# ARCHIE GTURE CREATES VALUE

Buildings, urban spaces and landscapes generating social, economic and environmental value

DANISH ASSOCIATION OF ARCHITECTURAL FIRMS Architecture should generate more value for more people by making the best use of the resources available. This is the challenge facing every project, large or small, and architectural design is able to create value at many levels – socially, environmentally and financially.

#### In view of the fact that construction accounts for 30-35 % of society's resource consumption,

architects face a challenge, and a unique opportunity, when it comes to developing society in relation to the UN Sustainable Development Goals. Architects work at all levels in our surroundings, from urban development to product design, from urban spaces to buildings. All these levels must be coordinated in order to achieve the best possible conditions for sustainable development. This booklet presents buildings, urban spaces and facilities designed by Danish architectural firms. The value generated by these projects has been documented by analyses, assessments, statistics and data. The results can be surprisingly impressive, whether in connection with improved health, well-being and learning or improvements to the environment or economy. Value is created jointly, requiring many considerations and involving many types of expertise. We must find solutions that create value at many levels, both for those who use the buildings daily and for society as a whole. By far the majority of the projects presented here result from innovative processes in which architects have challenged project developers and user needs through a dialogue to define the strategies required to materialise a joint vision and to carry ideas through to the completed

building. In architectural projects, we need to focus on processes, efficiency and construction costs. To achieve this, architects use digital models that provide an overview of the technical performance of a building, area allocations and the amount of materials, and thereby financial resources, needed for a project. The models improve decision making support, and provide a collaboration platform for project developers, architects, engineers, suppliers and contractors that enables them to complete construction as cost-effectively as possible.

However, the next wave of digital technologies can provide an even more precise and dynamic understanding of how surroundings affect the behaviour and well-being of people, and how buildings and neighbourhoods act and change over time. Architects are already working on the lifecycle of buildings, and are setting up design strategies for the economic and environmental consequences caused by the flow of materials and resources.

By using circular economy concepts, solutions that are currently creating waste issues can be redefined and become resources for future generations. Design solutions are vital: How to understand the challenges, and how each part of a solution creates the most possible value for the most possible people for the longest possible time.

The examples of architecture creating value in this booklet are grouped according to themes. The themes address the social, environmental and cultural dimensions that architects work with. There could be more themes, and they could be defined differently. The best projects add value in several dimensions. Accordingly, all the projects presented in this booklet could be categorised into more themes than those we have grouped them into here.

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## 69 % DROP IN PHYSICAL RESTRAINTS DEPARTMENT OF PSYCHIATRY, ESBJERG ARKITEMA ARCHITECTS

Significant reduction in the use of physical restraints at the Department of Psychiatry, Esbjerg.

#### **50 % OF USERS HAD PREVIOUSLY NEVER PLAYED** SPORTS AT A SPORTS CENTRE DGI HUSET AARHUS SCHMIDT HAMMER LASSEN | 3XN

Diversity, spaciousness and atmosphere attract new users to Aarhus' sports centre DGI-Huset.

# 27 % less use of physical restraints 30% fewer occupational accidents 59% reduction in the use of sedatives

#### DEPARTMENT OF PSYCHIATRY, AABENRAA

WHITE ARKITEKTER | DEVE ARKITEKTER

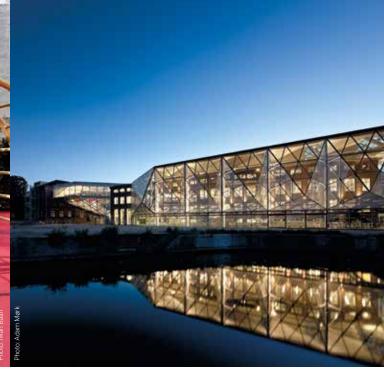
New facilities support behaviour and therapies that have reduced occupational accidents and the use of force.

# GOOD URBAN SPACES HELP MAKE AREAS MORE INVITING Buildings and urban spaces help create a better quality of life for citizens, improve social cohesion, and can even have a significant branding effect. In order to create liveable urban environments, access to parks and nature is very important, as is stimulating a thriving business community and outdoors activities. Likewise, the area must feel safe and accessible. All these elements greatly depend on the design of buildings and urban spaces.

# STRONG IDENTITY AND SENSE OF BELONGING SUPERKILEN BIG-BJARKE INGELS GROUP | TOPOTEK1 | SUPERFLEX

A dynamic activity space and meeting area for local initiatives in in Nørrebro, Copenhagen.

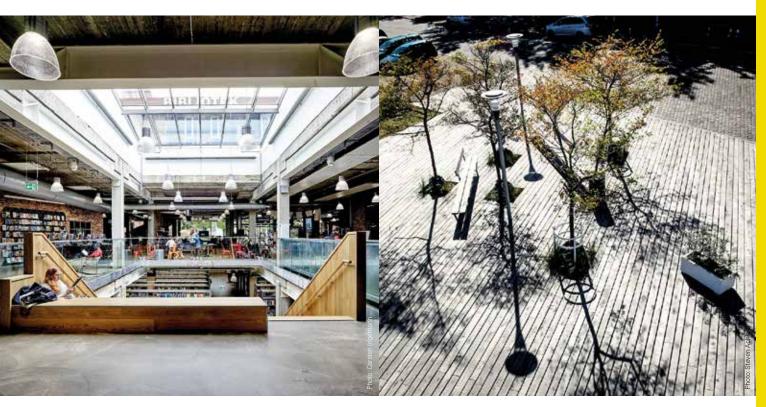




#### MORE THAN 750,000 VISITORS EVERY YEAR THE CULTURE YARD AART ARCHITECS

The Culture Yard in Elsinore is a popular success and very important for the city's cultural development.





#### THREE TIMES AS MANY VISITORS, UP TO 50,000 A YEAR HERNING LIBRARY

GPP ARKITEKTER | ARKITEKTFIRMA KRISTIAN H. NIELSEN

Time and money were saved by reusing the existing building's concrete construction rather than demolishing it and building a new one.

# 71% OF TOURISTS ARE SATISFIED OR VERY SATISFIED MARIELYST: THE SQUARE AND THE BEACH PATH GHB LANDSKABSARKITEKTER | ETN ARKITEKTER

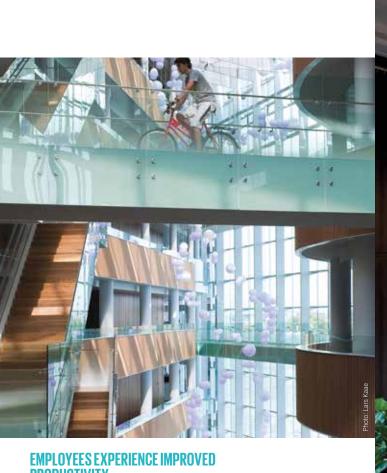
The renewal of the square and beach boardwalk in Marielyst creates value for tourists, citizens and local businesses.

Rarely have you seen a prouder Mayor. From now on, the square we are standing on will be the hallmark of Guldborgsund. Forget everything you have heard about problems in rural Denmark."

John Brædder, Mayor of Guldborgsund Municipality, 2015

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# **GOOD ARCHITECTURE IMPROVES LEARNING** The appearance and design of a space signals the values and attitudes of an organisation or community. Good workplaces and learning environments provide ample opportunity for sharing knowledge, working together in larger or smaller groups or finding room for solitary concentration. Attractive environments can boost recruitment, students' results or visitor numbers, and affects behaviour, well-being, productivity and learning - which in turn can generate financial value.



## EMPLOYEES EXPERIENCE IMPROVED PRODUCTIVITY ALLER MEDIA BUILDING

**PLH ARKITEKTER** 

New facilities enhance Aller's image and communication with its stakeholders and provide employees with new opportunities for collaboration in their daily work.



# DOUBLES THE NUMBER OF STUDENTS CONTINUING TO FURTHER EDUCATION VUC SYD

AART ARCHITECTS | ZENI ARKITEKTER

If just one in three can be moved from benefits to employment, an estimated annual added value of more than DKK 60 million would be added to the public purse. Therefore, the education centre will have paid for itself in just three years.

# GLIMATE

#### ARCHITECTURE CAN HELP IN THE FIGHT AGAINST CLIMATE CHANGE

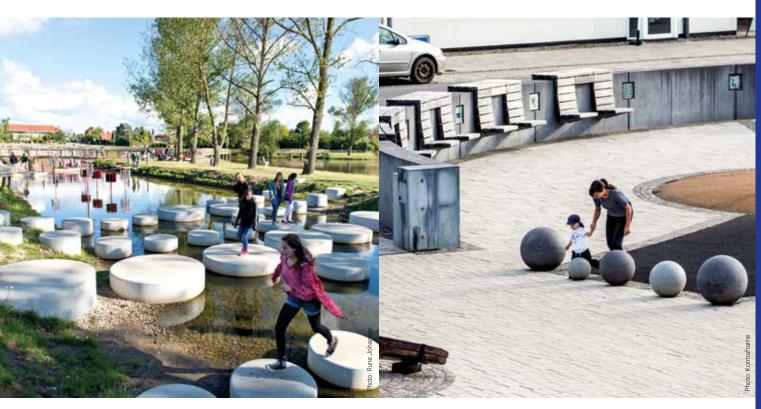
Construction is one of the largest contributors to climate change, mainly due to large consumption of energy and materials. However, it is possible to design urban spaces that are capable of dealing with extreme weather conditions, while at the same time adding new qualities to the urban space. Studies show that there are significant financial savings to be gained by combining climate protection with the construction of new facilities. We can reduce the climate footprint of buildings drastically by improving energy-efficiency and by designing buildings so that materials can be reused in new contexts.



# LOW-LYING BUILDINGS IN THE AREA ARE PROTECTED AGAINST A 100-YEAR EVENT SØNÆS MØLLER & GRØNBORG

Recreational city park brands a city neighbourhood, attracts house buyers and reduces the risk of flooding and leaching of phosphorus and nitrogen.





#### TAASTRUP AVOIDED FLOODED BASEMENTS AFTER THE CLOUDBURST IN JULY 2011 SELSMOSEN

#### FORCE4 ARCHITECTS

The combined technical installation and recreational area Selsmosen has created a new and inviting urban space in Taastrup.

#### REDUCES DAMAGE COSTS BY MILLIONS OF DANISH KRONER

#### LE MUR

#### HASLØV & KJÆRSGAARD

The high-tide installation Le Mur protects the area from high tides while simultaneously generating activities and revitalising the harbour front in Lemvig

The concrete wall has been part of transforming Lemvig Harbour into a bustling area with activities for local citizens, tourists and sailors. It was necessary to secure the town and harbour of Lemvig. We chose to make a virtue out of the necessity and we have thereby gained much more out of our investment for everyone.

Erik Flyvholm, Mayor of the Municipality of Lemvig, 2015

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# SOCIAL COHESION

# ARCHITECTURE SHAPES COMMUNITIES

Buildings and urban spaces help create an identity, a sense of belonging, a sense of security and social cohesion. Our surroundings reflect who we are, who we wish to be and where we come from. Our surroundings can be shaped in a way that not only generates value for the individual but also creates communities and rich experiences, stimulates participation or ensures accessibility for all. Even small projects can redefine a place, give it a new narrative, or reverse or generate a trend.



The local community takes pride and joy in the mill. We see that they return to visit it again and again. They also bring guests from other parts of Denmark to the mill to show the unique attractions Southern Funen can offer."

Per M. Jensen, Chairman of Egebjerg Mølle Guild



### 80-90 % OF LOCALS HAVE USED THE HALL IN THE COURSE OF A SEASON MULTIHALLEN

**CFBRA** 

The refurbishment has strengthened social cohesion, created a sense of pride in the local community and bolstered tourism.

Originally, we thought the 65% reduction in carbon emissions was unrealistic, but once we completed our calculations, it turned out that our carbon emission accounts were almost 86% better than the benchmark house."

Anders Lendager, Lendager Group, Realdania Byg 2014

# RESOURCES

#### REUSE IS GOOD FOR THE BOTTOM LINE

Architecture should generate as much value as possible

from the resources invested in a building. New Danish buildings are among the most energy-efficient in the world, but there are still challenges with regard to reducing the energy consumption of existing buildings. When architects design with circular economy in mind, resources can be recycled and recirculated. This results in significantly improved environmental profiles, and accounts for a growth potential of DKK 8.5-12 billion in the Danish construction industry alone.





### NATURAL VENTILATION WITH 70 % HEAT RECOVERY DTU COMPUTE B324

CHRISTENSEN & CO. ARKITEKTER | KRAGH & BERGLUND

Green solutions have been implemented from floor to ceiling at DTU's Department of Applied Mathematics and Computer Science.

#### 86 % LESS CO2 DURING CONSTRUCTION UPCYCLE HOUSE

LENDAGER GROUP

The single-family house in Nyborg was built using recycled materials. Upcycling and circular economy means materials are given new life and the environmental impact is significantly reduced.







#### NEW CONVERTED ATTIC APARTMENTS FINANCE A 56 % DECREASE IN ENERGY CONSUMPTION RYESGADE 30 A-C

#### KRYDSRUM ARCHITECTS | RØNBY.DK

Ambitious energy renovation reinforces preservation-worthy architecture while simultaneously making the conversion more attractive for residents and providing a better investment for the project developer.

# SEVENFOLD INCREASE TO 422,000 VISITORS IN A YEAR MOESGAARD MUSEUM HENNING LARSEN ARCHITECTS | ARKITEKT KRISTINE JENSEN TEGNESTUE

The increase in the number of visitors to Moesgaard Museum has meant increased revenues and growth in the tourist industry in Aarhus.





#### 22 % CHEAPER RENT – 68 % LESS CO2 DANMARKSHUSENE TEGNESTUEN VANDKUNSTEN

Danmarkshusene in Rødovre are a new generation of cheap, sustainable and attractive social housing.

# THE WORLD'S MOST ACCESSIBLE HOLIDAY CENTRE MUSHOLM HOLIDAY APARTMENTS AART ARCHITECTS | KEINGART | BSAA URBANLAB

With a DKK 35 million growth in revenue, Musholm is proof that accessible architecture can make a difference to society and simultaneously generate economic development.





reflects the dynamic society on Bornholm. Twenty years ago, we were mostly a fishing community, but now commerce, manufacturing, tourism and high green ambitions are just as important - this is clearly exemplified by this building."

Winni Grosbøl, Mayor of the Regional Municipality of Bornholm, Magasinet Byggeri







25 % LESS CO2 FOR MAINTENANCE

The mini-CO2 house "Brick House" has a esti-

mated lifespan of minimum 150 years and its facade will not need maintenance for 50 years.

**BRICK HOUSE** 

LETH & GORI

# Photo Serv Adagasid

# NEWLY DEVELOPED FACADE SYSTEM PROVIDES IMPROVED SPACE UTILISATION. TOTAL SAVING: DKK 1 MILLION DAMES ALEN, UNIVERSITY OF COPENHAGEN MIKKELSEN ARCHITECTS

Intelligent facade technology enables maximum use of space and daylight in Damesalen at the Department of Nutrition, Exercise and Sports.

#### SKATE PARK IN GENTOFTE TEGNESTUEN VANDKUNSTEN

The carbon neutral street sports facility saves 80% in life cycle costs compared to conventional alternatives.

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The Danish Association of Architectural Firms has collected a number of examples of architecture that have generated added value. The projects were selected on the basis of aspects documented in each individual project. Our work in selecting the projects has also shown that there is still a lot to understand about the interrelationships between architecture, behaviour and well-being, as well as the interrelationships between architecture, the environment and the economy. We hope that these examples will contribute to a better understanding of these interrelationships and thereby help to create better surroundings for all of us in the future.

THANK YOU to our members - all the architectural firms who have contributed with their cases - without you we would have no examples of architecture with added value!

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Danish Association of Architectural Firms

Vesterbrogade 1E, 2. floor

DK-1620 Copenhagen V, Denmark

T +45 32 83 05 02

E info@danskeark.dk

www.danskeark.dk

