in the five-minute city strategy which:

- connects the various neighborhoods to greater Copenhagen
- contains a super bicycle path and elevated metro line
- intersects with education, sports and cultural facilities.

Blue and Green City

The blue and green structure interweaves water and green landscape elements consistently distributed throughout the area to provide varied spatial experiences and settings for a multitude of activities.

Natural landscapes conducive to a diverse range of activities are linked to a network of parks, promenades and constructed beaches and water inlets.

CO_2-friendly City

The sustainability strategy exploits well-known systems (e.g. wind turbines, solar cells) and also ensures adaptability to accommodate future needs and opportunities. It includes:

- energy consumption minimisation
- protection against climate change impacts and flooding
- the district's own energy infrastructure – i.e. shared district heating and remote cooling systems and heat stores
- integration of information technology to control and monitor power consumption.

Intelligent Grid

Nordhavn is to be developed and expanded over a period of 40–50 years; it is thus subject to unpredictable circumstances. A flexible structure has been created to govern the potentially dynamic spatial organisation of the site. The 'intelligent' grid divides the islets into flexible building zones to be phased over time. The zoning is open to transformation and subdivision as and when needed.

ROBUSTNESS AND FLEXIBILITY

The layout of the islets has been determined on a structural plan level. The size and function of building zones, however, will not be finally determined until the phased building works come online. The ratio of housing to commercial facilities has been defined for each individual islet on the basis of its position within the greater urban plan. With regard to housing and commercial facilities there is greater freedom in locating these within the boundaries of the individual islets. This means the urban structure can be developed in response to market demands without deviating from the established development principles of mixed functions and diversity.

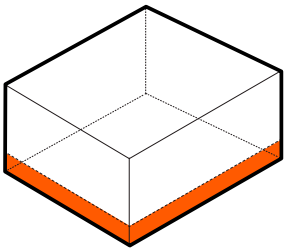
In other words, there is a framework, but not a detailed plan.

Governing principles

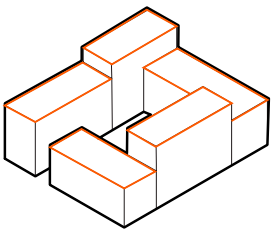
Governing principles will be applied to ensure:

- public realm and landscape will be given priority over buildings
- sustainable building design
- varied building and urban space design
- mixed ownership and functions
- re-use of existing buildings on a permanent or temporary basis.

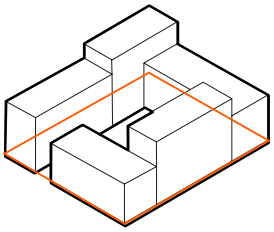
New buildings in Inner Nordhavn will mainly be three to six storeys. To highlight the individual identity of the district and ensure architectural variation, a number of rules and requirements will apply. The new low-rise buildings must follow the external boundaries of the building plots, and there must be at least three shifts in height within each building plot. This approach will define the character of the block pattern and create building height variation.



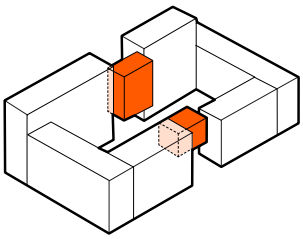
HIGH GROUND FLOOR LEVELS WITH A WEALTH OF DETAILS
HØJE STUEETAGER MED STOR DETALJERIGDOM



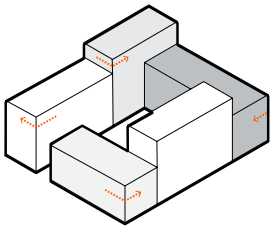
DIVERSITY THROUGH DIFFERENT BUILDING HEIGHTS
DIVERSITET GENNEM SPRING I BYGNINGSHØJDER



UNINTERRUPTED BUILDINGS
WITH GATE OPENINGS ALONG EDGES
SLUTTET RANDBEBYGGELSE MED PORTÅBNINGER



CONNECTIONS ABOVE TERRAIN CREATE PASSAGES
SAMMENBYGNING I HØJDEN GIVER PASSAGER



VARIATION BY MEANS OF DIFFERENT FACADE DESIGNS
VARIATION GENNEM SKIFT I FACADEUDTRYK

HEIGHT VARIATIONS AND
FINE GRAIN MASSING
Source: CPH City & Port Development 2012, p.64

Flexibility in the master plan is reinforced through smart real estate management, such as the exemplary joint venture between CPH City & Port Development and the Nordic Real Estate Partners – a partnership called RetReal Nordhavn P/S. To overcome the challenges of activating street life in the early stages of development, CPH City & Port Development has devised a system in which it sells a plot of land in the district to property developers with the terms and conditions of the sale mandating RetReal Nordhavn can re-purchase the ground floors for commercial and retail development. RetReal retains the ground floors of the buildings in the area for continuous development of the commercial activity to ensure that the newly built neighbourhoods become vibrant and buzzing with life (Katz & Noring 2017, p.29).

REALISATION

On the basis of the winning competition scheme, the City of Copenhagen has prepared statutory municipal and local development plans to guide the development of Nordhavn. The preparation of the plans was undertaken in collaboration with the winning competition consortium and CPH City & Port Development.

CPH City & Port intends a limited role in the actual delivery of buildings. Building rights are to be assigned to public institutions and private developers to deliver the master plan. As of 2012, with the planning phase complete, development has advanced to detailed design of individual projects in the realisation of the first development stage of the master plan.

SLUSEHOLMEN
Source: Anita Morandini

CASE STUDY

SLUSEHOLMEN SYDHAVNEN COPENHAGEN

The former industrial area of Sydhavnen, of which Sluseholmen forms part, has been redeveloped into a predominantly residential canal district built on eight artificial islands.
Clients Port of Copenhagen, Copenhagen Municipality, JM Denmark, Sjælsø Gruppen, Nordicom Architects
Architect Housing and occupation – Arkitema Architects and other Danish architectural firms
Landscape Arkitema Urban Design
Master plan Arkitema and Sjoerd Soeters
Engineers NIRAS (land development) and COWI (residential islands)
Contractors Skanska, KPC-Byg, Myhlenberg, MT Højgaard and Pihl
Timeline Master Plan 2002; Construction 2005-2012
Plot Ratio 1.5:1
Building Heights 5 to 7 storeys
Area 92,000 m^2 incl. landfill
Land-use Mix Residential 133,000 m^2, commercial and institutional 2000 m^2 = a total of 135,000 m^2 (number of dwellings 1310 of which 144 are public housing)
Awards Copenhagen Municipality Architecture Award 2009, 2007 Association for the Beautification of the Capital awarded Sluseholmen for excellence in urban design and architecture

NEW PLANNING FOR THE PORT OF COPENHAGEN

In 1999 Copenhagen Municipality in cooperation with the Port of Copenhagen (now By & Havn), the national real estate company Freja Ejendomme, Ministry of the Environment and Spatial Planning Department, formed an agreement to formalise guidelines for the regeneration of harbourside government lands.

The collaboration resulted in three focus areas for urban revitalisation: North Port, the Inner Harbour and South Harbour.

Conceptual plans were developed for three areas :

- Dutch architects Soeters Van Eldonk Ponec were responsible for Sydhavnen – a proposed mixed use precinct with emphasis on new housing addressing the waterfront.
- Henning Larsen Architects developed a volume study for the inner harbour, extending from the harbour entrance – Citadel to Knippelsbro. The study evaluated existing building context to determine the potential for creating new cultural facilities.
- Dutch architects WEST 8 with Adriaan Geuze studied the area of North Harbour Citadel to North Basin, with a focus on creating a sophisticated residential district with maritime amenity.

MASTER PLAN FOR SYDHAVNEN

1900s Sydhavnen land mass was originally created by landfill. The area had played an important role in the commercial port and industrial operations of Copenhagen. Affected by the decline in port activities and industry the area fell into disuse.

In 1999 regeneration plans for the area began. Structured on a new canal system, the local development plan[1] for Sluseholmen was established, guiding the transformation of Sluseholmen and neighbouring area of Teglholmen.

Sjoerd Soeters and Arkitema conceived and developed the local development plan in collaboration with the City and Port of Copenhagen. The architects where also engaged in an advisory role to formulate design guidelines and further develop façade strategies for six of a total of eight development blocks in Sluseholmen.

INTEGRATION – MUNICIPALITY AND INVESTORS

In 2003 the Municipality of Copenhagen and the Port of Copenhagen formalised a public–private partnership (PPP), Port of Copenhagen Ltd. The main objectives of the corporation were to kickstart redevelopment by providing essential infrastructure, ensuring delivery of quality design and regeneration of the area with erection of the first 1000 dwellings. The company partners shared financial risks and through leadership fostered investment confidence in the development of the area.

FOOTNOTE:

1. Through binding local plans, municipalities provide detailed regulations for land use and building conditions for individual plots. Through local planning the municipalities may secure private co-financing of some technical infrastructure and, to some extent, even social infrastructure.

SYDHAVEN MASTER PLAN – SLUSEHOLMEN
Source: Bydesign in Copenhagen – Lessons from Sluseholmen 2013

The corporation's leadership was essential in driving the district's regeneration in the context of challenging development constraints – in which investors generally regarded the existing area as low status, unsuitable for residential development and overall the project too ambitious.

From the inception of the project, the cooperation was focused on developing an integrated, cross-sector approach to achieve best quality design outcomes.

From the outset all stakeholders were invited to join consultation in project planning and delivery phases. This was the corporation's first occasion in attempting such ambitious stakeholder participation. Methodologies were established to manage these complex interactions between investors, consultants and authorities.

Architectural quality was developed in workshops where ideas were tested in open dialogue. At one stage of the project the success of the participatory process resulted in a large number of stakeholder contributions, so large that it affected discussion and decision-making (Aunsborg & Sørensen, 2008). Committed to ensuring a successful platform for engagement, the City constantly evolved processes to manage these challenges.

While the integrated process proved time-consuming and at times challenging, its success is generally acknowledged, balancing quality design and environmental requirements with investor objectives, fostering joint ownership of the project among stakeholders and assisting in streamlining approvals.

MASTER PLAN CONCEPTS AND CHALLENGES

Sjoerd Soeters master plan concept for Sluseholmen drew on their experience in designing Java Island, a residential district built on an artificial island in Amsterdam. The Sluseholmen plan established a canal structure creating eight artificial islands with pattern of perimeter blocks and sheltered courtyards. It was the first time new canals were built in Copenhagen Harbour since construction of Christianshavn canal in 1671.

PUBLIC DOMAIN AND INFRASTRUCTURE

Canals, Streets, Lanes and Harbour

The master plan design capitalises on the harbour as public space, giving priority to canals as an active public domain. The majority of apartments have an address to the water, and are built to the water's edge with balconies and small pontoons animating the canal frontage.

30% of the development land is devoted to a public domain predominately constituted of streets and laneways. Notably, there is shortfall of active recreation space to serve the local community of Sluseholmen. The future installation of parks located in adjacent canal development is anticipated to amend this shortfall.

The pattern of perimeter blocks is precisely dimensioned to make intimate streets, lanes and canals. Lane widths are deliberately constricted with aim of manipulating the potential for social encounters to occur within the courtyard of the blocks. However, this has resulted in limited capacity to cultivate space for common street life such as café tables, seating areas and street parking. It is the canals which provide alternative life with kayaking, boat movement and summertime swimming.

'Koralbadet' (the Coral Bath), designed by Danielsen Architecture, is situated at the peninsula of Sluseholmen, adjacent to the mid-rise residential complex Metropolis. The harbour baths provide four pools for children and adults with space for swimming, exercise, diving and play. It is one of three bathing facilities delivered by the City of Copenhagen.

TRANSFORMATION OF SLUSEHOLMEN

Source: Copenhagen Municipality 2013, pp.29–31

1 City Council adopts housing policy with 10-point program: with objective to ensure efficient urban renewal & supply of housing to modern standards in proximity to city amenity

3 Draft proposals for the South Harbour. The Dutch architects Soeters van Eldonk Ponec, inspired by 'Java Island' in Amsterdam, develop a concept of 'Harbour Homes' as an alternative to suburban 'Garden House'. The master plan focuses on 4 themes: the block, waterfront, canals & boulevard. The block structure is based on Christianshaven Frederiksstaden.

5 South Harbour City Plan 2001. Municipality objectives include delivering attractive family homes in proximity to water, the expansion of transport services and new service structure. Interdisciplinary discussion on the expansion plans undertaken by the Municipality in consideration of financing urban revitalisation.

City Council implements housing policy strategy, 10 point programme of 1995. Vision for Copenhagen harbour; attractive and versatile residential areas.

We aim as initially delivering 5000 new homes in the South Harbour.

1995 1996 1997 1998 1999 2000 2001

2 Master plan for the harbour. The City Council in cooperation with Copenhagen Harbour Environment and Energy Ministry and the State property company Freja, develop a master plan for the port of Copenhagen. Formulating new guidelines to ensure high quality for development on the harbour. It identifies 3 areas of focus: North Harbour, Inner Harbour & South Harbour.

4 Publicity surrounding the port conversion. The exhibition 'Heritage & Vision' opens. The ideas competition, along with corresponding draft proposals for North Harbour prepared by the office WEST 8 , Rotterdam and an urban study of the inner harbour conducted by Henning Larsen Architects. The proposals inform the review of the Copenhagen Municipal Plan 2001.

TRANSFORMATION OF SLUSEHOLMEN

Source: Copenhagen Municipality 2013, pp.29–31 (Google translate – Danish to English)

6 Master Plan development Tegmestuen Soeters van Eldonk Ponec Architects are engaged to develop the designs. Architects Sjoerd Soeters are appointed lead consultants to Sluseholm development consortium. Aekitema & Groning architects are also hired as consultants to the consortium. Interdisciplinary workshops conducted include government, development consortium and consultants.

8 Design Manual
The studio Arkitema in corporation with the Technical and Environmental Administration developed a set of architectural guidelines for Sluseholmen based on Sjoerd Soeters instructions. Guidelines informed the design of the perimeter blocks including, addressing building height variations, facades, windows & material treatment,public space, bridges & landscape features.
The design manual is an important element in the development of the areas spatial design.

10 Government development agency; Byggemodningsselskabet is founded. It consists of Port of Copenhagen and Copenhagen Municipality. The agency is responsible for acquisition of undeveloped lands and sale of lands.

1995 1996 1997 1998 1999 2000 2001

7 Master Plan approval by government, which included revised master plan for the South Harbour & Sluseholmen. Approval was granted to continue the transformation on the basis of the master plan. Finance, committee formally confirmed intent to establish a land development company with the Port of Copenhagen.

9 Local Plan Proposal.
Local Plan no. 310, allows construction of up to 135,000 m² residential and service area for Sluseholmen. Maximum plot ratio 1.5;1. These is a particular focus in the policy regarding noise amelioration to address the planning challenges in the transition of existing commercial uses (with associated noise impacts) to new residential neighbourhoods.

TRANSFORMATION OF SLUSEHOLMEN

Source: Copenhagen Municipality 2013, pp.29–31

⓫ Agreements concluded between Byggemodningsselskabet & Sluseholm Consortium.

⓮ Occupation of approximately 1300 homes. The area is fully developed.

⓯ Daycare centre is established in the area.

⓱ Bridge between Teglholmen & Slusholmen established. Havnbadet 'Coral 'Harbour Baths completed.

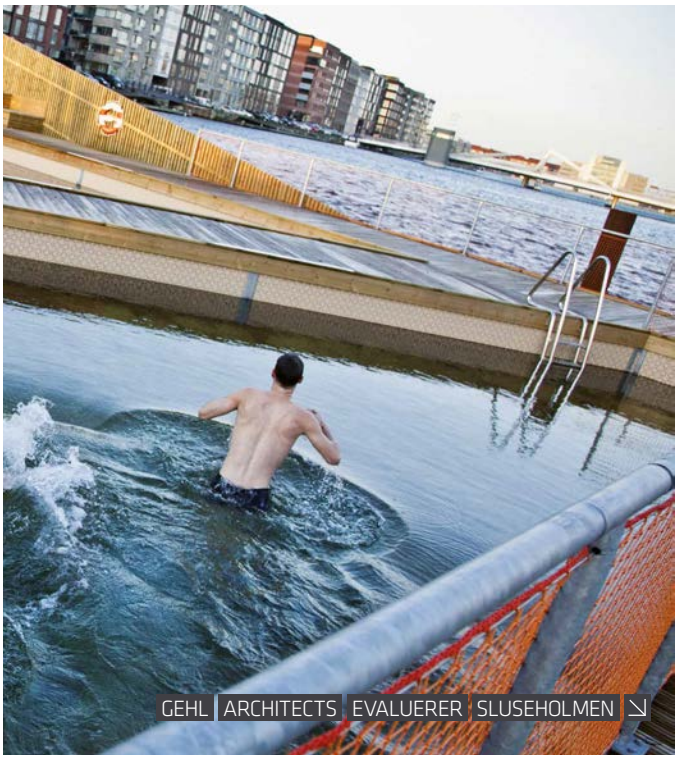
⓲ Byggemodningsselskabet Sluseholm is liquidated.

1995 1996 1997 1998 1999 2000 2001

⓬ Facade Development. Under Soeters supervision a series of workshops are undertaken with, teams of approximately 5 architects invited to develop designs and facade character for each of the city blocks. Concurrently Soeters develop the master plan of South Harbour incorporation with Technical & Environmental Administration, Finance Administration & Copenhagen Port. Soeters continue involvement in the process until 2005 and periodically between 2007 – 2008.

⓭ Construction proceeds for new clubhouse – Valby Badeklub. The design manual is tested in its application in construction of the first blocks.

⓰ Urban Planning Prize for Sluseholmen. Danish Byplanlaboratorium awarded area as a successful harbourside development.



CORAL HARBOUR BATHS
Source: Copenhagen Municipality 2013, p.45

Local Services and Public Functions

The City, in promoting the development of the area to support a diversity of residential accommodation, including family homes, required the early integration of public services and facilities.

A flexible strategy has been employed to overcome typical challenges faced in providing accommodation for retail and business early in the development phases. The City retains leases on retail and business accommodation, supporting temporary uses until there is sufficient private market interest to take over these leases. Ground-floor spaces located on principal streets and at block corners are designed for flexibility in uses, to accommodate residential, retail or commercial activities, featuring 4-metre floor-to-ceiling heights, level ground access and large glass facades. At the time of this case study several of the spaces were functioning as commercial use, however, it is too early to conclude the success of this strategy.

Due to insufficient local demand, delivery of a nursery, youth facilities and primary school have been deferred. Compared to the rest of Copenhagen, 50% fewer children aged 6–17 live in Sluseholmen. Aligning realisation of public facilities within development cycles continues to be a challenge.

Social Infrastructure

With the City lending initial support, an agglomeration of ownership and tenant associations has been established to promote common interests among the community.

The Coral Harbour Baths, with infrastructure provided by the City of Copenhagen, is just one of the Association's facilities. By agreement with the City, the Association operates and maintains the facilities, organises community events and fosters strong community engagement in the area.

Another of the Associations's interests is the Valby Boat Club situated in a row of old timber sheds on the eastern waterfront of the canal district. The initial planning of the canal district intended the boat club relocated and sheds demolished; however, ultimately it was decided to spare the club and its premises to maintain social continuity and preserve the maritime atmosphere.

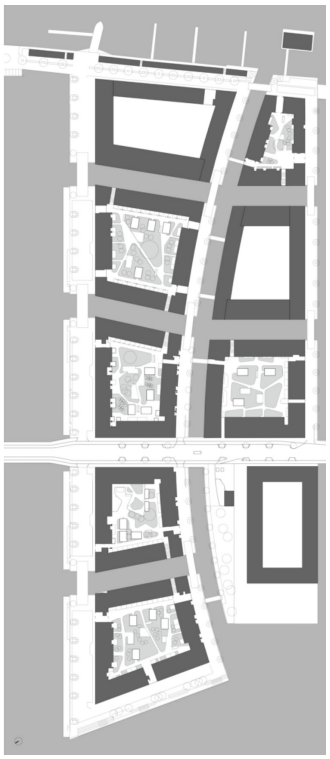
TRAFFIC AND TRANSPORT INTEGRATION

Borrowing from the medieval street networks of Copenhagen, the traffic concept for Sluseholmen prioritises pedestrianisation of streets. The network of shared streets is carefully designed to advantage pedestrian and bicycle movement over vehicular. To enable this concept an interdisciplinary approach to traffic planning was undertaken early in planning, involving traffic authorities and the police.

All secondary streets are designed devoid of surface carparking and with no obvious distinction between pedestrian path nor traffic lanes. Design devices, such as pavement detailing, placement of street furniture and constricted road dimensions are used to slow traffic and permit safe mixed use.

While Sluseholmen offers a high-amenity walking and cycling environment, it lacks sufficient access to public transport and is reliant on a harbour bus connection to Teglholmen and to the centre of Copenhagen to overcome its current isolated location.

GARDEN COURTYARD
Source: Anita Morandini



GARDEN COURTYARD

Car ownership in Sluseholmen is 77% higher than the rest of Copenhagen. A sufficiently integrated transport network still remains a challenge for the area.

HARBOUR HOMES

Described as 'harbour homes' the housing concept offers an alternative to the 'garden house' typical of suburban development. Constituting perimeter blocks, the majority of apartments are dual aspect, each with an address to the canal as well as to the semi-public interior courtyard with green lawn and landscape. Ground floor apartments capitalise on direct access to the canal as recreational space.

Inlets formed by perimeter blocks with zero setback to streets, lanes and canals characterise the urban structure. The blocks make way for an interior court and streets are reserved primarily for passage. All pedestrian access to residential apartments is via a large entry portal connecting street and court. This strategy, in combination with the isolated nature of the inlets and streets devoid of incidental passing traffic, tends to bias the interior life of the courts at the expense of street life.

Courtyards are generously dimensioned, activated by the arrangement of apartment entries and terraces fringing the central leisure space. While the communal areas are fully utilised by residents, the lack of mature trees and spatial variation in the landscape treatment is notable. Below the open courtyard, underground carparking occupies the complete site footprint thus restricting deep soil to support mature planting.

DESIGN QUALITY

In the context of a slow residential market, achieving financial feasibility in balance with high-quality design was a significant development challenge. From project outset, the City prioritised strategies to manage these pressures.

The master plan, development control plans, design manual and authority's capacity to negotiate balanced outcomes, has been and continues to be critical in achieving the desired design quality.

In early 2002, under guidance of Soeters master plan, Arkitema jointly developed with the Technical and Environmental Administration a design manual for Sluseholmen. Mindful of the budgetary constraints affected by the slow market, the manual sought to guide design approaches which would create a strong identity and diversity in architectural treatment while minimising cost. The manual focused on the design treatment of built elements to the waters edge and creating variation to building height and facade character.

The design manual formed part of the local plan and was also tied to purchase contracts for development lots. It has proved to be a powerful tool in negotiating high-quality design outcomes. Although the excavation of canals and design quality requirements entailed major investment from developers, conditions were generally accepted partly because the benchmarks were codified and made consistent across the entire precinct.

In the construction phase of development, quality has been upheld through the Technical and Environmental Administration building permit approvals, inspections and the capacity to rationalise cost pressures in balance with design quality.

Source: Sluseholmen/Arkitema Architects + Sjoerd Soeters

The Administration acknowledges the significant time impost and skills required of staff to manage the constant pressure to relax design quality. The design manual is cited as an invaluable tool setting clear standards to lead negotiations while affording sufficient flexibility for merit-based assessment of design alternatives equal in quality.

FINE-GRAIN ARCHITECTURAL CHARACTER AND DIVERSITY

In order to ensure architectural variation and diversity for the entire district, the design manual establishes principles to create fine-grain differentiated façades to each city block.

Borrowing from Amsterdam models, the strategy aimed to support rationalisation in the building system with fine-grain variation created in the façade design, and incremental variance in building heights. To achieve the required level of diversity, 25 architectural firms were asked to design the buildings, with around five firms involved in the design of each development lot.

While the architectural community regarded the strategy with some skepticism it is generally recognised as having successfully achieved fine-grain diversity in the façade design.

POST-DEVELOPMENT ASSESSMENT

Committed to ongoing improvement in delivery of high-quality design, the authorities have proactively undertaken a post-occupancy assessment of Sluseholmen to inform the future rollout of the master plan.

Bydesign in Copenhagen – Lessons from Sluseholmen (Danish) 2013 documents a review of Sluseholmen development. The analysis was prepared by Copenhagen Municipality, Centre Manager of Urban Design, Technical and Environmental Administration, in cooperation with many other professionals and citizens participating in the development process.

IN 2011, THE CITY OF COPENHAGEN ADOPTED THE COPENHAGEN CLIMATE ADAPTATION PLAN
This plan sets the framework for the implementation of climate adaptation measures, such as flood mitigation in the city.
Source: Milo Metropolen, Copenhagen, 2012, p.4

CASE STUDY

WATER PROJECTS

Copenhagen has in the past decade successfully transformed a polluted harbour into a clean environment for swimming and high-value recreational uses. A combination of harbourside improvements, installation of harbour baths, recreation facilities and green space has contributed to the revitalisation of adjacent areas. This transformation is an example of the government's integrated approach to urban water management combining a broad range of environmental, economic and social strategies.

A series of water projects (see case studies) demonstrate the success of the government's long-term polices, focused on creating multifunctional solutions which – in addition to managing rainwater and reduced flooding – also create additional value by contributing to the city's overall water balance and realisation of new recreational areas.

INTEGRATED SOLUTIONS FOR WASTEWATER MANAGEMENT

For many years, the discharge of wastewater from sewers and industrial sites had a major impact on the water quality in Copenhagen Harbour. The water was heavily polluted with sewage, algae, industrial waste and oil spills from commercial harbour transport. In 1995, 93 overflow channels fed wastewater into Copenhagen Harbour and the adjacent coastlines.

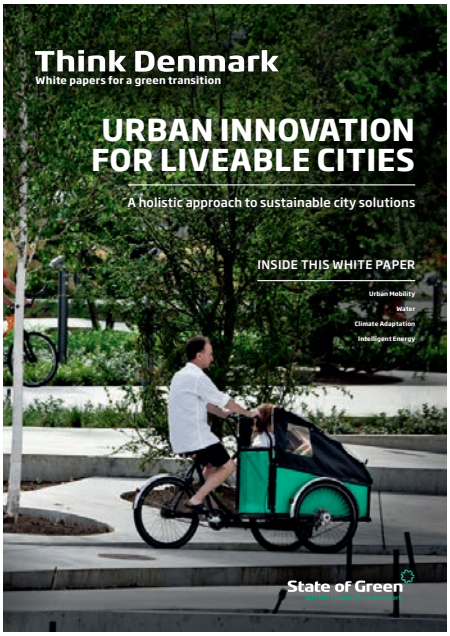
In 1976, the City of Copenhagen formulated its first wastewater management plan. Since then, the municipality has invested in the modernisation of the sewerage system and an expansion of the city wastewater management systems to minimise the amount of wastewater entering the harbour from sewer overflows during heavy rain.

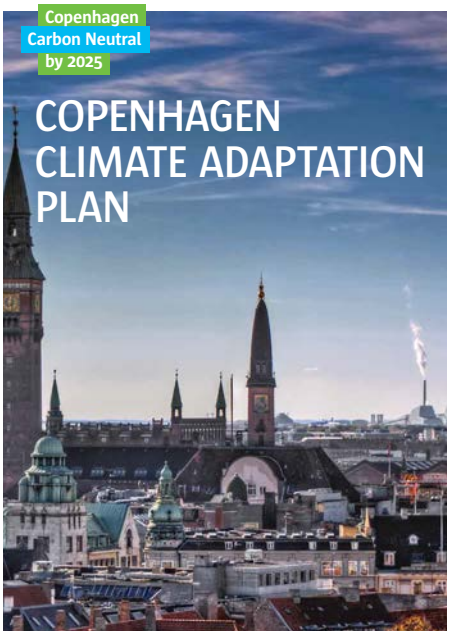
The City of Copenhagen's Climate Adaptation Plan 2011 defines a framework for implementation of a suite of strategies to meet the challenges of climate change. For example, green roofs are included in the City's Strategy for Biodiversity and Sustainability Guidelines in Constructions and Civil works. It mandates all municipal buildings incorporate green roofs, and since 2010 new local plans further mandate their inclusion in private developments.

Water management crosses both administrative and geographical borders: different elements of the water cycle, sewage, rainwater, rivers, lakes and groundwater being regulated by different legislative bodies. Recognising the challenges of this disaggregation, the government has vigorously encouraged collaboration across sectors and between disciplines, institutions and private property owners to leverage mutual benefits in multifunctional solutions.

Danish municipalities must include climate adaptation plans in their local development plans, of which water management forms part. The Danish Nature Agency[1] has developed a set of guidelines on how municipalities can manage climate adaptation as part of their overall planning for construction.

Under the Danish *Water Sector Act*, the expansion of sewerage systems are managed by water utility companies and financed through water tariffs. Via the 'co-financing regulative', water utilities are permitted to co-finance climate adaptation projects and above-ground surface treatment carried out in association with municipalities and private owners, with projects involving the construction of roads, water courses and recreational areas.





INTEGRATED SUITE OF CLIMATE CHANGE AND WATER MANAGEMENT POLICIES AND ADVOCACY AGENCIES

As Danish water utilities have a monopoly on managing water and sewage their activities and investments are closely monitored by the Water Utility Secretary under the Danish Competition and Consumer Authority.

These integrated policies and strategies have led to a network of water-related projects, such as harbour baths and water access infrastructure, green roofs and walls, street improvements with intensified landscape and tree planting, permeable paving, roadside infiltration beds, recreation parks, nature areas and 'green and blue' facilities in association with institutions and private developments.

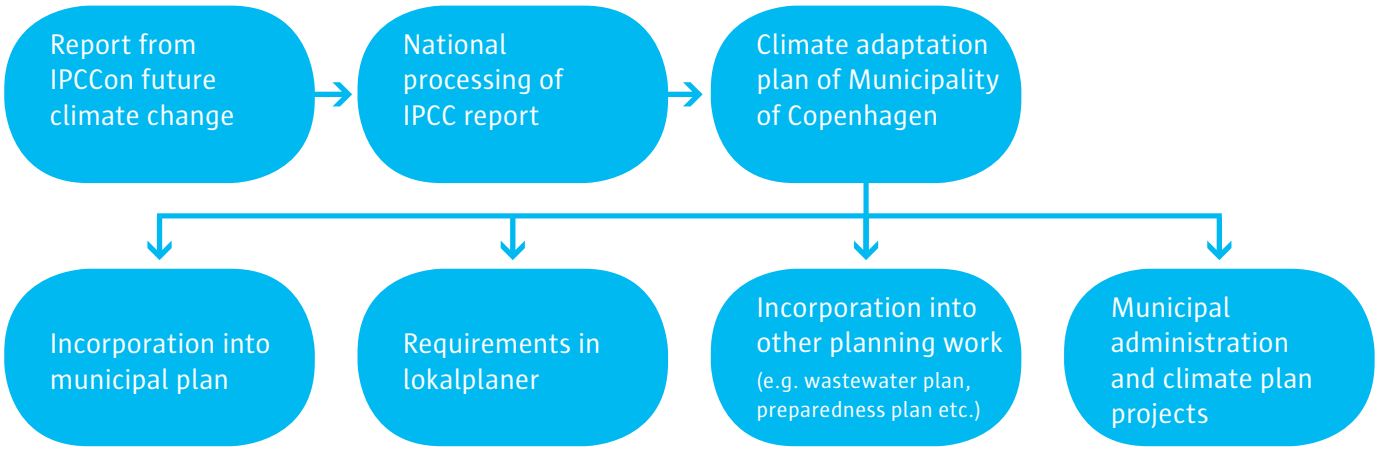
ECONOMIC VALUE OF GREEN SUSTAINABLE DRAINAGE SYSTEMS (SUDS) PROJECTS

Danish experience has demonstrated the economic benefits in leveraging multi-purpose investments in SUDS solutions. While there are no national guidelines, tools have been developed for calculating the cost benefits of green solutions.

Water in Urban Areas[2] provides a tool for comparing expenses in building 'grey' vs. 'green' solutions. The tool calculates various project, construction and maintenance costs. Accounting takes into consideration the cost bearer, associated risks and re-occurring costs, project life cycle, environmental impacts and benefits, the aesthetic and recreational qualities which add value to a project as well as potential cost advantages gained through collaborations with other planned construction projects.

Danish Nature Agency provides 'SPLASH', a tool to assist in calculating the socio-economic consequences of specific climate adaptation measures to be implemented in a local area. The tool enables estimation of capital investment required to mitigate projected flooding events and the potential economic gains achieved through each proposed action. Costs are assessed on a long-term basis within a holistic accounting framework. For example, in the assessment of a landscape project designed to mitigate flooding, accounting takes into

THE CLIMATE ADAPTATION PLAN



PROCESS OF CLIMATE ADAPTATION – COPENHAGEN
Source: Milo Metropolen, Copenhagen, 2011, p.10

consideration reduced damage caused by flooding in conjunction with the potential value-add gained through increased green areas, increased CO_2 absorption and reductions in water consumption.

BOOSTING URBAN DEVELOPMENT

Copenhagen's harbour, canals, recreational facilities, adjacent parks and green nature areas have significantly contributed to the transformation of low-value urban areas to highly desirable localities attracting residential and commercial development.

A 2012 study undertaken by the University of Copenhagen determined property prices increase by an average of 10% where property is located within walking distance of a park or an area of urban nature. Proximity to the coast increases property prices by 15–30%, an increase which is diminished to zero once the property is located more than 300 meters from the water.[3]

Projects such as Copenhagen's harbour baths, the first opening in 2002 at Islands Brygge, make evident the added value of improved water assets serving to increase property values, local business and tourism activity while enhancing the quality of life for Copenhagen's citizens.

EARLY STAKEHOLDER INVOLVEMENT

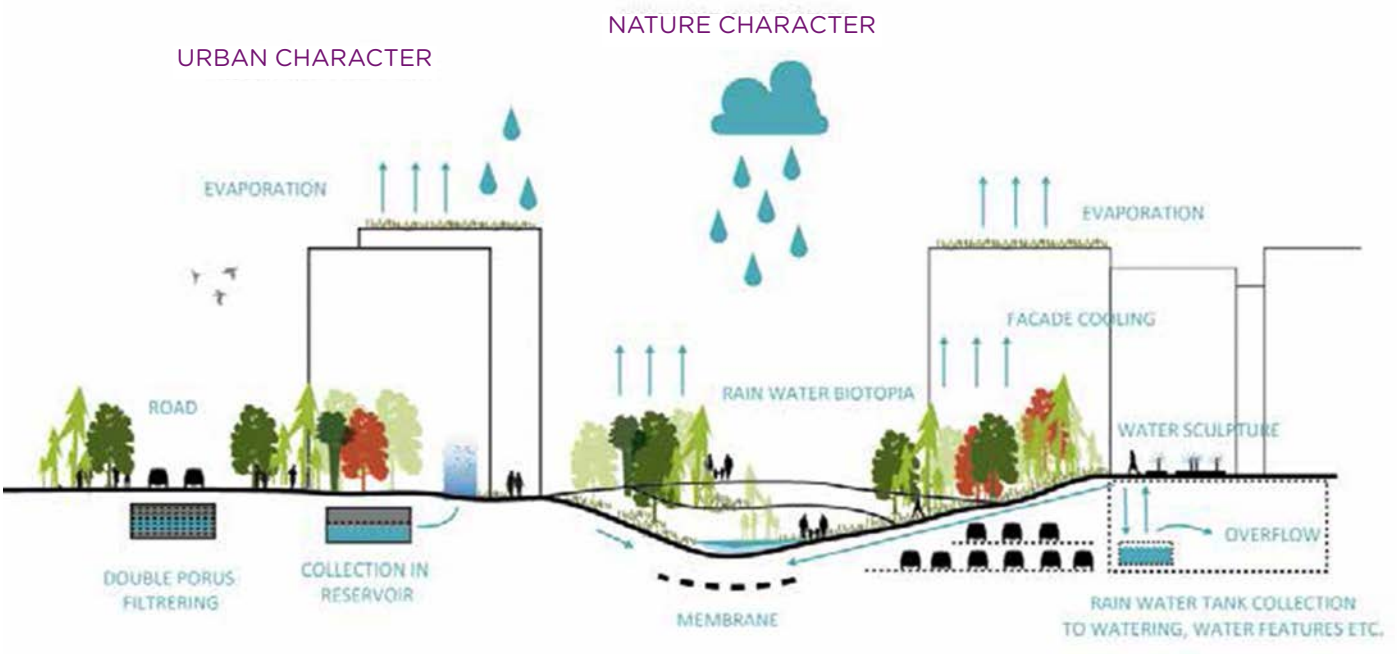
State of Green, the government agency assigned to foster cross-sector stakeholder relationships in the green economy, notes that in the Danish experience, SUDS projects are more likely to achieve success when city planning, construction, environmental issues, financing mechanisms and stakeholder relations are addressed early in the development process.

Although initially more complex, it is ultimately more cost-efficient for the city when investments in blue infrastructure are integrated early in the urban planning process where advantages can be cross-leveraged to reduce costs.

Policy frameworks can create incentive for innovation and optimisation of resources as well as increasing public awareness about the value of water assets.

Notably the Danish Government has invested in enabling all stakeholders to visualise the benefits of integrated blue and green infrastructure, communicating a clear vision beyond the most obvious benefits of reduced hydraulic load on wastewater treatment.

The successful conversion of Copenhagen's harbour from polluted waterway to high-quality recreational place, demonstrates the power of an inspired vision translating pragmatic technical issues into transformational city-making.



SUSTAINABLE WASTEWATER MANAGEMENT

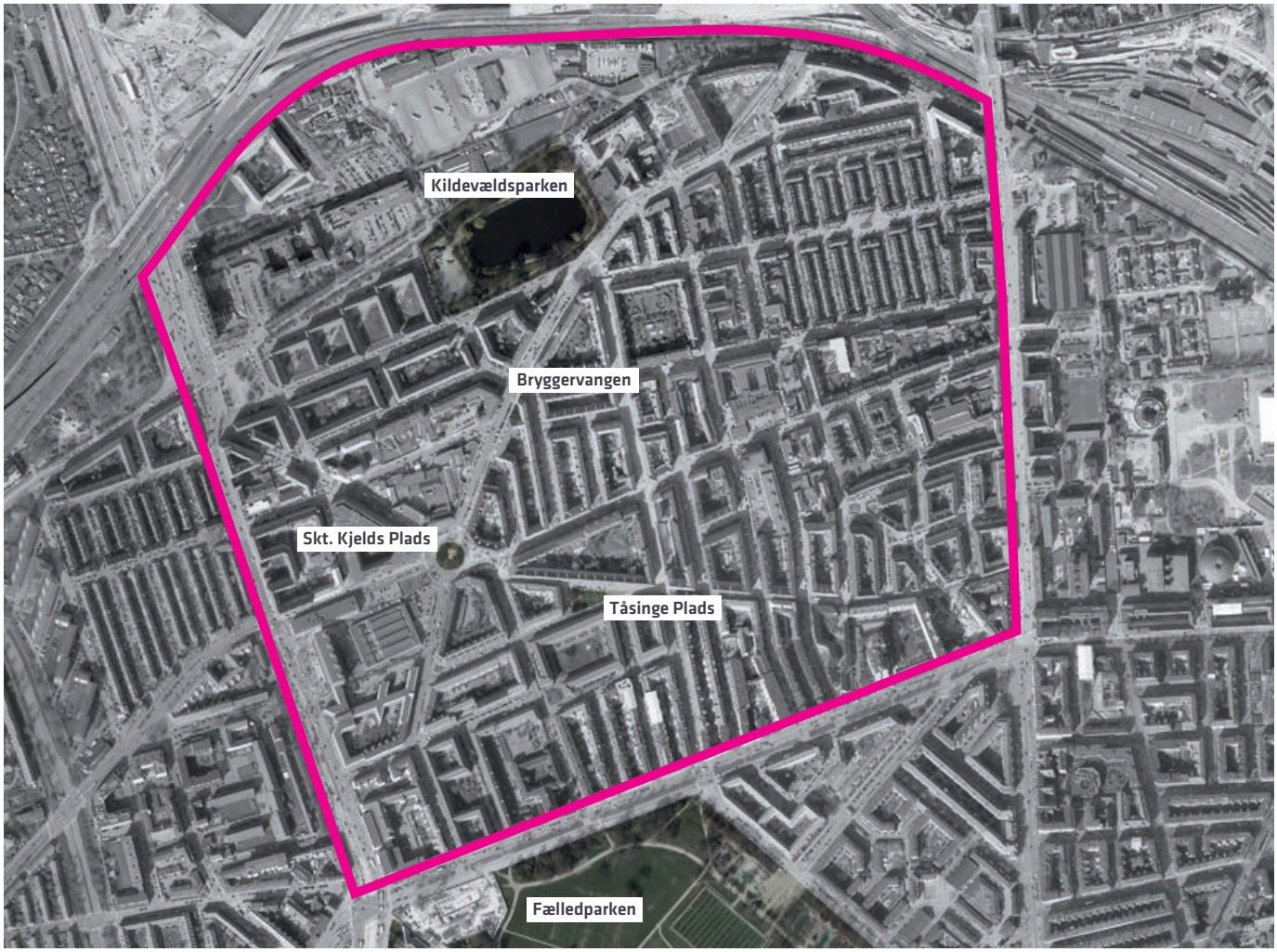
Source: Technical and Environmental Administration Copenhagen Municipality 2010, p.38

FOOTNOTES:

1. The Danish Nature Agency is an organisation under the Danish Ministry of Environment. The Nature Agency implements the government's policies concerning nature, land use, water and climate change adaptation. The Nature Agency aims to protect and secure clean water, nature, and undertakes climate adaptation planning for cities, landscape and outdoor activities.

2. Water in Urban Areas was originally established in 2010 as a strategic partnership. From the end of 2014, Water in Urban Areas has transformed into an innovation network of knowledge institutions, government agencies, utilities and private companies. It's task is to develop, document and present climate adaptation technologies and associated planning tools for transformation of existing urban areas in Denmark.

3. Page 12, State of Green Version 1.0 (2016), *Urban Innovation for Liveable Cities – Think Denmark White Papers for a Green Transition*. State of Green is the official green brand for Denmark. It gathers all leading players across the Danish green landscape and fosters relations with international stakeholders interested in learning from the Danish experience.



EXTENT OF CLIMATE ADAPTATION NEIGHBOURHOOD – OUTER ØSTERBRO NORTH OF FÆLLEDPARKEN
Source: Copenhagen Municipality 2014

TAASINGE PLADS
Source: www.ghb-landskab.dk/en/projects/taasinge-square

The project Skt Kjelds Square and Bryggervangen will be the first climate-adapted neighbourhood in Copenhagen. Implemented by the Municipality of Copenhagen, the project addresses increasingly heavy rainfall and cloudburst events through an integrated strategy of rainwater management and green recreational spaces.[1]

Location Østerbro, København
Client Municipality of Copenhagen (Københavns Kommune)
Consultants Strategic design advisors for the master plan of the area: Tredje
Natur. Advisors for Taasinge Plads: GHB Landscape Architects and Orbicon.
Advisors for Bryggervangen & Skt Kjelds Plads: SLA and ALECTIA
Design Period 2015
Realisation 2016–2018
Area 34 900 m^2
Competitions established designs for phase 1: Taasinge Plads and phase 2: Bryggervangen & Skt Kjelds Plads

CASE STUDY / WATER PROJECTS

CLIMATE ADAPTATION PLAN BRYGGERVANGEN & SKT KJELDS SQUARE

The area of St Petersburg and Kjelds is a densely populated neighbourhood of 50,000 square metres currently undergoing transformation. In 2012 the Municipality of Copenhagen designated the area as an exhibition space for climate adaptation, consequently spurring renewed interest in the locality.

The neighbourhood of Skt Kjelds Kvarter is located on a gentle slope descending towards Copenhagen Harbour. The master plan aggregates and enhances once neglected residual street spaces, pocket parks and sporadic street tree planting to create a landscape corridor rich in biodiversity connecting Fælled and Kildevælds park.

The overall aim of the strategy is to fully integrate water management surface solutions and detention systems with streets, vehicular parking and bicycle lanes to create a 'blue-green' high-quality landscape setting.

The transformation is to be implemented in two phases:

1. Taasinge Plads and
2. Bryggervangen & Skt Kjelds Plads.

TAASINGE PLADS

The once remnant park of plain grass has been overhauled to create an urban habitat dense with vegetation, wild herbs, grass slopes addressing the sun and a new café area. The project demonstrates a sophisticated integration of 3 types of surface water management including:

Rainwater capture from neighbouring properties collected in an underground reservoir and decorative surface reserves shaped like giant metallic water drops.

Ground surface water is managed by a series of green 'dunes', contoured to collect rainwater in shallow valleys and providing ground infiltration in lieu of disposal through drains.

Stormwater from surrounding streets is diverted to and collected in water beds lined with filtration systems to improve water quality.

Tested by a short but intense cloudburst in 2015, the project has proven successful in flood mitigation and preventing water inundation of neighbouring properties previously experienced during such weather events.

BRYGGERVANGEN AND SKT KJELDS PLADS

Bryggervangen and Skt Kjelds Plads form a long stretch of street (34,900 square metres in surface area) where the existing landscape of asphalt and pavement is to be replaced by a series of linked green spaces, urban 'nature' and surface water solutions. The design stitches together a variety of fragmented spaces, residual niches, corners, and street verges in the tight traditional residential street to create a green corridor with a multitude of uses.

A collection of incremental interventions, such as introduced tables and seating, new pocket vegetation and enhanced tree planting, create a green threshold to existing residential blocks, and cumulatively form a continuous green link between existing parks situated at each end of the street. The strategy encourages walking and cycling while also offering areas of local domestic retreat. For example, in summertime the Danes routinely take advantage of street dining to enjoy a home-cooked meal at public table settings conveniently located in front of their apartment buildings.

The pilot project is intended to set a benchmark and illustrate the benefits of integrated climate change adaptation. It will demonstrate how rainwater can be managed naturally and effectively. By reconfiguring road and parking space, 20% of the street area is reclaimed for soft landscape. Bicycle paths with adjusted kerb alignments will perform as stormwater channels; urban gardens and green roofs will detain and delay water runoff. Biotopes will manage 30% of the water and, in the event of cloudbursts, excess water will be diverted to Copenhagen Harbour.

CITIZEN INVOLVEMENT

Since its inception in 2012, the project has been and continues to be developed in close cooperation with the local residents and businesses, through citizens' meetings, workshops and project groups.

Consistent with the City's commitment to ongoing citizen involvement, the project provides dedicated garden areas for local residents to participate in seeding, planting and ongoing gardening. Residents are also involved in detailed development of the structured park areas, for example in Taasinge Plads the testing and relocation of children's play elements and furnishings were agreed in collaboration with residents.

MULTIDISCIPLINARY TEAMS

The City acknowledges and actively promotes these pilot projects as an opportunity to build national climate adaptation expertise. Imperative to the project success are multidisciplinary teams capable of converting engineering utility to good design. Such projects require a breadth of skills including but not limited to architecture, landscape architecture, urban design, biology, horticulture, urban ecology, sociology, civil engineering and stormwater engineering.

SLA is just one example of the type of multidisciplinary consultancies operating in this space. The practice employs architects, landscape architects, urban designers, biologists, sociologists and horticulturalists.

Sommerscenarie på Skt Kjelds Plads: Boboerne fra boligkarréen har rykket børnefødselsdagen ud i solen og børnene leger i bakkerne.

VISION

Vi vil lade København slå rødder i de blågrønne byrum ved Bryggervangen og Skt Kjelds Plads! Vi vil skabe en ægte københavnsk klimatilpasning, der består af enkle og robuste løsninger kombineret med urban design i verdensklasse og en stedsspecifik bynatur, der er vild, grøn, blå og som fungerer som katalysator for byens aktive, kreative og sociale liv.

Vi vil skabe en hel københavnsk byarkitektur, der består af både det byggede og det groede miljø i en kraftfuld og fuldendt ligevægt. Med løsninger, stemninger og udtryk der bliver stadig bedre, stadig stærkere og stadig mere komplette - fordi byen *gror*.

Og vi vil lade fremtidens Københavnerfortælling blive en blågrøn historie om byens natur, om en bæredygtig fremtid og om københavnernes rolle som medskabere af deres by, deres liv og deres verden.

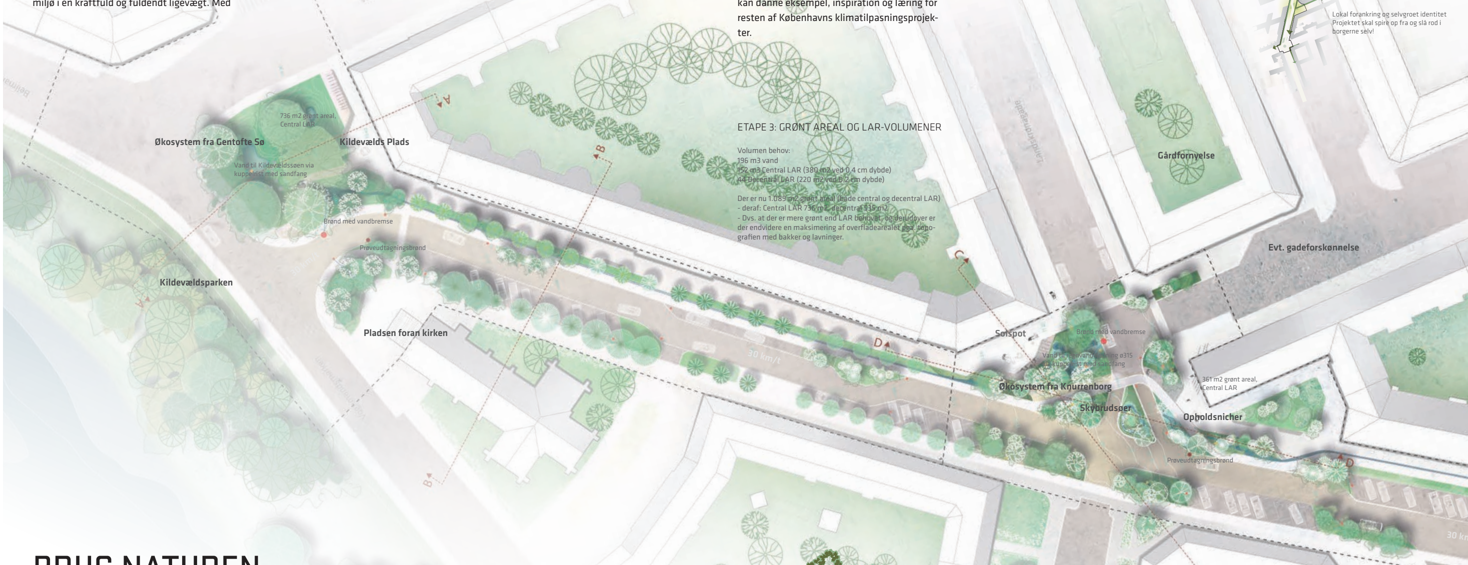
MISSION

Vi vil sammen med Københavns Kommune skabe et vartegn for Klimakvarteret, der bliver et internationalt førende eksempel på, hvordan man ved hjælp af klimatilpasning kan skabe nye og spektakulære rammer for et enestående, socialt og aktivt hverdagsliv.

Vi vil sammen med kommunens centre og afdelinger skabe et projekt, der kombinerer letoverførlige klimatekniske løsninger med en række principper og metoder for bynatur-design, der kan danne eksempel, inspiration og læring for resten af Københavns klimatilpasningsprojekter.

Vi vil sammen med Områdefornyelsen skabe en proces, der sikrer den lokale forankring og det lokale ejerskab og ikke bliver et top down projekt. Projektet skal spire op fra og slå rod i borgerne selv.

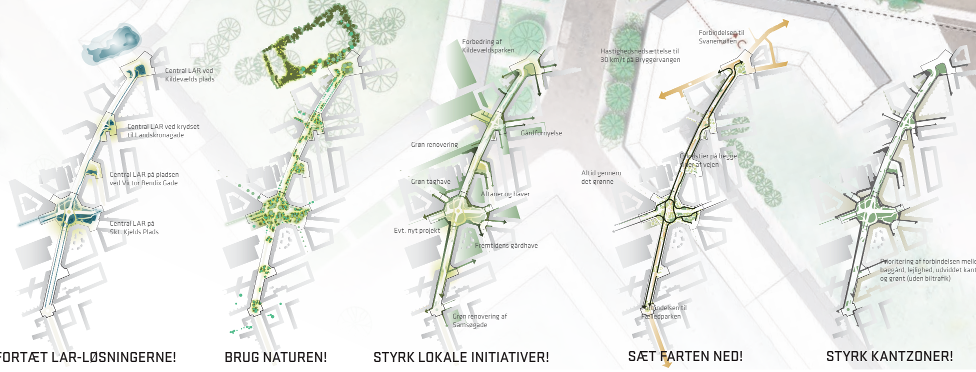
Og vi vil sammen med Klimakvarterets beboere designe, plante og gro en sanselig, varieret, blågrøn og specifikt københavnsk bynatur, der kommer til at være rygraden i kvarterets fremtidige identitet og liv.



BRUG NATUREN I BYEN

Dette forslag bygger på fem hovedgreb, der alle har det tilfælles, at de maksimerer graden af blåt og grønt i Bryggervangen og Skt. Kjelds Plads. Dette har flere positive effekter:

- Bryggervangen og Skt. Kjelds Plads gøres så attraktiv, sanselig og naturlig som muligt, hvilket ansporer til ophold, rekreative aktiviteter, socialt byliv og nye naturoplevelser.
- Klimatilpasningen får optimale betingelser både for lokal nedsivning af hverdagsregn såvel som for bortledning af regnvand ved skybrud.
- Bryggervangen og Skt. Kjelds Plads opleves som én sammenhængende enhed, der samtidig indeholder stor variation i de forskellige pladser og grønne hjørner.
- Bryggervangen og Skt. Kjelds Plads får en stærk identitet som byens blågrønne vartegn for klimatilpasning.
- Bryggervangen og Skt. Kjelds Plads opleves som et trygt og sikkert sted for fodgængere og bløde trafikanter såvel som bilister.
- Bryggervangen og Skt. Kjelds Plads skaber maksimal blågrøn synergi med kvarterets øvrige klimainitiativer.



Efterårsscenarie på Skt Kjelds Plads: 3.A fra Kildevældsskolen har temadag om bynatur og er ude og plante træer på pladsen med studerende fra KU Life

ENGAGEMENT

Forholdet mellem københavner og by er under forandring i disse år. Som borgere vil vi ikke længere bare være forbrugere af byen. Vi vil være medskabere af byen, fordi det er her, vi lever vores liv, og fordi det giver mest mening for os, hvis vi føler en stærk tilknytning til vores by, vores kvarter, vores gade og vores naboer.

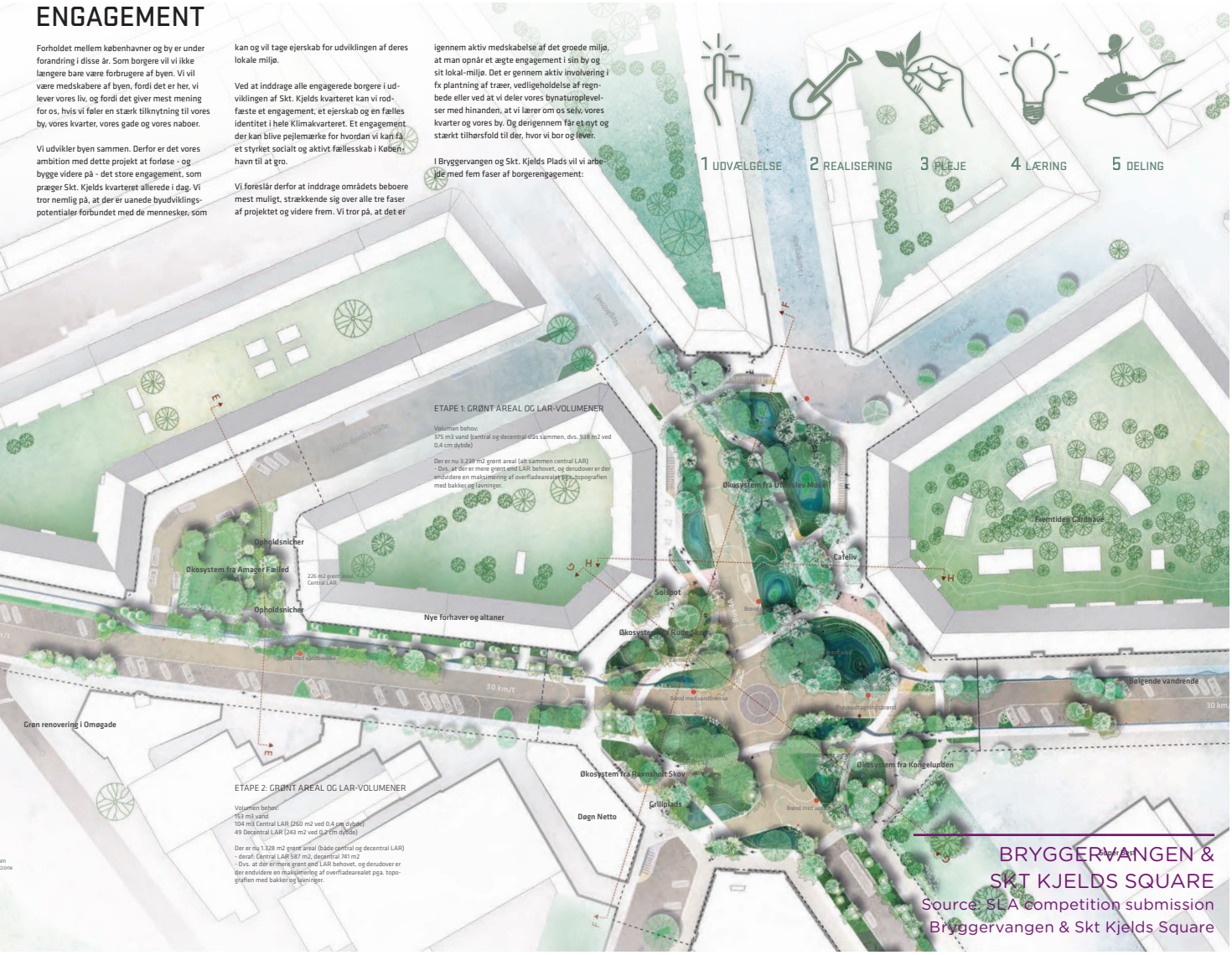
Vi udvikler byen sammen. Derfor er det vores ambition med dette projekt at forløse - og bygge videre på - det store engagement, som præger Skt. Kjelds kvarteret allerede i dag. Vi tror nemlig på, at der er uanede byudviklingspotentialer forbundet med de mennesker, som kan og vil tage ejerskab for udviklingen af deres lokale miljø.

Ved at inddrage alle engagerede borgere i udviklingen af Skt. Kjelds kvarteret kan vi rodfæste et engagement, et ejerskab og en fælles identitet i hele Klimakvarteret. Et engagement der kan blive pejlemærke for hvordan vi kan få et styrket socialt og aktivt fællesskab i København til at gro.

Vi foreslår derfor at inddrage områdets beboere mest muligt, strækkende sig over alle tre faser af projektet og videre frem. Vi tror på, at det er igennem aktiv medskabelse af det groede miljø, at man opnår et ægte engagement i sin by og sit lokal-miljø. Det er gennem aktiv involvering i fx plantning af træer, vedligeholdelse af regnbede eller ved at vi deler vores bynaturoplevelser med hinanden, at vi lærer om os selv, vores kvarter og vores by. Og derigennem får et nyt og stærkt tilhørsfold til der, hvor vi bor og lever.

I Bryggervangen og Skt. Kjelds Plads vil vi arbejde med fem faser af borgerengagement:

1 UDVÆLGELSE 2 REALISERING 3 PLEJE 4 LÆRING 5 DELING



BRYGGERVANGEN & SKT KJELDS SQUARE

Source: SLA competition submission Bryggervangen & Skt Kjelds Square

SEB BANK – CITY DUNE
PUBLICLY ACCESSIBLE PRIVATE SPACE
Source: Anita Morandini

The City Dune is Copenhagen's first climate adaptation project, constructing open space featuring landscape, rainwater collection and evaporative cooling to mitigate the heat island effect.

Name The City Dune – SEB Copenhagen
Address Bernstorffgade 50 Copenhagen
Roof Area 7300 m^2
Build Cost 35 million Krone
Client SEB Bank & Pension
Development Type New headquarters for SEB in Copenhagen
Date Completed July 2010
Landscape Architects SLA, partners Lundgaard & Tranberg
Structural Engineer Ramboll System
Planning Authority City of Copenhagen
Awards The RIBA Award, The Danish Arne Jacobsen Prize, The Copenhagen Municipality Award

CASE STUDY / WATER PROJECTS

THE CITY DUNE SEB BANK COPENHAGEN

EXTERIOR VIEW CITY DUNE
Source: http://adammork.dk

URBAN SPACES

The urban space City Dune is the first climate adaptation project completed in Copenhagen.

The open space is situated between the SEB twin towers; it is privately owned by SEB Bank & Pension. The client, working in close cooperation with the City of Copenhagen, has provided a publicly accessible green space directly linked to the neighbouring green roof of the Danish National Archive. Collectively the green roofs will in the coming years form part of an elevated urban passage 900 metres long, incorporating a SUDS system to optimise stormwater management and a reservoir with capacity to collect 70% of stormwater on an annual basis (State of Green 2016).

The City Dune is designed as an 'open foyer' for the public and employees of the bank.

SLA landscape architects worked in collaboration with the twin tower architects Lundgaard & Tranberg to integrate a topographic approach across the entire site. Blurring the boundary between the exterior and interior, a series of contoured terraces seamlessly extend into and form the building foyers.

Rising 7 metres above the surrounding street levels, the dune disguises a 120-space carparking facility. The carpark roof deck forms an interlaced pattern of ramped concrete terraces contributing to contiguous pedestrian and cyclist access from the harbour side, through SEB, onto The Danish National Archives and Tivoli Congress Centre beyond.

The hardscape strategy of terraced concrete pathways supports mobility while also addressing drainage and

SEB FOYER INTERIOR
VIEW OUT TO CITY DUNE
Source: http://adammork.dk

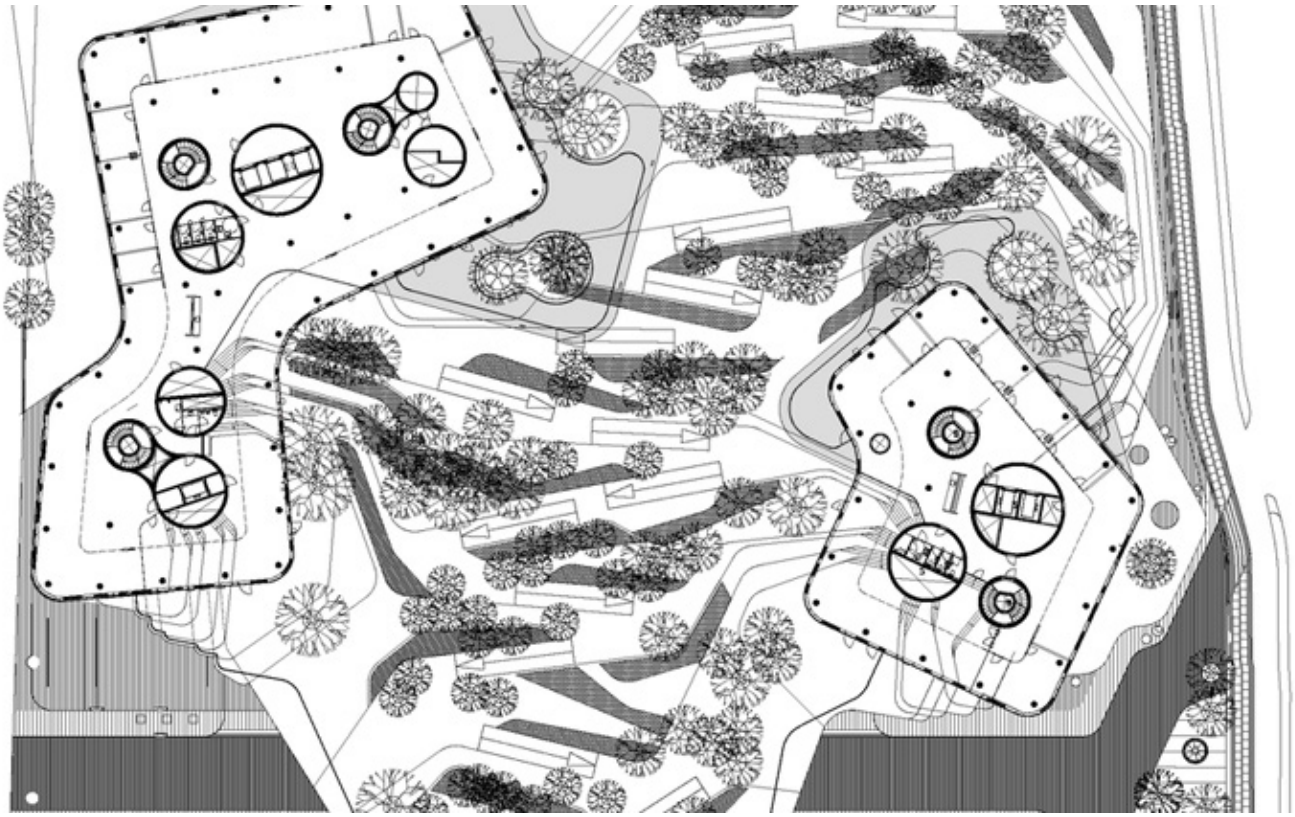
CITY DUNE TERRACES AND VEGETATION
Source: SLA Landscape Architects Cities of Nature – A New Nordic Model

site cooling requirements. Bordering the terraces, a network of drainage fissures collects and directs rainwater runoff into two large underground storage tanks. Pumps and a fine-meshed system of irrigation pipes distribute water throughout the dune landscape with 110 water atomisers emitting moisture into the air, cooling the site.

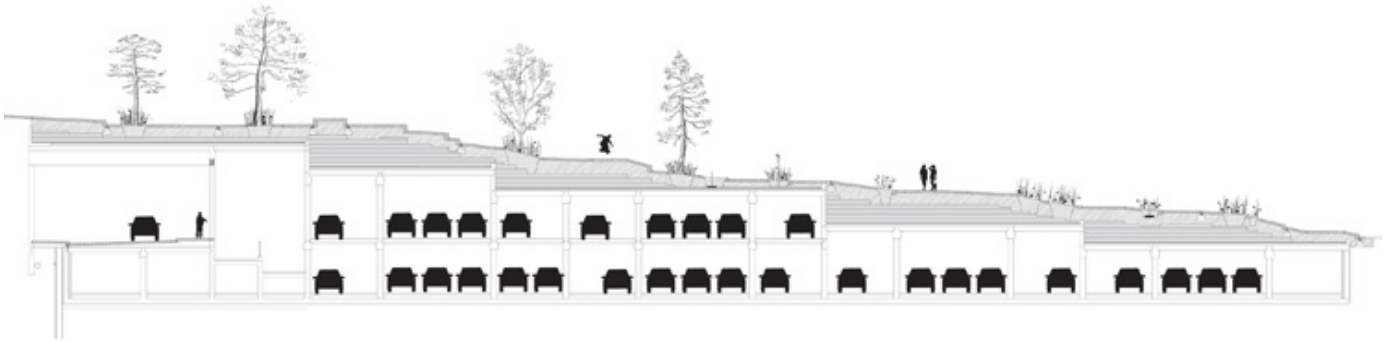
The inclined white concrete surfaces reflect much of the incoming sun's radiation. Tree and herbaceous borders are planted in the fissures between the concrete hardscape. In addition to assisting water absorption, a combination of deciduous and evergreen vegetation is used to achieve seasonal shade and wind protection to the open space. The strategy provides a responsive system to year-round seasonal conditions, enhancing the microclimate and comfort of its users. (Technical and Environmental Administration 2010).

The design concept presents and makes visible a natural system and its processes in mitigating heat island effects while creating a haven of green overlooking Copenhagen Harbour. Agreements negotiated between the owner and the City of Copenhagen ensured the establishment of a privately owned space retained as publicly accessible. No defensive boundary security is employed to privatise the site and pedestrians, cyclists and skateboarders are free to use the area 24 hours a day.

The seemingly simple landscape concept of City Dune is underpinned by a sophisticated and multifaceted design response. The project balances public and private interests by contributing to the creation of a high-quality public realm while serving SEB's branding objectives. The integrated landscape and architecture promoting SEB's corporate sustainability values and leadership is 'guided by a strong belief that entrepreneurial minds and innovative companies are key in creating a better world.' (SEB Group: https://sebgroup.com/about-seb/who-we-are)



PLAN TWIN TOWERS AND CITY DUNE
Source: SLA Landscape Architects Cities of Nature – A New Nordic Model



SECTION CITY DUNE
Source: SLA Landscape Architects Cities of Nature – A New Nordic Model

ISLANDS BRYGGE BATHS AND KALVEBOD WAVE LINK
Source: JSDA Urban Agenda

CASE STUDY / WATER PROJECTS

ISLANDS BRYGGE HARBOUR BATH

Over the past decade, modernisation of Copenhagen's stormwater and sewerage systems has resulted in water quality much improved, with the Copenhagen Harbour now supporting four public bathing facilities. The first of the baths, Islands Brygge, opened in 2002.

Clients City of Copenhagen, The Space and Facility Foundations for Sport
Location Islands Brygge Harbour Bath Copenhagen
Architect PLOT (now BIG + JDS), BBP (Lifeguard Tower)
Contractor CC Design
Cost 520,000 Euro
Construction 2002
Area 2500 m^2

Islands Brygge Harbour Bath is a vibrant leisure facility located on the harbour in the heart of Copenhagen city. Visible from 'the main land' and the nearby Langebro (long bridge), it has become a symbol of the harbour's transformation from an industrial port to a high-value recreational, cultural and social asset.

Industrial harbour activities and associated water traffic have now ceased. Today, integrated wastewater systems and innovative technology protect the harbour from heavy rainfall discharge and pollutants. A coordinated forecasting system provides real-time information on the harbour's water quality and suitability for bathing. The system measures sewer overflows, and hydrodynamic and bacterial models, to simulate the harbour water conditions ensuring compliance with EU standards (Kristensen & Klee 2014).

The much-improved water quality inspired the local community of Islands Brygge to initiate the installation of harbour baths. Created as extension to the green lawns of Islands Brygge park, the floating timber structure enables easy access to the water. A composition of timber terraces and abstracted elements resembling dry docks, piers, boat ramps and cliffs form pontoons enclosing the bathing waters. Facilities include a 75-metre swimming pool, diving, children's and paddling pools. Entry to the baths is free, and management carefully controls numbers to a maximum of 600 persons. At the time of this report the City of Copenhagen was planning to extend the facilities with additional winter baths.

The floating structure is constructed of renewable indigenous timber from Scandinavian forests and is potentially able to be relocated.

The baths have attracted new life to the area – now a hub of vibrant activity with sunbathers, local picnickers, bar and music venues. Shops and services have activated the waterfront, all contributing to its rejuvenation.

The project exemplifies the success of government strategies in realising synergies between projects. Each initiative – improved water quality, recreational facilities, urban regeneration – all cross-leveraged for mutual advantage.

ISLANDS BRYGGE BATHS
Source: City of Copenhagen

KALVEBOD WAVE AND OFFICE BLOCKS
Source: Anita Morandini

CASE STUDY / WATER PROJECTS

KALVEBOD WAVE AT KALVEBOD BRYGGE

Kalvebod Wave is a new promenade which reclaims Copenhagen Harbour shoreline, reconnecting the city to water and providing for public recreational uses.

Address Kalvebod Brygge foreshore, Copehagen
Client Port of Copenhagen
Architect JDS Architects
Landscape Arkitema Urban Design
Engineers NIRAS (land development) and COWI (residential islands)
Contractor Sloth Møller Rådgivende Engineers
Construction 2011–2012
Area 8500 m^2
Cost 7 million Euro
Land use Mixed public harbour bath, promenade link, swimming and water sports facilities

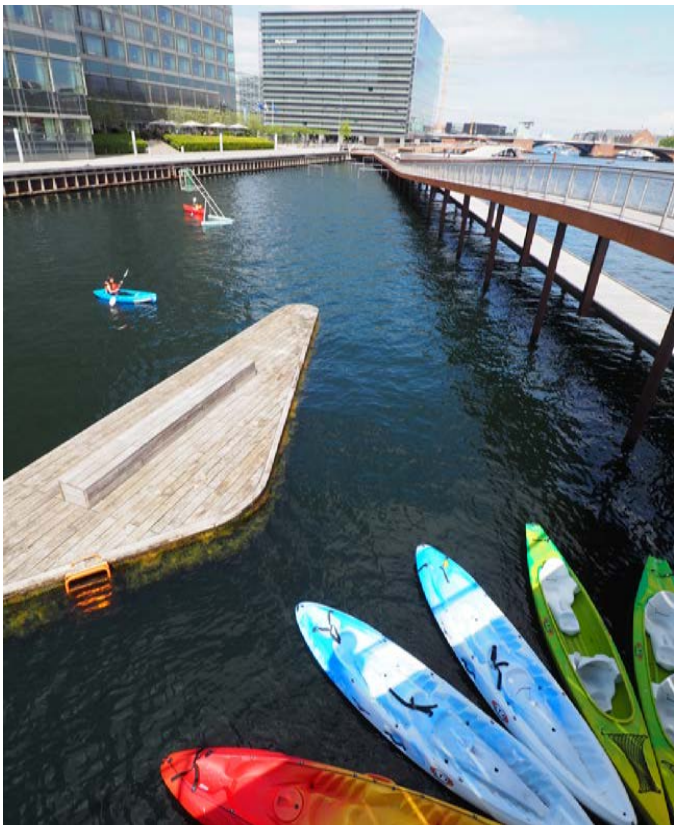
NORTHERN PIER AND ISLANDS BRYGGE HARBOUR BATH IN BACKGROUND
Source: www.dac.dk/en/dac-life/copenhagen-x-galleri/cases/kalvebod-wawes/

Overshadowed by dominant office buildings and disconnected from the city, the harbour shoreline stretching between Langebro and Bernstorffsgade languished with inactivity. The construction of the Kalvebod Wave in 2012 amended this impoverished shoreline to deliver a multipurpose promenade promoting life once again at the harbour's edge.

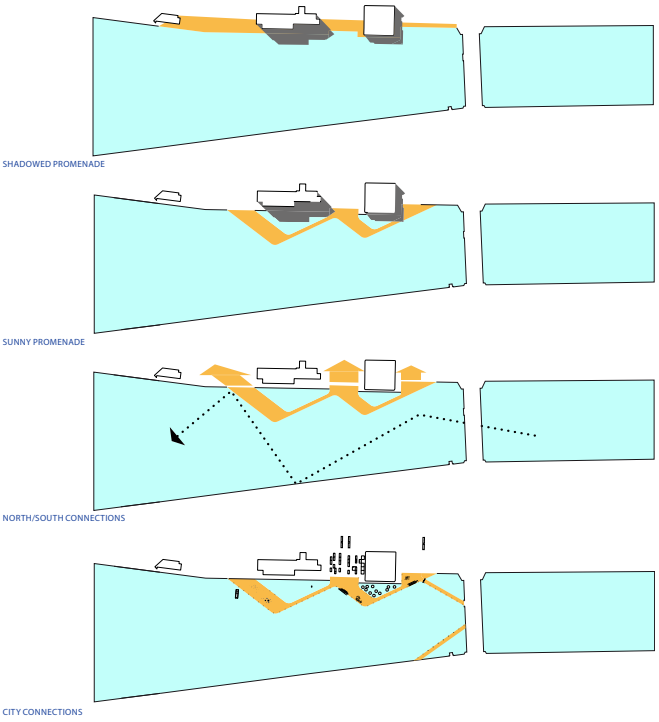
Kalvebod Wave forms part of the city development project, The Metropolitan Zone, which includes a portion of central Copenhagen, extending from Kalvebod Brygge to Skt Jørgens Sø, and from the Central Station, across City Hall Square, to Vester Voldgade. The plans for the Metropolitan Zone will improve the cohesion of central Copenhagen, interconnecting various public spaces and the waterfront. Plans for the Metropolitan Zone were launched in 2007 and at time of this report implementation was still in progress.

The Wave consists of two main piers differing in character. The piers reach into the water, with geometry specifically tailored to access maximum sunlight hours and provide shelter from wind.

The southern pier allows for a flexible public space on the water with a small stage and facilities to host events festivals, fairs, music and theatre. In connection with this space, an active water enclave is created for various water-related activities.



SOUTHERN PIER
Source: Anita Morandini



CONCEPT DIAGRAMS
Source: JDSA Urban Agenda

The northern pier serves as a recreational oasis. A network of undulating platforms and pontoons enclose a canoe polo field and provide jogging paths and areas with various exercising equipment. A jetty offers short-stay moorings to small vessels and a pick-up point for water taxis and tourist boats.

Located opposite the Islands Brygge Harbour Bath (see case study), together the two pools offer complementary experiences of the harbour, with a focus on promoting diversity in the social and recreational life of the city.

GREEN ROOFS
NØRREPORT STATION
Source: COBE Architects

Nørreport Station forecourt, station access and bike parking facilities have transformed the formerly chaotic station entry into a highly functional and aesthetic public space. The project incorporates a green roof for wastewater management, which is just one of the numerous environmentally sustainable design strategies integrated into this project.

Location Copenhagen
Clients Banedanmark, DSB, City of Copenhagen
Architect COBE and Gottlieb Paludan Architects
Collaborators Sweco, Bartenbach LichtLabor, Aarsleff Rail
Timeline Construction 2013–2015
Area 10.500 m^2 urban space, 2500 parking lots for bikes
Competition Winning scheme in 2009 international competition
Awards WAN Transport Award 2016, European Prize for Urban Public Space 2016

CASE STUDY / WATER PROJECTS

NØRREPORT STATION

Nørreport Station is Copenhagen's busiest transport hub, with around 250,000 visitors a day. Before the 2015 transformation, the station forecourt was characterised by a confusion of noise and conflicting bus, motor vehicle, bicycle and pedestrian activities.

Today the redeveloped station forecourt has combined complex functional requirements to create an open, safe and legible urban space of high quality.

From project outset, the interdisciplinary design team embraced technical issues to creatively drive and influence the form and aesthetics of the forecourt architecture.

Efficiency and separation of the various modes of movement were recognised as critical and a rigorous mapping of movement undertaken by the design team to guide the concept. Preferred pedestrian routes were traced and zones of useable space identified to appropriately locate station access points, kiosks, cafés, newsagent, public toilets and clusters of bicycle parking. Vehicular movements were redirected and traffic limited to one artery north of the station.

2500 bicycle parking spaces are accommodated within the forecourt. Rather than attempting to conceal parking, this utility is exploited as a design opportunity to animate the area and promote Copenhagen's cycling culture.

A structure of 'bike beds' cluster parking into zones to provide unimpeded pedestrian paths and sightlines through the forecourt. To further enhance the legibility of the public domain, the base of the bike beds has been set marginally below that of finished forecourt ground level, reducing the height of the bikes and enabling unobstructed views of the space as a whole.

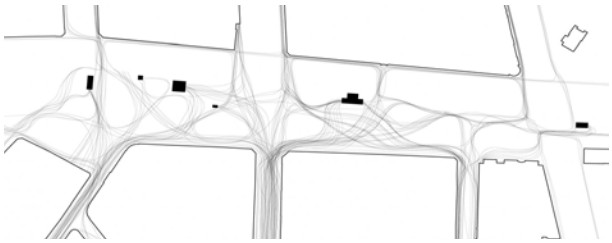
The architectural structures situated within the forecourt are treated as organic objects in the round. 'Backs to buildings', corners and undesirable niches are eliminated to create a safe and highly legible public realm.

Eleven ventilation chimneys provide fresh air to the station platforms located below. At night these vents also operate as lanterns illuminating the forecourt. Canopies and kiosk structures are fitted with green roofs providing insulation and tempering thermal conditions to the spaces below. At the same time, the greening provides an outlook to neighbouring buildings overlooking the forecourt.

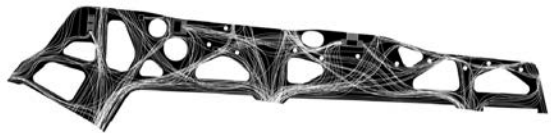
Future tree planting is planned at the edge of the forecourt to provide further natural cooling. Roof-mounted PV solar panels assist in reducing the station's energy consumption. Robust materials, including concrete, granite, glass and stainless steel are used to ensure low maintenance appropriate to the public space.

The project is the result of a design team committed to an interdisciplinary approach. COBE architects stressed the importance of the technical consultants working in creative collaboration to convert functional and technical requirements into high-quality design opportunities (Interview: Boserup 2015).

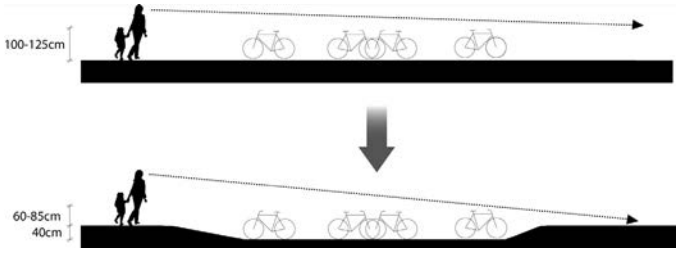
BIKE PARKING PRIOR TO REDESIGN
Source: COBE Architects



MAPPING OF PREFERRED PEDESTRIAN ROUTES
Source: COBE Architects



ZONES OF USABLE SPACE
Source: COBE Architects



SECTION THROUGH BICYCLE PARKING BEDS
Source: COBE Architects

NØRREPORT STATION BICYCLE PARKING
Source: COBE Architects

Projektområdet:
Køge Kysts tre arealer - Collstropgrunden, Søndre Havn og Stationsområdet er 24 ha i alt.
Nærheden til havet og Køge centrum ses tydeligt. Køge er en åben, lav by med mange grønne lommer og parker.

KØGE KYST DEVELOPMENT SITE
Source: Køge Kyst P/S 2010, p.4

Køge Kyst is an urban redevelopment project, aimed at extending the historic centre of Køge and transforming the former industrial harbourside. The redevelopment provides for new infrastructure, housing, commercial, retail and cultural uses.

Location Køge
Clients Køge Kyst P/S (Realdania and City of Køge)
Architect Vandkunsten Architects
Landscape KAB, 3B, Domea
Consultants Centre for idræt og arkitektur (KADK), Albæk Byggerådgivning, ICP, Claus Bech-Danielsen, Lise Gamst, Esbensen Rådgivende ingeniører, Sloth Møller, Rådgivende ingeniører, Tyréns AB med partnere
Timeline Under development 2010–2035
Building Heights 3–7 floors
Gross Area 320,000 m^2
Land use Mixed residential, commercial, retail and cultural uses
Awarded First prize in master plan competition (parallel competition process)

CASE STUDY

KØGE KYST (COAST) URBAN REDEVELOPMENT MASTER PLAN

The municipality of Køge is located 45 kilometres south of Copenhagen and is connected to an effective transport system within Denmark and wider northern Europe. The Municipality's economic development strategy, with a 27-million Euro investment plan over 20 years, aims to make Køge an attractive district centre within the greater Copenhagen and Øresund region.

The economic strategy is spearheaded by development plans to transform the industrial harbour area, enhance transport infrastructure as well as provide residential, commercial, education, health and cultural facilities. Redevelopment is anticipated to support a population increase of 59,285 to 63,000 by 2025 and the creation of 10,000 new jobs within the local area.

Forming part of these development plans, Køge Kyst is envisaged as an extension to the well-preserved historic centre of Køge. The strategy focuses on increasing the population density in the town centre rather than expanding into surrounding farmland. The new urban development aims to link the centre to the harbour and transform a predominantly industrial/railway landscape to make way for new residential, commercial and cultural facilities. Development is expected to occur over 20 years and is estimated to accommodate 4000 new residents and 4000 jobs.

PARTNERSHIP PROJECT

Køge Kyst is a partnership project, with the founding of Køge Kyst P/S 2009, formalising an agreement between the Municipality of Køge and Realdania in equal 50/50% ownership.

Realdania brings to the partnership equity and strategic urban development knowledge, with the intent of delivering a high-quality urban environment. (Refer to the Realdania case study in this report for further information on the partnership model and Realdania's urban development activities.)

Development lands are held in the ownership of Køge Municipality. Additional industrial lands were acquired prior to the project commencement to reinforce the municipality's control over securing and delivering high-quality development outcomes.

DEVELOPMENT CONTROL PLAN

The Køge Kyst Board decided in August in 2010 there should be a single development plan for the project covering the total site area of 24 hectares (Køge Kyst P/S, 2010).

The development plan includes spatial and strategic plans. Spatial planning establishes the framework for buildings, urban space and infrastructure, and the basis of subsequent local development plans. The strategic plan proposes projects and activities as catalysts and drivers for urban development, with a focus on six aspects: sustainability, dialogue, business, culture, city life and transport infrastructure.

A summary of the development timeline is:
2009: Development project launch by Køge Kyst P/S
2009–2010: International parallel competition and the winner selected

KØGE KYST BEACH FRONT DEVELOPMENT
Source; Vandkunsten A/S 2015 p6

2011: Development plan endorsed by the Køge Kyst board
2011–12: Temporary cultural projects/Stage 0
Summer 2011: Development plan for the area
2012: Municipal development plan supplement and local development plans made (Municipality of Køge)
2012–34: Sale of plots
2012–34: Land development
2012–34: Establishment of infrastructure, arts centre etc.

The development consists of three distinct areas:

- South Harbour – 15 hectares
- Station Area – 6 hectares
- Collstrop Area – 3 hectares with total floor area:
  Residential: 152,000 m^2
  Commercial: 118,000 m^2
  Retail: 22,000 m^2
  Arts: 15,000 m^2
  Public service proposal: 6000 m^2

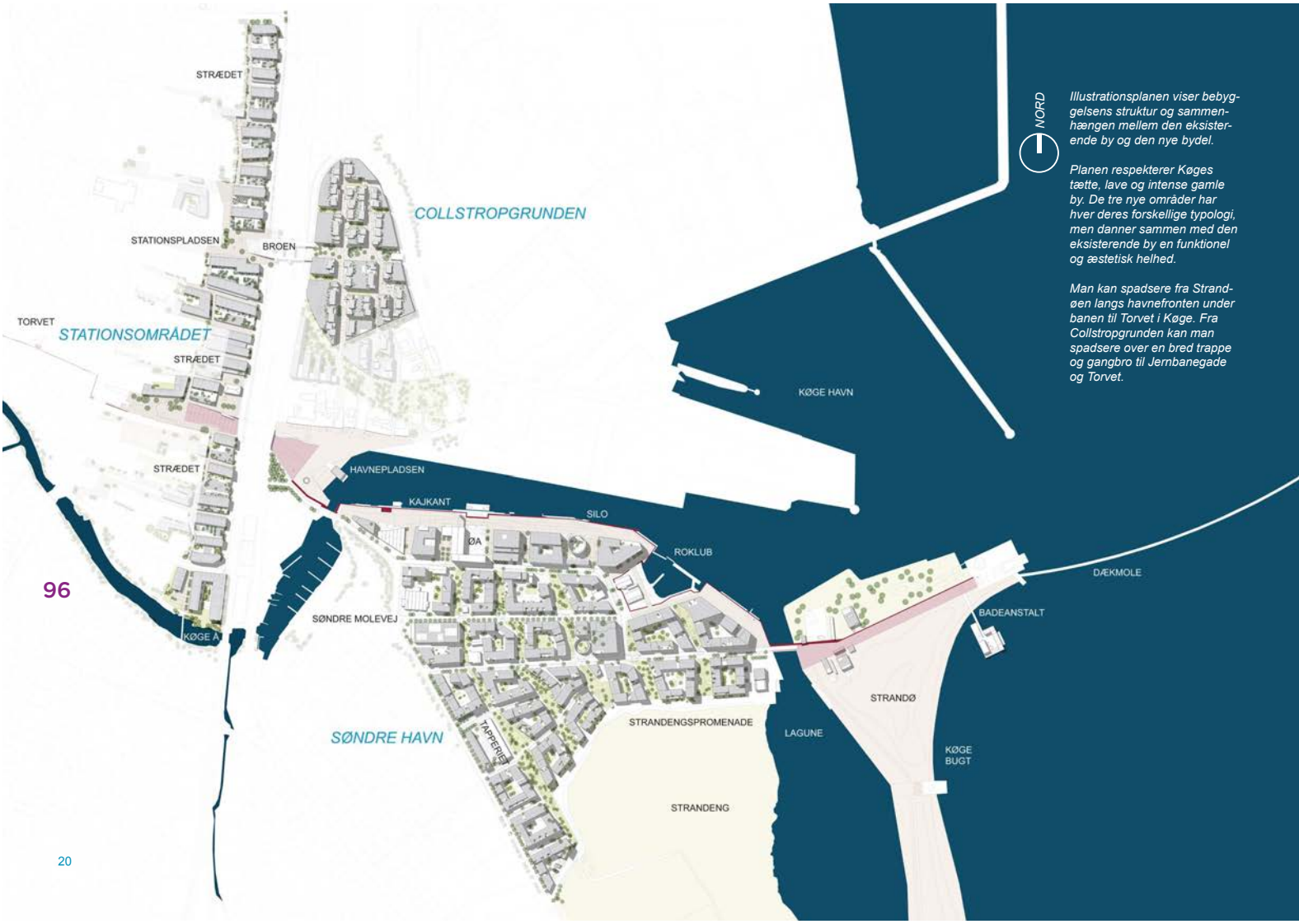
Station Area: Proposed to create a coherent pedestrian area, accommodating larger volume retail stores on the ground floor, roof gardens, offices and homes on the upper levels of generally three-storey high development.

South Harbour: Proposed as open blocks with variations in shape and facade, preservation of some existing buildings, three to seven floors.

Collstrop Area: Proposed as a business park, adjacent to the station with pedestrian streets between the station and the port, five to seven floors.

Thirteen development stages, as defined in the local area plan, are to be delivered over 20 years. Each site, with building rights of approximately 20–30,000 m^2 floor area, is to be sold to investors and developers to construct. The sites will be regulated by the local development plan and architectural guidelines to ensure diversity and fine-grain form.

The development plan, founded on assumed 'average economic conditions', is structured to respond to varying socio-economic conditions over 20 years. The staging aims to deliver infrastructure and services early in the project and mitigate the impact of disruptive construction on establishing communities. Construction of Stage 1 – railway infrastructure upgrade and associated commercial uses – commenced in 2014.



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KØGE KYST MASTER PLAN
Source: Køge Kyst P/S 2010, p.20

MASTER PLAN PARALLEL COMPETITION

An international competition, completed in 2010, was won by the Vandkunsten Architects consortium. The winning scheme has informed the basis of the Køge Kyst Development Plan.

The process involved a two-stage 'parallel' competition. Based on a prequalification process, seven interdisciplinary teams were selected to prepare plans for the development of Køge Kyst. Phase 1 began February 2010, requiring project concepts and process description. Teams included local and international architects, urban designers, landscape architects, engineers, anthropologists, sociologists, economists and others.

Five of the seven teams were selected to progress to Phase 2 and prepare detailed proposals. In September 2010 the competition jury reviewed proposals, identifying strong elements in each of the 5 schemes. Vandkunsten, SLA A/S and Grontmij + Carl Bro were selected to further develop their proposals together with a number of consultants.

The competition called for dialogue with citizens throughout the process. A public exhibition was held and citizens invited to comment on proposals. Additionally, an official public website provided a forum to publish comment and follow public discourse. During the competition process citizens were invited to attend presentations, ask questions and provide input in direct conversation with the competing teams and client body.

The competition resulted in the appointment of the Vankunsten consortium to prepare the master plan. Vankunsten Architects have an ongoing engagement in the project development, including the preparation of the local development plan, continued involvement in housing, landscape and user participation projects, as well as providing an advisory role to the client.

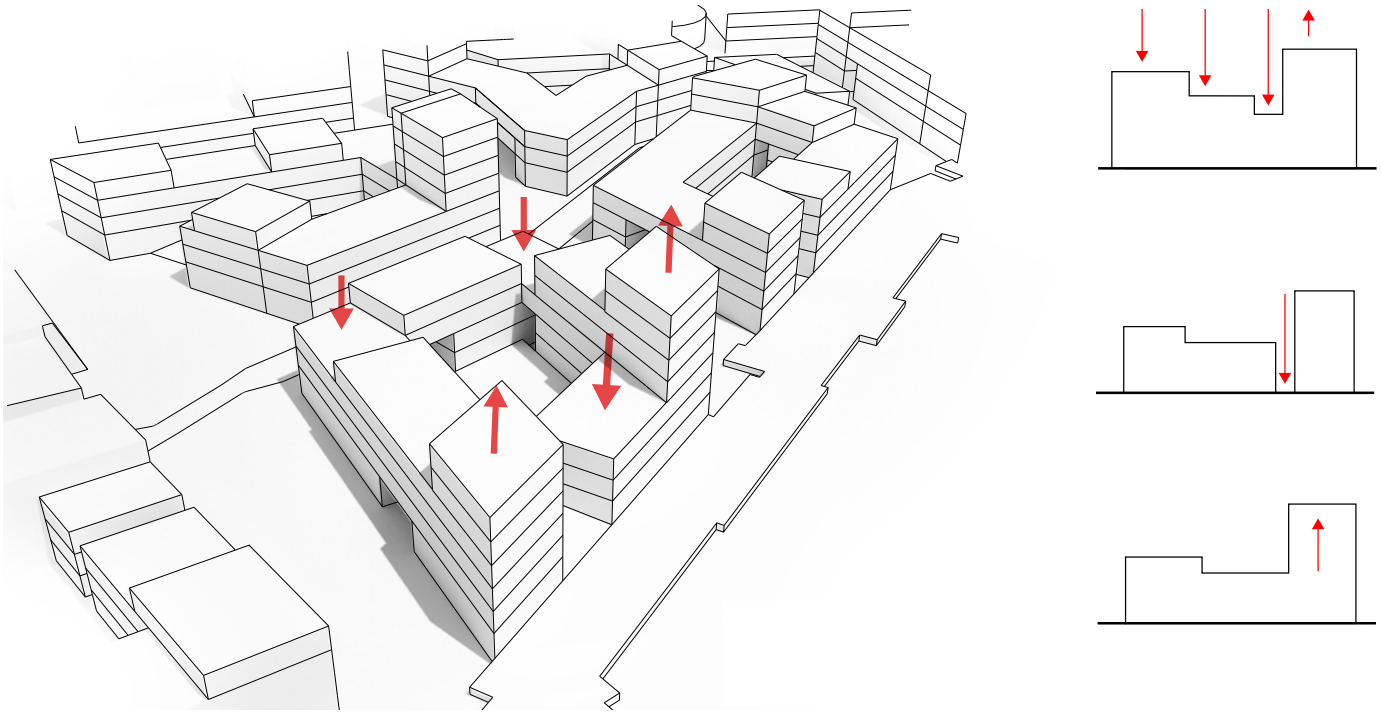
Distribution of prize money at competition completion in 2011:

Team Vandkunsten: EUR 14,000
Team ADEPT: EUR 9,000
Keep ASTOC: EUR 9,000
Team Grontmij+Carl Bro: EUR 9,000
Team SLA: EUR 9,000

MASTER PLAN

The Køge Kyst Development Plan (Køge Kyst P/S, 2010) outlines the master plan and sets out the following strategies:

'The vision of Køge Kyst is to create a unique, attractive and sustainable neighbourhood that strengthens Køge's role as the centre of the metropolitan area, Zealand and the entire Øresund Region.' It is set to leverage the new rail link (2018) between Køge and Copenhagen, (a 22-minute journey), capitalise on its port trade and amplify its position as a business catchment area.



DESIGN 'CATALOGUE' – HEIGHT VARIATIONS
Source: Vandkunsten A/S 2015, p.12

The principal strategies for the redevelopment include:

Culture as Driver – Cultural activities and initiatives are sighted as priority and the main driving force behind the urban development.

A Cultural & Urban Life Strategy is designed to support and revitalise existing cultural assets. It commits to investment in physical and social infrastructure as well as educational and culturally oriented events. Søndre Havn is the primary site in which Køge Kyst tests new activities, temporary and permanent urban spaces in close collaboration with local organisations, companies and individuals.

Business and Retail – The intent is to amplify existing business sectors, focusing on port transport and logistics, and development of health sciences in association with the new 'super hospital' and environmental and energy industries. The strategy broadly promotes small and medium-scale enterprises, intended to collectively establish a framework of shared facilities and rental opportunities for business start-ups. A brand new shopping precinct is centrally located in the station area, expanding on existing retail. Large-scale box retail is excluded to ensure a fine-grain, diverse, retail and commercial precinct.

Infrastructure – Infrastructure is to be integrated with the delivery of a quality urban domain, with allowance for pedestrian and cyclist movement as a priority. The plan focuses on managing traffic, relocating parking underground and providing new road and transport infrastructure to provide connectivity between existing and new areas.

Creativity and quality – Urban renewal, architecture and projects in the new area are distinguished by innovation, creativity and high quality. This is managed through quality programs and continuous collaboration with all investors. The enhancement of Køge's unique heritage is also a priority with emphasis on adaptive re-use of heritage buildings and appropriately scaled new development in sympathy with existing context.

Dialogue – A comprehensive stakeholder participation strategy from project inception to completion includes local citizens, retail, the business and cultural community, investors, developers, and other stakeholders in continuous dialogue with Køge municipality and Køge Kyst P/S.

Sustainability – Sustainability is considered to bring competitive advantage. Integrating social, cultural, economic and environmental considerations is an overarching principle for the redevelopment. Social (including health) sustainability is emphasised, with the promotion of new public spaces and diversity of housing choices supporting equity and the wellbeing of residents. Sustainability tools and measures are to be adopted and applied throughout design and planning, and realisation.

The development plan is based on five major principles:

- public realm and communal areas of blue and green infrastructure to establish a diverse variety of sustainable environments
- intensification of urban life underpinned by higher density build with a diverse mix of uses
- appropriately scaled built form sensitive to the current built character of Køge

DEVELOPMENT PLAN – GREEN INFRASTRUCTURE IN SONDRE HAVEN
Source: Køge Kyst P/S 2010 p.22

- creation of contemporary architecture integrated with the historical districts
- quality assurance managed through local plans, design guidelines and sustainability tool.

QUALITY ASSURANCE

The master plan envisages a cohesive urban environment expressed through an ensemble of modest architectural buildings rather than singular iconic statements.

High-quality architecture offering variety and fine-grain diversity is encouraged through the local planning instruments. A complementary quality assurance program imposes conditions on the sale of lands and construction delivery. Benchmarks are specified for architecture, landscaping, street design and sustainability.

The local development plan includes specific built form descriptions and is further complemented by an architectural 'catalogue' illustrating design options.

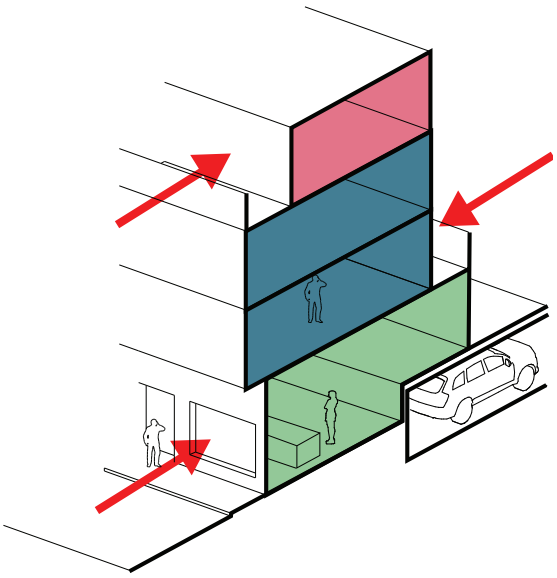
The catalogue *Architectural Diversity in South Harbor – A Principal Inspiration* (Vandkunsten A/S, 2015) is a central document in managing design quality. It provides guidance on an expected standard of architectural design for individual buildings and sets out options detailing urban quality, particularly for:

- functional mix
- variation in massing
- choice of materials, colours and lighting
- good amenity regarding noise, light, air and views
- ground floor treatment
- design of open spaces
- quality in construction.

It serves as a framework for dialogue and negotiation between developer and landowner in ongoing design development. Guiding principles with in-built flexibility assist in managing design changes (such as those compelled by cost pressures) typically encountered on such large-scale projects.

DIALOGUE STRATEGY

Fostering citizen focus and ongoing dialogue with investors and developers is a feature of the development plan. Stakeholder participation commenced with the Parallel Competition for the master plan will be continued with public 'hall meetings' to review plans throughout all the development phases.



DESIGN ‘CATALOGUE’ –
FAÇADE TREATMENT
Source; Vandkunsten A/S, 2015, p.11

CITIZEN DIALOGUE – Public meeting: official publication of the report in the Køge Kyst parallel competition, September 2010
Source: Køge Kyst P/S 2010, p.16

The Dialogue and Cultural Strategies operate in tandem. Initiatives such as temporary installations and events are devised to engage citizens early in the development and act as a testing ground for ideas which may inform the future cultural life of Køge Kyst.

The Dialogue Strategy anticipates and provides a forum for increased citizen dialogue during the construction phases of the project when the community typically experiences disruption to business and residential amenity.

Dialogue with potential investors and tenants is equally managed. Køge Kyst P/S actively pursues candidates with the capacity to align with and contribute to fulfilling development objectives – cultural, environmental and economic. Events such as the public exhibition of the master plan at the Danish Architecture Centre (DAC), October 2010 – January 2011, are leveraged to attract investors and identify opportunities to involve companies innovating in environmental and sustainable products and cultural services.

CULTURAL STRATEGY

The Cultural Strategy, aimed at attracting new investment and residents to the area, is central to repositioning the urban life of Køge. In 2011 Køge Kyst P/S launched *'Stage 0 - Life before the City'* a cultural program with the ambition of generating activity in the area well in advance of any actual construction. Events and pop-up facilities were designed to animate the site, encourage visitation, community engagement and investment.

The program, funded by 5 million Euro and implemented over five years before construction, set up temporary installations and prototypes for testing potential permanent infrastructure such as parks, picnic, play areas, outdoor cinema and art fairs.

CENTRE FOR CANCER
AND HEALTH COURTYARD
Source: Anita Morandini

CASE STUDY

CENTRE FOR CANCER AND HEALTH

The Centre provides health and rehabilitation services for cancer patients and their relatives. The Centre houses common facilities including kitchen, training, gym and individual treatment rooms, areas for reflection and private conversation.

Location Nørre Allé 45 2200 Copenhagen N
Client City of Copenhagen
Architects NORD Architects
Landscape Architect NORD Architects
Engineer Wessberg
Timeline Project 2005–2009 Completed 2011
Construction Cost 50 million DKR
Area 1885 m^2 plus basement 361 m^2
Competition Winning scheme

DANISH HEALTH CARE MODEL

Since Demark's hospital extension program carried out in the mid-1970s, new hospital construction remained limited until 2007 when new local government and health care reforms stimulated development.

Local government reforms consisted of three main elements: a new map of Denmark, reconfigured municipal boundaries, and a redistribution of responsibilities and financing. The introduction of five regions replaced 14 counties, reducing the number of municipalities from 273 to 98. With these changes regions were made responsible for delivering health care treatment, operating hospitals and ensuring the functionality of the practice sector.

2020 goals set by the health sector focus on creating better quality services, coherent patient care, increased safety, and improved quality of physical surroundings to support patient wellbeing.

Once residing with the counties, responsibility for preventive treatment, the promotion of healthy living and all rehabilitation services (outside of hospitalisation) have been passed to the municipalities, with the intention of integrating these with other local services such as daycare facilities, schools and centres for the elderly.

New financing schemes support the performance of the municipalities and ongoing financing of health care (Ministry of the Interior and Health 2005). Since 2002, initiatives for improved health outcomes have formed part of the government's public health disease prevention program 'Healthy throughout Life' (Ministry of Health and Prevention 2008).

The built and working environment, housing, traffic and safety are all recognised by government as influencing the general health of the population. With the objective of creating improved physical settings to support patient wellbeing, these reforms have stimulated a series of innovative facilities currently being rolled out by the government.

FIRST HEALTH CARE CENTRE FOR CANCER SURVIVORS

Run by the City of Copenhagen and designed by NORD Architects, the Centre for Cancer and Health is the first facility in Denmark designed specifically for rehabilitation of citizens affected by cancer. The Centre demonstrates NORD's integrated architectural approach operating beyond the traditional boundaries of architecture to render socially focused and humanistic environments.

NORD began their practice in 2002 during an economic crisis. With no building projects on their books, they involved themselves in running participatory design workshops for local councils and organisations. This experience established the social principles which underpins their work today.

At project initiation they routinely invest in an analysis of a brief's local and specific issues in combination with an understanding of the broader social context. This process of expanded enquiry and focus on content development, often in cooperation with end users and stakeholders, has led to a recasting of the brief and unlocking opportunities for innovation.

In the case of the Centre, NORD's challenge was to create a facility that functioned more like a home and less like a hospital, while also creating an iconic building to increase cancer awareness without stigmatising the patients.

COMMON KITCHEN
Source: Anita Morandini

LOUNGE AND CAFÉ
Source: Danish Cancer Society
2015 Annual Report

Stakeholder confidence in the potential success of a health care facility often relies on evidence-based design. NORD noted that dealing with statistics, content, data and the synthesis of this information brings into play issues not normally within the domain of the architect. Regarding content, the process of design involves more systematic and extensive inquiry into the needs and desires of the stakeholders involved, revealing things that the architects would not likely to have discovered alone.

'In many ways, we view the architect's role as being a facilitator of change processes with a physical consequence. We don't view our process work or our user involvement as a way of achieving direct democracy but as a means of activating knowledge.' (Weiss & Vindum, 2012, p.240)

'Research shows that architecture in itself can be healing and have a positive influence on people's recovery. The key is to have a human scale in the architecture and create physical surroundings with a homey atmosphere.' notes NORD.

The Centre represents a paradigm shift from health care delivered as treatment to one of rehabilitation and restoration of dignity. This mindset is evident in the informal atmosphere of the Centre.

USER DEFINED AND FOCUSED

Achieving a facility which creates a domestic home quality and casual environment, without frustrating the delivery of professional services, required collaboration between the Danish Cancer Society[1], staff, users and the architects.

COMMON STAIR AND TERRACE TO COURTYARD
Source: Anita Morandini

EXERCISE FACILITIES INTEGRATED WITH ADJACENT PARK
Source: Anita Morandini

There is no secured reception area or staff receptionist suggestive of typical hospital facilities; rather, one enters the facility through a domestic-scaled lounge area with an open café. Volunteers tend the cafe, welcome guests and provide patient assistance as needed. All volunteers have themselves dealt with cancer and so are familiar with feelings and sentiments experienced by clients and guests.

The kitchen is central to the rehabilitation of the clients, who meet and prepare food in the common kitchen, learning and gaining guidance on nutrition and preparing meals for recovery.

The facility is characterised by the fine-grain variety of shared common areas, kitchen, gym and intimate niches for privacy. Shared areas view into the inner courtyard, which provides a diversity of quiet meditative and more social spaces, small vegetable patches and potted garden herbs that supply the kitchen.

Change rooms, conversation and quiet treatment rooms for psychologists, relatives, client and advice groups operated by the Danish Cancer Society, are interspersed throughout the facility.

Outdoor exercise and climbing facilities are located adjacent to and integrated with a park setting to further normalise rehabilitation.

DESIGN CONCEPT

The building presents as both protective and welcoming, focused on the de-institutionalisation of the hospital experience.

The introverted courtyard is enclosed and protected by a series of abstracted traditional ‘houses’, interconnected by a folding roof plane. Timber cladding enhances the warmth and serenity of the inner courtyard. The exterior, on the other hand, is iconographic. It presents as a singular entity unified by aluminium facade and roof cladding, which changes with the varying daylight.

CENTRE FOR CANCER AND HEALTH
Source: www.adammork.dk/home

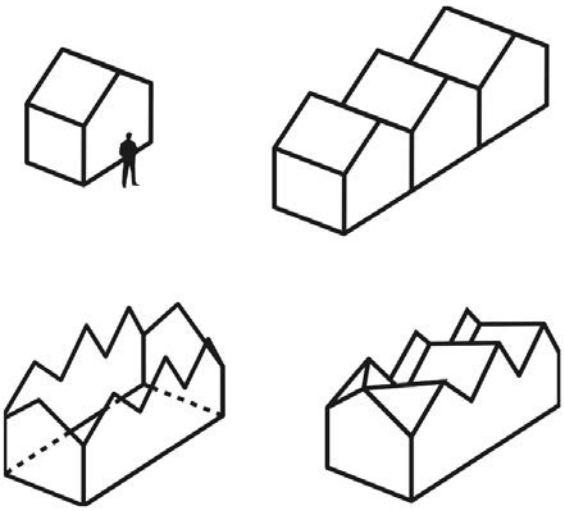


DIAGRAM ARCHITECTURAL CONCEPT
Source: NORD Architects

While material quality and geometry form part of NORD's architectural idiom, the architects stress such interests are not the drivers of formal architectural expression. Rather, materials and formal expression serve to promote content-oriented intentions, founded on understanding the greater context – in the case of the Cancer Centre, how design supports multifaceted aspects of wellbeing and how this finds expression in the architecture. (Interview: Pedersen 2015)

FOOTNOTES

1. The Danish Cancer Society is a private, non-governmental, non-profit organisation. About 600 employees work with cancer prevention, research and rehabilitation. Established in 1928, its vision is a 'Life without cancer', focused on:
• prevention of the development of cancer
• offering the possibility of cure
• helping those affected.

EXTERIOR OF TIETGEN STUDENT HOUSING
Source: Anita Morandini

Tietgen Hall of Residence (THOR) has gained a reputation among Danish students as the best dormitory in Copenhagen, sensitively balancing communal and individual living needs.

Before its completion, no new dormitory had been built in Copenhagen for 40 years. It was generally assumed students preferred living in small groups, in dispersed and mostly privately owned apartments.

Location Rued Langgaards Vej 10–18, Ørestad North
Client Nordea Foundation (Tietgen Hall of Residence Fund)
Architects Lundgaard & Tranberg Arkitekfirma A/S
Landscape Architects Marianne Levinsen in collaboration with Henrick Jorgensen Landkab A/S
Engineers COWI A/S
Artists Aggebo & Henriksen
Timeline 2003–2006
Area 24,000 m^2 with 360 studio apartments of 26–33 m^2
Competitions Winning scheme, invited competition 2002, Copenhagen City Culture Award 2006, RIBA European Award 2007

CASE STUDY

TIETGEN HALL OF RESIDENCE (STUDENT HOUSING)

CONTEXT TIETGEN STUDENT HOUSING
Source: Anita Morandini

THE BRIEF

The evolution of the brief for the THOR student housing began with the Nordea Foundation's (client) concerns that their funding activities lacked strategic direction. In response to these concerns the Foundation decided to become more innovative in providing residential college accommodation for students in academic institutions across Copenhagen.

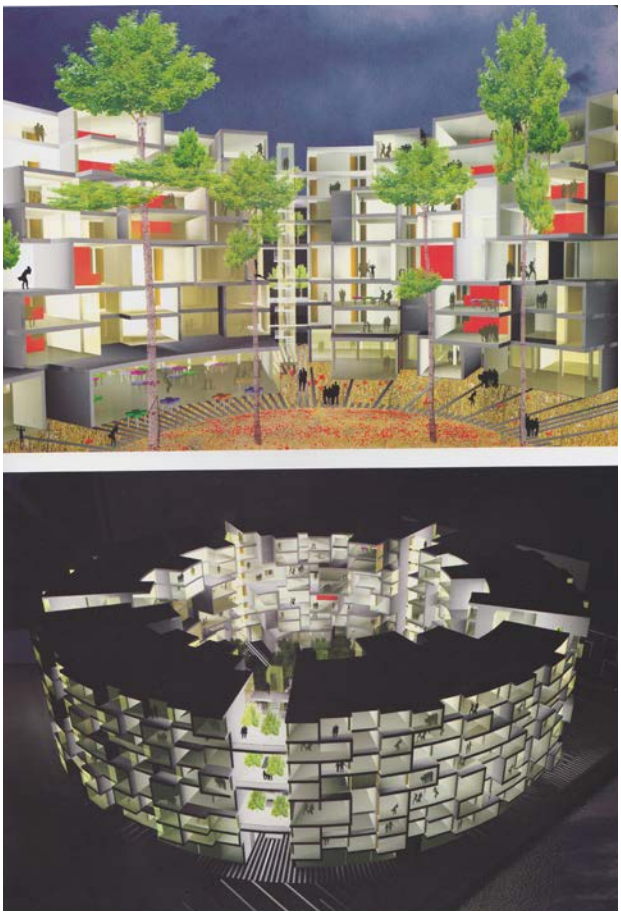
The Board of the Foundation formed a working group to develop a brief and identify a suitable site. In consultation with the Copenhagen City Municipality and various universities, the location was established as Ørestad Nord, a major new urban development area of Copenhagen, situated in proximity to Kastrup airport and numerous new university buildings.

Since no student housing had been built in Copenhagen in the past 40 years, the Board visited and drew inspiration from traditional precedents which focused on promoting a 'common spirit' among students. The client envisaged a new option for student living, a 'dormitory of the future', a kind of 'social condenser' (Weston 2012, p.122) catering for students of diverse backgrounds studying in different educational institutions.

No target budget was indicated in the competition brief, instead the focus was directed at creating a visionary facility providing 400 living units and communal areas.

DESIGN COMPETITION

Five architectural firms were invited by the client to participate, commencing work in November 2001 and presenting proposals to the Board in March 2002. Each competitor was given the opportunity to present their projects to the client and the professional jury members.



TEITGEN HALL OF RESIDENCE
WINNING COMPETITION
SCHEME
Source: City of Copenhagen 2003, p.111

During the competition phase several meetings were held allowing competitors access to client and jury.

Lundgaard & Tranberg Arkitekter were unanimously selected as offering the best scheme. Subsequently the proposal was further developed and detailed in close collaboration between the client, architect and consultants.

The following extract from an interview with Lena Tranberg and Peter Thorsen of Lundgaard & Tranberg illustrates the collaborative nature of this process:

Lene Tranberg: 'The Society of Architects prefers anonymous competitions, as they feel that everyone should have an equal chance and it should not be a question of rhetorical skills and curriculum. Anonymity is very democratic but one does not have the chance, at an early stage, to review one's ideas with the client. We got the idea of a round building quite early in the process, but we were afraid that it was a little too radical in relation to the jury's expectations. There was also an implication that we would not be respecting the zoning laws for the area.

Interviewer: Does that mean that you actually used this dialogue to get a feeling of how far you could go?

Peter Thorsen: 'Yes, you could say that. The program was far more open and searching than we are used to. There seemed to be the attitude that one should not produce a project, but an idea for a project, and there was a clear expectation that there should be an intense collaboration with the entire client organisation on developing the project; in this case the dialogue with the client had the greatest importance for the final result!' (Keiding 2007, p.434).

Building work commenced in the summer of 2003 and the student housing was ready for occupation in the autumn of 2006.

ARCHITECTURAL CONCEPT

The competition proposal established all the central concepts for the organisation and character of the building, albeit diagrammatically. With a focus on the interplay between the individual and the collective: 'the entire project has dealt with getting people out of their cells and into a community situation.' (Keiding 2007, p.437)

The distinctive circular building form cradles a tree-filled court, the ground floor being enclosed by predominantly glazed communal spaces including reception, administration, laundry, mail room, bicycle storage and repair, sewing, workshop and music rooms. Although closed at night for security reasons, the central court essentially functions as a public space.

Above the ground floor, the upper six levels house a total of 360 living units, organised in 30 housing groups, each with 12 individual dormitory rooms and shared kitchen, dining and pantry spaces.

The planning separates private and communal uses into two concentric rings. The outer exclusively formed of student living units orientated to take advantage of views and privacy which the surrounding context offers. The inner, reserved for communal areas facing inward to the central court. This arrangement maximises the visual communication between the social spaces, operating as a kind of 'social condenser' and animating the central courtyard. Almost all areas receive direct sunlight.






FUNCTIONAL DETAILS TIETGEN DORMITORY

Industrial artists Aggebo & Henriksen convert utilitarian objects to design opportunities.

Source: http://www.aggebo-henriksen.com/tietgenkollegiet.html

The architects focused on strategies to encourage structured and incidental social interactions between the residents. The circular arrangement of each floor enables multiple views into the central court, communal lounge, kitchen and reading spaces, fostering opportunities for casual socialising among students. The virtue of the looped circulation allows passage to any destination on the floor without encountering dead-end areas.This strategy has a democratising and unifying effect providing all residents with access to an equal quality of amenity.

Lundgaard & Tranberg explains the rigorous rationalisation in planning and construction detailing which occurred during design, noting these developments were not driven by cost engineering ambitions but rather an aim to pare back elements to the essential, eliminating inefficiencies in design.

For example, at the competition stage a wide range of apartment layouts were proposed; however, in development, types were reduced to an essential few, producing efficiencies gained in the repetition of building elements. The design development resulted in much more traditional dormitory model evolved with groupings of similar rooms arranged around five independent lift cores, linked by looped circulation and shared common facilities. A system of planning modules was developed to gain efficiencies in repetition and at the same time provide variation in the architectural expression, such as the shared functions (kitchens, lounge, reading rooms) of differing dimensions expressed as cantilevered pods animating the central courtyard.

URBAN CONTEXT

'Whether the buildings function socially as a housing milieu or whether they add something to the city is rarely discussed anymore. These issues engaged the client strongly, and thus the project development focused on much more than the form and texture of the building.' (Keiding 2007, p.437)

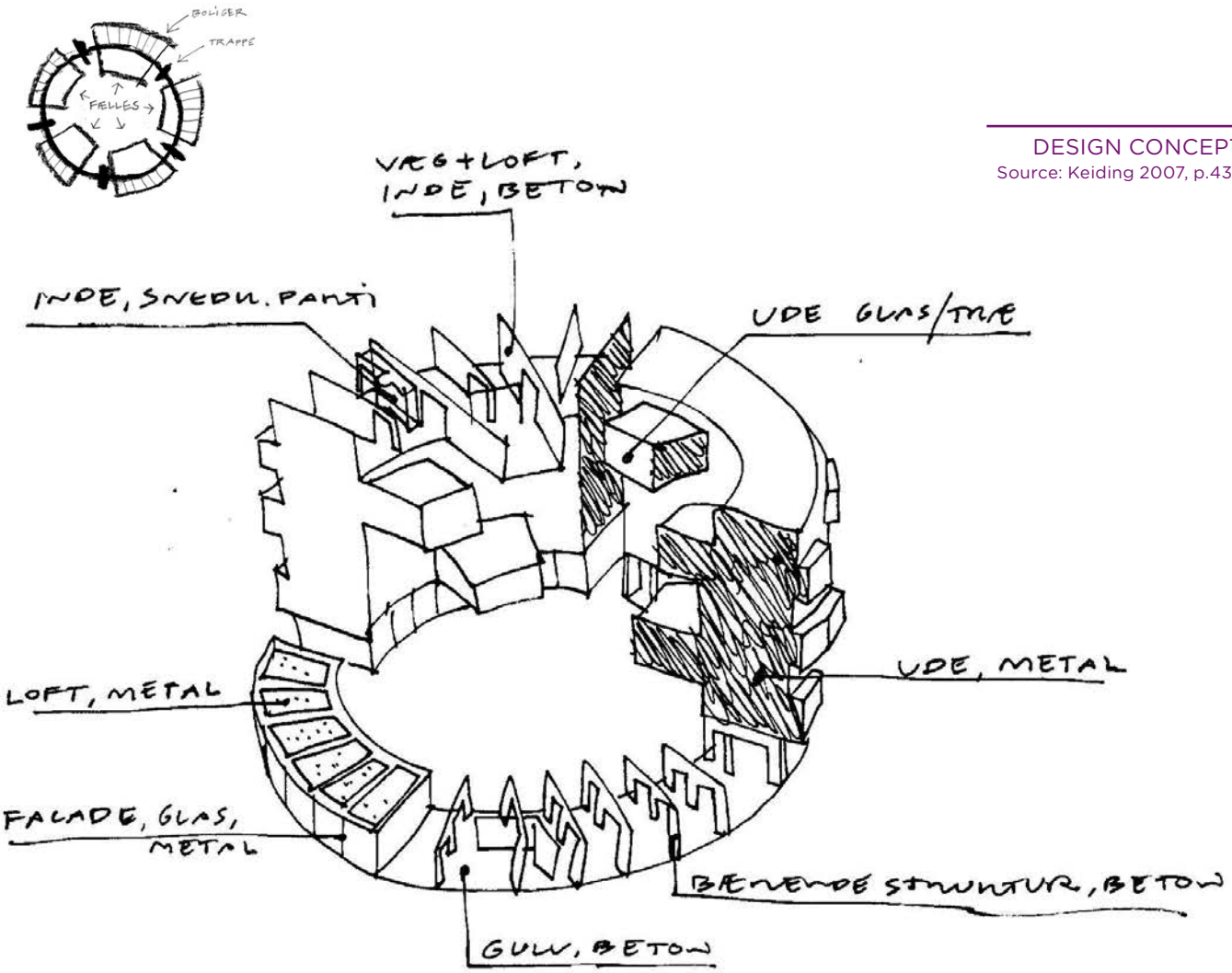
At the urban scale, Ørestad often lacks street life. Rather than engaging with the surrounding context, building uses which might traditionally activate the street are orientated inward and the ground floor address at the street level is sometimes mute. In combination with the generous street widths and distances between structures, these rob the public domain of activation

In some respects, the THOR housing modifies this context. In contrast to the rectilinear planning of the neighbouring area, the circular form of THOR presents an address to all frontages. A highly activated ground floor offers views into the communal spaces and pedestrian passage through the semi-public courtyard. The individual living units located on the upper levels orientate balconies to overview the public domain and university precinct while providing privacy for each resident.

INDIVIDUAL AND COMMUNAL

The detailing of the project is uncompromisingly managed to clarify and reinforce the concept of the individual and the communal.

One example is the detailing of the individual student living quarters, totalling 360 rooms (26–33 m^2) with and without balconies configured to permit flexibility with an arrangement of single and double spaces.



DESIGN CONCEPT
Source: Keiding 2007, p.435

Units are designed with precision, optimising limited space while maximising amenity. Situated in the outer ring, the rooms while long and narrow, work with the circular geometry and splay outward to the view creating a greater sense of space.

The walls lined with plywood cabinetry are configured and crafted similar to that of a boat interior. Spatial planning is exacting in its functionality, housing individual needs of the user and moulded to create various niches for sleeping, reading, showering, and storage for clothes, books or sporting equipment.

Concrete ceilings and floors, and plywood linings have been selected for their capacity to patina over time and durability for ease of maintenance. Details right down to a continuous hanging gallery system have been designed to enable students to customise their space with fixing of lamps, objects and wall art etc., without compromising the wall surfaces with DIY drilled holes.

Students are even offered a choice from a range of colours for curtains to window-dress their room. Collectively the rich colour variation between window dressings interplays with the exterior shutters creating a constantly changing facade.

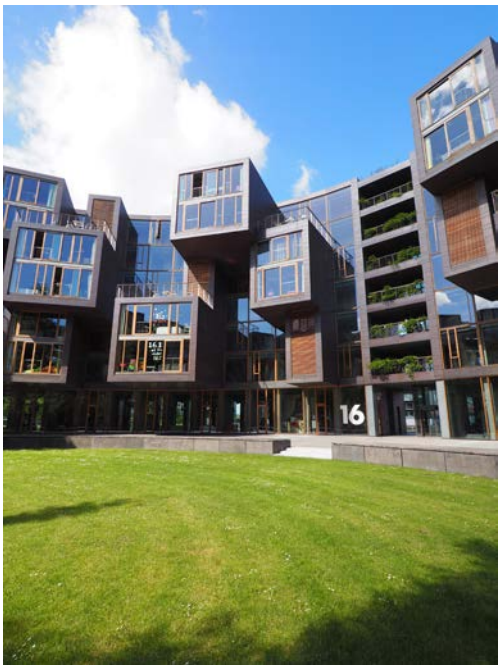
Kitchenettes have been deliberately excluded from individual units. Shared kitchens are located in the inner ring adjacent to other communal functions, encouraging social interactions between students and reinforcing the convivial spirit of the dormitory.

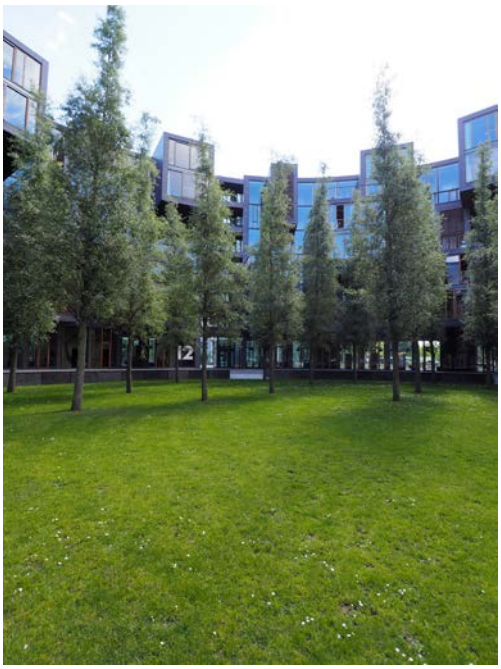
COLLABORATION

The studio of Lundgaard & Tranberg worked in close collaboration with industrial artists, structural engineer and landscape architects. The success of the partnerships is evident in the way each of the design inputs serves to reinforce the integrity of the whole.

Industrial artists Aggebo & Henriksen address acoustic requirements in the main corridor with timber veneer wall lining overlayed with super graphics. Colour variations in curtain textiles, selection of functional objects(e.g. washing machines, post boxes), furnishings and signage introduce a rich graphic overlay to spaces. The most utilitarian of objects are understood as opportunities to contribute to rather than detract from the quality of design.

Building tectonics and the expression of cantilever boxes characterising the inner courtyard are the product of the COWI engineers and architects evolving a dynamic while efficient structural logic. A total of 45 varying-





LANDSCAPED COURT
Source: Anita Morandini

sized cantilever boxes with an 8-metre maximum span ring the courtyard. Prefabricated concrete beams and a system of 'free cantilevers' inspired by bridge-building technology enabled rapid construction employing cranes rather than scaffolding.

The landscape architecture includes the design of outdoor areas, courtyard and balconies. The central courtyard consists of a recessed grass area surrounded by a 2-metre wide wooden plinth which is the only furniture in the yard. Silver birch trees connect the open court to the sky.

Large 'bells' of wisteria overhang the open stair landings, and steel trellises provide support for a variety of climbing and flowering plants creating lush greening to common circulation areas.

PLANNING LEGISLATION

A master planning competition for the expansion of the Copenhagen University, Department of Amager, was undertaken and won by KHR A/S Arkitekter in 1996–97. It established the basis of The Local Plan for the University district of Ørestad. In 2000 a series of subsequent competitions were undertaken for individual building developments, all of which ultimately complied with the statutory planning controls, except the Danish Broadcasting Corporation which only partially did so.

Lundgaard & Tranberg's winning competition scheme for THOR was a radical departure from this conformity. Although it directly contradicted the planning codes, the principles of the design were considered of great merit and fully supported by the consent authority, City of Copenhagen.

It was concluded that in 'the view of the competition jury the proposed design for a new dormitory in the University District would enrich the district although it did not follow the general rule of good conduct.' (City of Copenhagen 2003, p.110).

ØRESTAD GYMNASIUM INTERIOR
OPEN PLAN, FLEXIBLE AND
STUDY ZONES
Source: Anita Morandini

CASE STUDY

ØRESTAD UPPER SECONDARY SCHOOL (GYMNASIUM)

Ørestad Upper Secondary School is the first school designed to reflect the 2005 Danish educational reforms – an architectural response to the new pedagogy and a radical departure from traditional planning.

Location Ørestad Boulevard/Arne Jacobsen Allé, Copenhagen

Client City of Copenhagen

Architects 3XNielsen A/S Architects

Timeline Completed 2007

Construction Cost 20 million Euros

Area 12,000 m^2

Competition Winning scheme, invited competition

DANISH EDUCATIONAL REFORM

The 2005 Danish National Reform Program was the first comprehensive government overview of strategies leading change for fiscal sustainabilty in Denmark. It aimed at improving Denmark's long-term potential for growth and employment founded upon a framework of responsible social, environmental and fiscal principles.

The reform identified that in order to reap the full benefits of globalisation through flexible markets, principle economic and social challenges needed to be addressed, including an extensive improvement in the quality of education and an increased number of young people completing an education after primary and lower-secondary school, plus an effective strengthening of the quality and quantity of research (Danish Government 2005).

Viewed in a global context and with the objective of fostering a knowledge society founded on a world-class educational system, a new vision for secondary school reform was established. This pedagogical reform is boldly promoting innovation and self-directed learning in the Danish education system.

Traditionally, the Danish upper secondary school was primarily oriented to the reproduction of established knowledge, but, as the dynamics of the competitive market society intensify, the upper secondary school is expected to produce students with creative and innovative competencies, equipped for future challenges and facing the demands of the global market (Hansen, Boje & Beck 2014). Reforms introduced various cross-curricular activities both between and within faculties. Since 2005 teachers are required to collaborate in teaching teams where competence building and cross-curricular activities are planned.

Previously administered by the state (i.e. Danish counties), upper secondary schools were also subject to organisational reform, assigned greater responsibility, and, since 2007, required to self-govern while remaining accountable to the state. Budgets now depend on the number of enrolled and graduating students, and the ability to compete against other educational institutions in a semi-privatised market.

Promoted by these reforms, the management and development of facilities have become increasingly important features of schools, helping to attract and retain students as well as supporting a new pedagogy of collaborative and self-directed learning.

ARCHITECTURAL RESPONSE TO 2005 EDUCATION REFORMS

Ørestad Upper Secondary School (Ørestad Gymnasium) is the first school in Denmark which responds architecturally to the educational reforms of 2005. With the changing demographics of Copenhagen, there is a 50% shortfall in supply of study places for 16–19 year olds. The new school contributes more than 1000 student places to assist in addressing this undersupply.

Located within the new urban quarter of Ørestad1, the school offers study within the fields of science, social science and human science. Designed by 3XN Architects and completed in 2007, the innovative school is the outcome of an invited competition. In 2003 The City of Copenhagen invited seven architects to participate in a restricted competition. The brief requested 'a concrete proposal for an educational building complex

ØRESTAD GYMNASIUM URBAN CONTEXT
Source: www.adammork.dk/home

ØRESTAD GYMNASIUM
URBAN CONTEXT
Source: Anita Morandini

focusing on media, culture and communication' (City of Copenhagen 2003, p.171), which was deliberately formulated without traditional terms for rooms, leaving much to the architect's interpretation.

3XN's winning design proposal presents not so much a response to spatially specified requirements or defined tasks, but rather the evolution of a new idea for a Danish school, exploring and giving form to the possibilities raised by the 2005 education reforms.

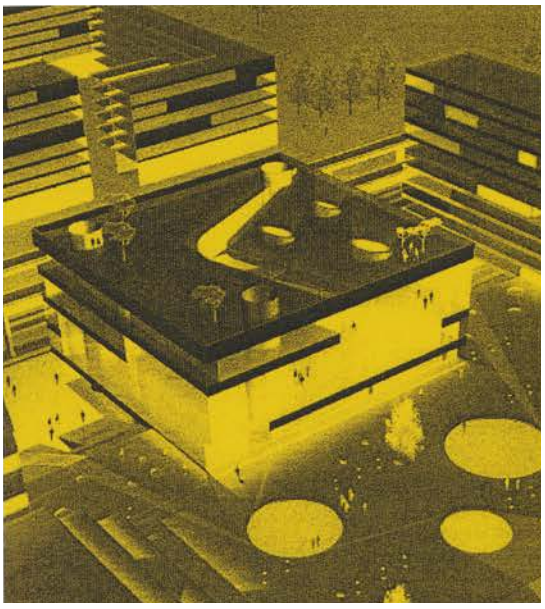
ARCHITECTURAL CONCEPT

3XN's design for Ørestad Gymnasium is a radical interpretation of flexible open space where the architecture supports the pedagogy of individualised and interdisciplinary learning. Traditional self-contained classrooms are replaced by an environment which features a diversity of interconnected spaces described as 'study zones'.

The building is divided into four 'study zones', each located on a dedicated level, providing organisational flexibility with the option of micro adjustment to create different spaces and learning environments accommodating varied group sizes.

Each level is arranged in a shifting boomerang form around a central atrium with a grand-scaled spiral stair enabling visual and physical connectivity between all levels. The main staircase is the primary connection between levels and the heart of college educational and social life. It is generously scaled, designed to encourage lingering and a place to watch and be seen.

Each floor has few permanent elements and can be laid out and rearranged almost completely at will.



3XNIELSEN A/S WINNING
COMPETITION PROPOSAL
Source: City of Copenhagen 2003, p.171

ØRESTAD GYMNASIUM
CASUAL LEARNING AREAS
Source: 3XN

Three 'mega columns' form the primary load-bearing system, supplemented by a number of smaller columns positioned according to structural requirement, rather than arranged on a rigid grid. Flexible and temporary room arrangements and learning environments that can accommodate varying group sizes (from one on one, to large groupings) are achieved by means of custom designed 'room furniture', which may be rearranged as needed.

The school is without corridors. By eliminating corridors, 3XN reduced the overall size of the building by 25% (4000 m2) in comparison to a traditional school arrangement; 'every square centimetre is used for teaching interactions,' notes Kim Herforth Nielson of 3XN.

DIGITAL TECHNOLOGY

The school has been designed to accommodate a teaching ethos of 50% teacher-led learning coupled with 50% independent student-centred learning. To facilitate this model of education, the school has done away with all analogue teaching materials and claims to be 100% digital. Lessons are taught entirely using computers and iPads, and teachers move between the different working groups and 'study zones' assisting students.

'There are many reasons for the use of ICT,' explains Principal Allan Kjaer Andersen. 'When you have an open school like this, you have to develop new models of leading a lesson, because you can't talk to the whole class at once. You can't yell at the students, so you have to guide them in other ways. We structure our lessons in our virtual world, so students log on and everything is described there.' The emphasis on digital learning is also one of the key pedagogical philosophies of the school, adds Andersen. Teachers want to nurture tech innovation among students and transform them into 'producers of content, not just consumers' (Matthew 2015).

Designing to support these new ways of teaching, communicating and socialising, brought into focus for 3XN the ability of architecture to influence behavior, and vice versa technology in shaping architecture. 3XN's Ørestad experience of working in close cooperation with school staff, facility operators, students, consultants and City of Copenhagen, has produced a legacy of collaborative and cross-disciplinary studio practice. Increasingly diverse fields of experts are engaged in their projects, necessitating developing methods of collaboration that foster common understanding and enable multifaceted solutions. Interdisciplinary practice and its value to the studio were celebrated and featured in the recent 3XN exhibition, held in Berlin in 2016, 'Behind the Scenes – The Simplicity and Complexity of Architecture'.

FOOTNOTE:

1. Ørestad is the product of a strategic planning initiative to construct a new urban district south of Copenhagen's old city centre with direct access to Ørestad via a new metro link. Ørestad enables Copenhagen to expand as the primary centre of the new Øresund Region without ruining the old City's historic environment. In early 1990s the Danish parliament passes a series of Acts formalising the Øresund Link, Metro and development of Ørestad. In 2001 the first new buildings in Orestad were constructed and the new Metro opened in 2002.

Catalytic philantrophy

REALDANIA

Source: Realdania 2015, p.14

Realdania | Realdania By

CASE STUDY

REALDANIA

Realdania is a philanthropic foundation that began operating in 2002. It uses the return on its business investments to support financing of projects in the built environment: cities, buildings and built heritage. Its mission is to improve the quality of life and benefit the common good by improving the built environment.

Location Realdania, Jarmers Plads 2 DK-1551 Copenhagen

Projects Since 2002 Realdania has contributed to 2900 projects within the built environment (at June 2015)

Total value of Realdania grants EUR 1.5 billion at June 2015

REALDANIA BY & BYG INC. (REALDANIA URBAN DEVELOPMENT)

Realdania provides finance and expertise in built environment projects. 'Its mission is to improve the quality of life and benefit the common good by improving the built environment' (Realdania 2015, p.4)

The foundation aims to contribute to improving the quality of urban development projects. It is committed to achieving optimum sustainable urban development in the widest sense of the term; that is, urban development which takes into account social issues, health, economics, the environment and resources.

Realdania By & Byg is a subsidiary company wholly owned by Realdania. By demonstration it aims to positively influence processes in delivery and the quality of built environments in Denmark through acquisitions, development and sale of lands for urban redevelopment.

Projects focus on resolving significant societal problems, adding value and improving the quality of Danish towns, urban life, urban development, planning, urban construction and architecture. Operating through organised collaborations and strategic partnerships, the association assists in guiding and streamlining development processes. It primarily works in partnerships with municipalities.

PROGRAMS

Realdania has contributed expertise and funding to a great number of initiatives that promote and foster innovation in the built environment. It indentifies five programs as areas for philanthropic activity and investment:

Space for Everyone

Strengthen the welfare of society through new and upgraded physical settings which support social inclusion,and the physical and mental wellbeing of all citizens.

Denmark Land of Opportunities

Focus on resolving the challenges facing outlying areas and rural districts in Denmark (e.g. depopulation), and assist in developing local qualities and assets to create a strong identity.

Innovation in Construction

Promote innovation in the construction sector in order to enhance quality of life through sustainable and better quality built environments.

Living Built Heritage

Develop built heritage by revitalising degraded buildings through adaptive re-use, securing continuity and establishing potential for new activities.

Cities for People

Exploit the challenges of urbanisation and climate change to create balanced social, environmental and economic solutions for resilient and equitable cities (Realdania 2015, p.14).

PROJECT EXAMPLES

The sample of projects referred below are indicative of Realdania's collaborative and interdisciplinary practices on a local and global scale.

Sustainability

At a local scale, Realdania has developed Tool for Sustainable Urban Development 2. The aim of the tool is to inspire urban developers to adopt wide,

INDICATORS FOR SUSTAINABLE URBAN DEVELOPMENT – TOOL FOR SUSTAINABLE URBAN DEVELOPMENT
Source: Realdania By 2013, p.4

interdisciplinary approaches to achieve sustainable outcomes.

The tool establishes three areas for consideration: Environment and Resources, Social and Health, and Economic aspects. Guidelines and a calculator are provided to establish project-specific sustainability profiles and quantitative benchmarks.

The tool, applied during competition and ensuing development phases, has been adopted by Realdania and its development partners on projects such as the new sustainable districts of FredericiaC, Køge Kyst and Ringkøbing.

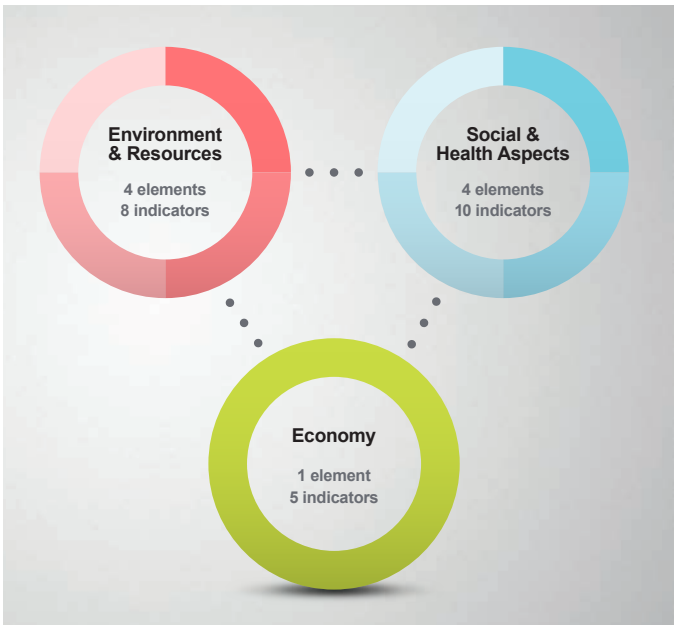
Realdania also works with international partners and organisations on initiatives that have a larger-scale impact. Major development issues are often global in scope and require international collaboration. Realdania partnerships include C40 Climate Leadership Group1, Sustainia2 and UN Global Compact3, cooperating to address sustainability and climate change impacts at a local and global level.

The Good Hospice

The Good Hospice in Denmark is a program aimed at demonstrating how architecture and physical surroundings may support care for the dying. Jesper Nygård, CEO of Realdania, in an interview with Global Trends (Stoklund 2013) discusses the Good Hospice program. In 2004 the Danish government introduced a new plan for hospices which presented a challenge. The government had limited experience in the design of facilities and was at risk of failing to deliver best practice outcomes. In this context, Realdania offered to provide expertise and support in the development of a model program for a 'good hospice'.

Realdania and government established a partnership, coupling government funding and a mandate to build best hospice standards with Realdania's expertise and business capabilities. The process involved drawing upon national and international knowledge to inform the implementation of the program.

Modest fund allocations were distributed to selected hospices establishing test sites and trials. Consequently, the program was revised several times in close cooperation with The Danish Knowledge Centre for Rehabilitation and Palliative Care. Realdania points out this prototyping and the iterative process may have incurred additional upfront costs. However, the practical knowledge gained from the shared experience of the trails was invaluable in formulating the final plan, ultimately saving costs.



KØGE KYSTE, EXAMPLE OF APPLICATION OF TOOL FOR SUSTAINABLE URBAN DEVELOPMENT
Source: Realdania By 2013, p.11

The program has contributed to improved new build facilities such as Hospice Sondergard, Hospice Djursland and Svanevig Hospice.

Innovation by the Construction Sector (Building Lab)
'Innovation by the Construction Sector' is a government industry partnership initiative undertaken from 2005 to 2008 with a total budget of 10 million Euro, of which Realdania contributed 7 million. The initiative was designed to encourage innovation in the construction sector with the objective of reducing future building costs and enhancing quality. It was organised with a secretariat, which provided consultancy and financial support to company-driven innovations for commercialisation (Nyman 2007, p.13)

Public Realm & Company Value Creation
As an association which advocates for good design, Realdania builds expertise and facilitates learning and knowledge sharing to improve the built environment. It supports and undertakes many studies, such as the Public Realm & Company Value Creation report, (Gehl Architects 2013). The document aims to create awareness and generate debate on how a business might gain a financial advantage by its proximity to a well-designed public domain. While the report does not attempt to summarise quantifiable economic benefits attributed to a high-quality public realm, it does begin to make suggestions as to potential advantages.

Case studies are presented and queries raised as to how the public realm may be conducive to supporting networking and knowledge sharing, or how shared facilities such as co-working spaces might produce cost-savings coupled with social benefits. Potential solutions are proposed to facilitate connections between the public realm and businesses illustrating how this might realise additional value, social and financial.

Køge Kyst Urban Development Partnership Project
See case study Køge Kyst in this report.

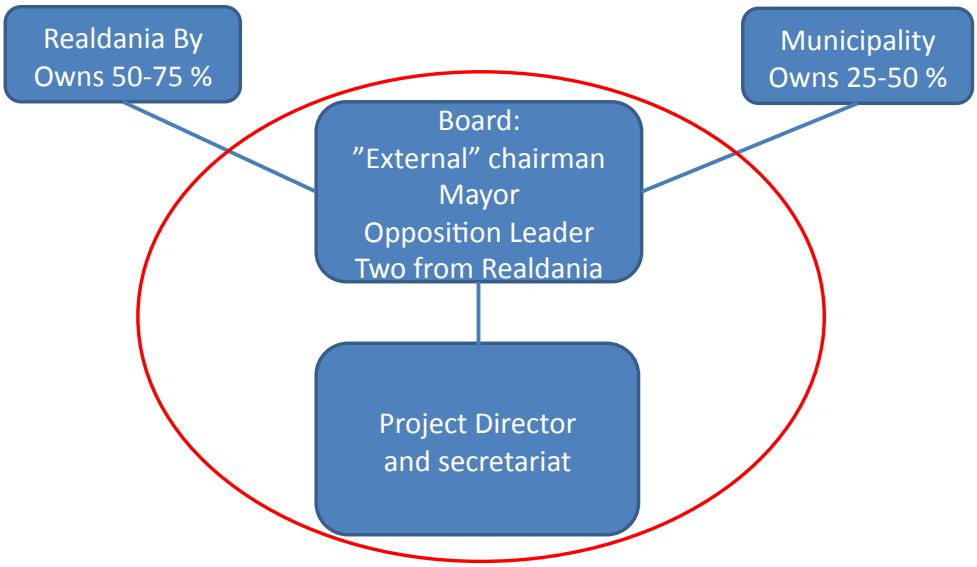
PARTNERSHIPS
A significant change occurred within the Danish planning system when the concept of municipal planning strategies was introduced in 2000. Further to this, 2007 local governance and administrative reforms required newly merged municipalities to define themselves in a restructured regional context. At the same time the state's role and influence over the qualitative content of municipal plans was reduced, thus making room for Realdania's increased participation and significant impact in planning and development.

After the 2007 reforms, with the objective of developing and enhancing planning competencies

Realdania | Realdania By

BUSINESS IMPROVEMENT DISTRICTS

NYE SAMARBEJDER ØGER LIVSKVALITETEN I BYERNE



Realdania By is:

- partner with a municipality
- an active owner
- a philanthropic investor

PARTNERSHIPS
PROJECT STRUCTURE
Source: Interview: Rahbek & Ravn 2015

of the municipalities, the national planning agency partnered with Realdania (which financed the project) to initiate Plan09, an initiative to inspire and drive the development of Denmark's spatial planning culture. Between 2006 and 2009, 27 projects were carried out in cooperation with 40 municipalities. The projects mainly addressed traditional urban planning issues while also tackling topics such as public participation and strategic planning, and the Plan09 secretariat launched a large number of complementary initiatives in the form of workshops, publications and studies (Reimer, Getimis & Blotevogel 2014, p.33).

Realdania regularly partners with private and public organisations such as academic institutions, municipalities, industry bodies, private businesses and cultural institutions. It maintains, the 'most important thing for Realdania is to bring partners together to create a solution or product that is much better than the one you can create alone' (Nygard, in interview with Stoklund 2013).

Realdania By is currently engaged with four public–private partnerships for the urban development of FredericiaC, Køge Kyst (Coast),Ringkøbing K and NaerHeden. These large-scale, long-term projects are structured on the basis of:

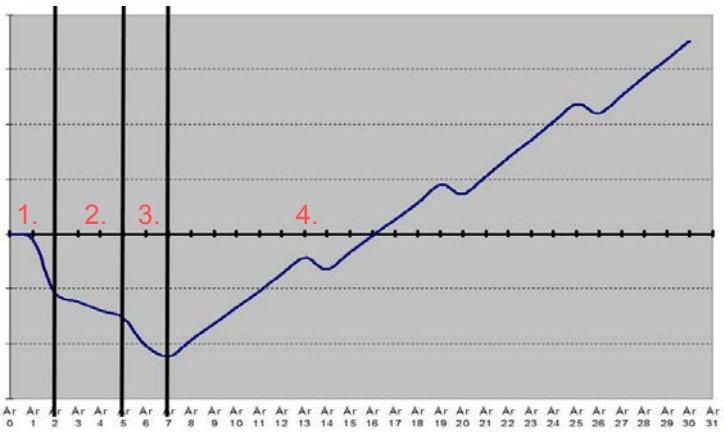
- a partnership between the municipality and Realdania By
- formal agreement setting out partnership terms which include the owners' joint vision, conditions of development and the role of each partner
- the establishment of a partnership company administered by a board
- the formation of a project secretariat with a project director.

Anne Metter Rahbek, Head of Communications and Horizontal Services, Realdania, points out a critical aspect of the partnership structure being the establishment of the Board to include the relevant municipalities' current mayor and opposition leader. This structure attempts to manage and stabilise the political interests over the long-term life of the projects, which may extend for decades (Interview: Rahbek & Ravn 2015).

COLLECTIVE IMPACT

'Our collaborative approach ensures that our contribution has a catalytic effect that exceeds what we could have achieved on our own. Large-scale change requires collective impact. We encourage broad cross-sector coordination and collaboration in order to find shared solutions to shared problems', Anne Skovbro, CPO (Realdania 2015, pp.10–11).

1. Preliminary estimations, establishment of partnership and a company, aquisition of land
2. Competition/parallel assignment and development plan
3. Early site preparation, ready for sale
4. Sales and site preparations



Long term cash flow

Investments by the partners in the early years, return as building rights are sold over the years

LONG-TERM PROJECT CASH FLOW –
BUSINESS MODEL BASED ON PARTNERSHIPS
Source: Interview: Rahbek & Ravn 2015

Realdania claims to be one of the first organisations in Denmark to systemically work with collective impact, initiating three collective impact projects:

- Built Heritage in Rural Areas
- The Countryside as a Double Resource
- Inclusion for Everyone.

Modeled on collective impact theories (Kania & Kramer 2011) Realdania has established five principles which underpin these projects:

All parties must agree on an agenda and common, specific and measurable goals which all the parties work together to achieve.

There must be:

- shared measurement methodologies supported by all parties
- binding activities that contribute to reaching the shared goal
- frequent and open communication based on trust and knowledge sharing
- a common secretariat, which sets the direction for work and facilitates the process between the partners.

As Kania & Kramer note, 'unlike collaboration or partnership, collective impact initiatives have a centralised infrastructure – known as a backbone organisation – with dedicated staff whose role is to help participating organisations shift from acting alone to acting in concert.' In the case of Realdania's projects the 'backbone organisation' is referred to as the secretariat. Since early 2014, Realdania has been actively experimenting with this working methodology to fulfill its mission in positively addressing societal issues.

In 2016 Reldania commissioned a Strategic Review of Collective Impact at Realdania to assess the progress of collective impact projects and make recommendations on how it could better support future efforts. The review has identified four opportunities relevant for Realdania's overall strategy (FSG 2016, p.4):

1. Assess more specifically which problems require collective impact and invest in adaptive skill sets.
2. Develop an internal guide book for how the organisation engages with collective impact.
3. Invest in developmental evaluation for the three collective impact groups to foster adaptation in processes.
4. Invest in a cross-sector learning platform for collective impact.

Realdania at the date of the report notes a general satisfaction with the project status, however, it is recognised as too early to measure project outcomes due to their complex nature and the time required to register an effect.

GOVERNANCE

Realdania is a foundation of over 150,000 members from all over Denmark. Anyone owning real estate in Denmark can become a member of Realdania.The management structure consists of a Supervisory Board and an Executive Board. The Supervisory Board is responsible for overall strategic management, while the Executive Board deals with day-to-day management (Realdania 2015).

Members democratically elect Board representatives. Members are diverse in scale and include large property owners such as the social housing associations, municipalities and private property owners.

INVESTMENT

Realdania's commercial investment is based on a long-term strategy with a horizon of 25 years or more. As an active asset owner, it takes on risk to generate returns to support philanthropic activities. It invests in equities, credit-related products and part of its capital is invested directly in urban development projects, often in close cooperation with municipalities or large property owners (Realdania 2015).

'The foundation is known as being a demanding and agenda-setting partner when it invests; however, for many municipalities the direct economic support and investments from the foundation have become an important precondition for attracting other private and public investment and for the implementation of bigger urban development.' (Reimer, Getimis & Blotevogel 2014, p.40).

FOOTNOTES:

1. C40 Climate Leadership Group is a network of the world's megacities committed to addressing climate change. C40 supports cities to collaborate effectively, share knowledge and drive meaningful, measured and sustainable action on climate change.
2. Sustainia is a think-tank and consultancy headquartered in Copenhagen, Denmark. It identifies readily available sustainability solutions across the world and demonstrates their potential impact and benefits in Sustania's work with cities, companies and communities.
3. UN Global Compact is a voluntary initiative based on CEO commitments to implement universal sustainability principles and to take steps to support United Nations goals.

CASE STUDY

COMPETITIONS

Competition regulations were established in the Nordic countries at the beginning of the 1900s. Denmark has developed a sophisticated and well-developed tradition of competitions for public and private projects with the majority organised by the public sector, state promoters and local councils. Many of the case studies included in this report are the result of such competitions.

In the 1990s, as the building sector became more market driven, Nordic governments, including Denmark, developed architectural policy and programs to foster better design quality. 1994 saw Denmark's first national architecture policy, drawn up by the Ministries of Culture, Environment and Finance. The policy stressed that particular attention should be paid to architectural quality. Public promoters were encouraged to augment the use of competitions as a means of elevating design quality.

Subsequent Danish architecture policies have continued to encourage the undertaking of competitions. The 2007 policy A Nation of Architecture Denmark suggested the success of some Danish architectural bureaus might be directly attributed to their winning national and international competitions. One of the goals of architectural policies is to create good conditions for continued development of and renewal in architecture. Competitions are regarded as a precondition for growth and development.

The basic principles for architectural competitions are the same throughout the Nordic countries, even if regulations vary somewhat. There must be a competition program with appropriate administrative provisions, a brief setting out design and technical requirements, goals and evaluation criteria, and a jury representing the organising body and the professional architectural body. The jury assesses and judges anonymous entries.

Competition procedures are guided by The European Union's (EU) regulations for competitions. The Danish model employs profession-orientated competition rules rather than regulations drafted by trade associations. Generally accepted by the development sector, competition regulations are drawn up by the Danish Association of Architects. These apply only to projects to be undertaken by registered architects and require the competition brief and program to be approved by the association.

Well-established administrative support and expertise in competition processes is available through the dedicated Competition Unit of The Danish Association of Architects. The unit has delivered over 15,000 competitions and provides assistance to public and private clients in running competitions within the disciplines of planning, building and design.

The Danish Association of Architects competition website lists the most common types of architectural competitions as shown below, ideas competitions and project competitions being the two main types.

A. IDEAS COMPETITIONS

When no specific assignment can be formulated, or if the aim of the competition is to establish the basis for the formulation of an assignment, an ideas competition may be chosen. This type of competition is primarily used for planning assignments and may be launched as an open competition or a restricted competition.

B. PROJECT COMPETITIONS

Project competitions are used to select a design for a specific project when the intention is to entrust the winning architect with the project design and subsequent realisation. Project competitions may be launched as open competitions or competitions restricted to a limited number of participants, for the design of projects which are defined to such a degree that they can be realised.

C. COMBINED PROJECT AND FEE-BASED COMPETITIONS

This type of competition, which should always be organised as a restricted competition, makes it possible for promoters to combine a project competition (B) with a fee quotation from each participant.

D. COMPETITIONS IN STAGES

This type of competition is suitable when the promoter wishes to solicit ideas for major building or planning projects before formulating a specific brief. The competition must be a combination of A and either B or C.

E. COMPETITIONS NOT BASED ON ANONYMITY

This type of competition may only be organised as a restricted competition, the purpose being to open up dialogue between participants and assessors so as to achieve the best possible basis for the further design. Requirements concerning the scope and degree of detailing of entries should be limited since the possibility of a relatively loose interpretation of the brief facilitates dialogue concerning the final building program and project design.

PARALLEL COMPETITIONS

Parallel competition or assignment is a model which has also been adopted recently for complex projects where a high level of interdisciplinary practice and client engagement is preferred to inform the outcome. On complex large-scale urban developments Realdania has employed and continues to experiment with this parallel model, such as in the case of Køge Kyst and Carlsberg Brewery (Interview: Rahbek & Ravn 2015).

Merits of the parallel competition operating as a 'sophisticated' procurement process are debated by the development and design industries. While it is argued the process, in concert with client and public feedback, enables benefits of comparative review between design options, critics point out it may equally result in a narrowing of alternatives and innovation.

While the structure of parallel competitions vary, an example of one type is outlined here (Interview: Rahbek & Ravn 2015):

- An open pre-qualification process is used to select a small number of participants: between five and seven multidisciplinary consortia.
- Competition fees are paid to all participants to appropriately renumerate a process of shared ideas, extended program and associated costs.
- Competition phases are staged, and the competition schemes are exhibited publicly during the competition. The public are given the opportunity to provide comments at each stage.
- For competition presentations, the jury, technical advisors, client and public participate in an open forum.

- Q & A and feedback are provided to participants at milestone points during the competition process.
- All invited participants may be party to the open forums, thus competitors view each others' work and feedback, and hence there is no anonymity of schemes, and ideas are shared.
- The competition may not result in a singular winner, rather there may be multiple awarded schemes and multiple competitors engaged by the client to collaborate on post-competition design development.
- The competition outcomes may inform the development of a local plan.

Competition outcomes frequently challenge planning codes and consequently may suggest an amendment to a local plan. The planning authorities generally view competitions as a useful tool in revealing unidentified opportunities or constraints, and for providing confidence in alternative formulation of a local plan (Interview: Mylin 2015). The Teitgen Student Housing competition winning scheme by Lundgaard & Tranberg Arkitekfirma is one example of this.

Local architecture policies further support competitions; the City of Copenhagen commitment to competitions as a means of achieving outstanding design quality is made explicit in its 2010 Architecture Policy. The policy advocates benefits of competitions providing a broad exploration of the project task, which sometimes leads to solutions of merit exceeding expectation. Numerous competition formats are supported, including open and invited competitions, parallel assignments and workshops.

Open competitions are particularly encouraged as a means of providing young design talent an opportunity to connect to markets which they might not otherwise access. The City of Copenhagen employs a 'wild card' strategy. Whenever possible, young and less tested architectural firms receive 'wild cards' to take part in invited competitions and workshops for smaller assignments.

At the time of this report, the Danish Architecture Centre (DAC) was in the process of compiling documentation on competition processes in Denmark. The document is intended to provide an overview of the number and type of competitions and stakeholders' participation. DAC is Denmark's national centre for the development and dissemination of knowledge about architecture, building and urban development (Interview: Mylin 2015).

Several of the young architectural firms interviewed for case studies confirmed the benefits of competitions and the wild card system in accelerating their studio's commercial development and profile. While it was acknowledged typical remuneration to cover competitions was as little as 0% to 30% of the cost to the firm, it was generally conceded the long-term benefits compensated for cost imposts.

Architectural competitions are routine practice under the auspices of Swedish, Norwegian, Finnish and Danish architectural organisations. Denmark's government has, since the early 1990s, progressively advanced the competition system, notably fostering the growth of exportable new design talent (Magnus 2009, p.54). The merits of the program are manifest in the many competition projects which have been successfully delivered and have received local and international awards.

About the Author

Anita Morandini is an architect and Design Excellence Manager, City of Sydney, with over 25 years professional practice in the private and public sectors.

Her architectural experience encompasses a broad spectrum of project types, including mixed-use, commercial, workplace, recreation, education, leisure, medium and high-density residential developments.

In key roles as architect she has contributed to awarded projects, working with acclaimed firms in Europe, Asia, and Australia:

Kerry Hill Architects – Singapore

Wiel Arets Architect – Holland

Miralles Pinos (now known as EMBT) – Spain

Smart Design Studio – Sydney

Candalepas Associates – Sydney

Bligh Voller Nield Architects – Sydney.

Contributions to design reviews include appointment as a member of the North Sydney Design Excellence Panel and positions on competition selection panels.

Anita regularly participates as a guest critic in architectural and urban design reviews at various universities. Tutoring engagements in architectural design have been undertaken with the University of Sydney, University of New South Wales, Newcastle University, University of Technology and Bond University Queensland.

Anita is most interested in design engaged with integrating environmental, social, cultural and economic aspects to create sustainable, high-quality environments. The Byera Hadley Travelling Scholarship 2013 has provided an invaluable opportunity to explore these interests in an international context.

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COBE Architects – Project Director Rune Boserup

Copenhagen City & Port Development (By & Havn), Head of Planning – Rita Justensen

Copenhagen Municipality, City Architect – Tina Saaby Madsen

Gehl, Partner & Managing Director – Henriette Vamberg

Lundgaard Tranberg Architects, Founder & Head Architect – Lene Tranberg

NORD Architects, Director – Johannes Pedersen

Realdania Byg (subsidiary Realdania Foundation), Project Manager – Anne Mette Rahbæk

The Danish Architecture Centre, Senior Project Leader – Rikke Lequick

HAMBURG GERMANY CASE STUDY INTERVIEWS

My study tour also encompassed 12 case studies located in HafenCity & Wilhelmsberg, Germany. Undertakings included site visits and interviews with relevant development actors. In order to gain a more comprehensive understanding of context and its impact on integration, this report has focused on documenting the Danish case studies only.

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GPT Group, Head of Sustainability – Rosemary Kirkby

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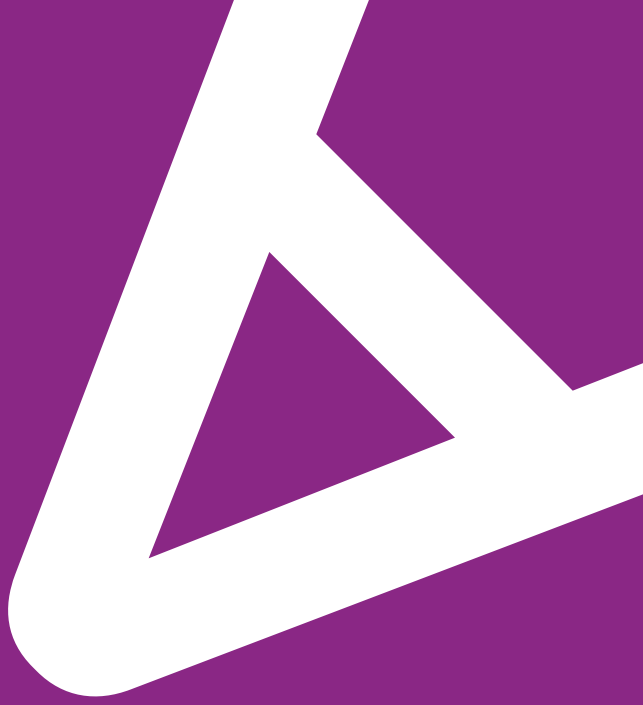

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