UIA Guidebook for the 2030 Agenda
THE 17 GOALS

In 2015, world leaders agreed to 17 goals for a better world by 2030. These goals have the power to end poverty, fight inequality and stop climate change. Guided by the goals, it is now up to all of us, governments, businesses, civil society and the general public to work together to build a better future for everyone.

https://www.globalgoals.org/
There's no point of return
Credits

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The United Nations’ Sustainable Development Goals Report 2023 is a stark reminder that international progress towards the 2030 Agenda is far behind where it needs to be. It is unlikely that the objectives will be achieved in the remaining fifteen years, but there are signs of clear progress and increased efforts in this respect.

Uncontrolled urban sprawl all over the world threatens not only the environmental, social and economic balance of the globe, but also its relation to nature and biodiversity. Climate crises, frequent natural disasters, political upheavals and wars in many countries have revealed social, economic and environmental inequalities that disproportionately affect those living in poverty. The world faces the difficult task of how to best respond to today’s climatic and social challenges. Urban planning and architecture are challenged to find adequate answers in this difficult context.

Building is a public act. It depends on political and economic factors and requires interdisciplinary collaboration. Architects are called upon to design places capable of generating a better society, buildings that contribute to the wellbeing of the people that use them and environmental challenges. Architects are educated and trained to coordinate the knowhow of other disciplines and specialists, to use technology intelligently, to find solutions within the given economic and legal framework. At the same time, they are active in promoting changes in legislation to improve public policy, optimise the use of land and natural resources, reduce energy expenditure and improve environmental protection. What is truly essential and unique for the profession of architect, though, is the ability to translate needs into spatial solutions and respond with design creativity to the particularities of the task, place and context with consideration of constraints.

As a design specialist, the architect is challenged to understand the needs of both users and investors and interpret them in the interest of society. The profession does not only have an aesthetic, but also a social, ethical and political responsibility. Good design is not extravagant, but responsible. Quality does not imply high cost but care for people and public interests. The different formal languages and aesthetics of the projects express the diversity of cultural identities and sensibilities, and manifest the enriching plurality found across the world.

The projects selected to feature in this compendium document examples of remarkable social engagement and creativity. It is particularly encouraging that the projects have been planned and realised in all parts of the world. With 96 projects from 29 Member Sections spanning all 5 UIA Regions, the Guidebook demonstrates how responsible architecture can contribute to the achievement of the 17 UN Sustainable Development Goals across the globe.

On behalf of the UIA, I would like to congratulate the UIA SDG Commission and its 2021-23 Co-Directors for the third edition of the UIA Guidebook, and thank the Royal Danish Academy and the UIA 2023 Congress organisers for their collaboration in the realisation of this impressive publication.

Regina Gonthier
UIA President
THERE’S NO POINT OF RETURN.

In the year 2023, we find ourselves at the midpoint of the 2030 Agenda’s timeline. Following the challenges posed by the COVID-19 pandemic and a global economic crisis, a recent analysis commissioned by the United Nations and presented by its Secretary General, António Guterres, reveals that less than 13% of the 2030 Agenda’s targets have been achieved thus far.

The significant outcomes of the UIA Congress 2023, which took place in Copenhagen last summer, indicate a heightened awareness among architecture and urban planning professionals of their essential role in combatting the challenges of climate change, as they actively seek sustainable solutions in their day-to-day practices. This confirms our unwavering dedication to this important global agenda and its objectives, underscoring the fundamental role that the UIA, a global organisation representing over 100 countries and territories and recognised by numerous United Nations agencies, will continue to play in the years to come.

Inspired by the previous publications orchestrated by the Royal Danish Academy, the UIA SDG Commission designed and developed this Guidebook. Its purpose extends beyond mere dissemination of knowledge about the 17 Sustainable Development Goals; it also aims to share the results of the labour undertaken by architecture professionals worldwide. This, however, is just the inception of our journey, and there is no point of return as we steadfastly pursue the mission to leave no one behind.

We would like to express our heartfelt gratitude for the unwavering support extended by our members, the UIA Secretariat and Bureau throughout this undertaking. This publication was only made possible through the collaborative endeavours of the regional sections from five regions, who diligently promoted the call for proposals and spurred the active involvement of their members.

We trust that you will find this Guidebook enriching, and we encourage you to use it as a vehicle to propagate the principles of sustainable development in architecture and urban planning, thereby inspiring forthcoming generations of professionals.

Cid Blanco Jr. and Iman Gawad
UIA SDG Commission Co-Directors (2021-2023)
Editors of the UIA Guidebook for the 2030 Agenda
UIA Guidebook for the 2030 Agenda

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In the following pages, all projects were identified with the category they were registered by their authors.

EFP - Experiences from the Past
LDP - Last Decade Projects
IFF - Inspirations for the Future
Poverty is more than the lack of income and resources to ensure a sustainable livelihood. Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion as well as the lack of participation in decision making.\footnote{Extract from UN’s Global Issues, available from \url{https://www.un.org/en/sections/issues-depth/poverty/}}

The decline of global extreme poverty continues but has slowed. The deceleration indicates that the world is not on track to achieve the target of less than 3% of the world’s population living in extreme poverty by 2030. Strong social protection systems and government spending on key services often help those left behind get back on their feet and escape poverty, but these services need to be brought to scale.\footnote{Extract from UN’s SDGs Knowledge Platform/ \url{https://sustainabledevelopment.un.org/sdg1}}

Architecture cannot lift people out of poverty, but the built environment can affect the impact of poverty on people’s lives by providing access to affordable housing, sanitation, educational institutions, health facilities and spaces for recreation.

Through building design and planning, architects can develop buildings and settlements that are low cost, safe and healthy. Examples of this can be found in social housing schemes, co-ops and projects for urban upgrading.

The overarching principle of architecture’s contribution to the goal of no poverty is that buildings and public spaces must help provide services that are affordable and accessible for marginalised and poor citizens.

This requires new architectural solutions emphasising low-cost construction principles, natural light and ventilation, use of local materials and increased reuse of available materials. Buildings must be designed using products and materials that do not compromise the environment, while maintaining the affordability of the solutions.

Furthermore, architecture, landscape design and planning must adapt the built environment to local climatic, geographical and cultural contexts, working with the surrounding environment and not against it, to increase quality of life while helping inhabitants save on electricity and other running costs. As part of this, architects working on development projects must engage local communities and help marginalised and poor citizens gain ownership of the built environment of which they are a part. Finally, the building process itself must take place under conditions that protect the environment as well as workers and other stakeholders.
Project Description
With this ongoing community-led project, the working group is documenting, studying, and moving awareness of the First Indigenous Peoples of South Africa’s settlements and dwellings located in a remote area of the Eastern Cape, never studied before. A unique example of a regenerative approach to the built environment where the Indigenous building knowledge, typology, technique and materials have been handed down from generation to generation, from pre-colonial times till the present, orally, despite the long history of repression and segregation, Indigenous people went through since the arrival of the settler colonialists. The working group was formed in 2015, under the Nelson Mandela University, School of Architecture, and their focus is on community engagement projects.

The project started in 2021 with a pilot project and continued in 2022-23. This is the first opportunity for the Khoikhoi and San community of the Eastern Cape to document and build a written and digital repository about their built environment, building technologies and techniques that are still in use. In 2023, a documentary entitled “Indigenous Architecture of Zaaimanshoek in Baviaanskloof” was produced and it was envisioned, at the end of this research, to publish a book, as a manual, of the IKS of the built environment of the First Indigenous Peoples of South Africa in the Eastern Cape. Documentary Trailer: https://vimeo.com/812088198?activityReferer=1

Author(s): Prof Magda Minguzzi (NMU), Gaos/Chief Margaret Coetzee, in collaboration with Arch Lucy Vosloo (NMU)
Organisation: Nelson Mandela University
Project Location: Eastern Cape, South Africa
Geographic Coordinates: 33° 30' S, 24° 8' E
Year of Conclusion: in progress
Linking the project to the indicated SDGs

This community engagement project (Nelson Mandela University-First Nations of South Africa) promotes inclusivity, social cohesion and equity. The village under study is a remarkable example of equal opportunity to housing (the land is owned by the community), which empowers people (self-building), uses a sustainable model (materials used are self-collected in the area) improves people's living conditions and creates food security lifestyle (each house has a vegetable garden). It's an example that can be used in other similar climate contexts to alleviate poverty and promote a regenerative approach to the environment.
Project Description
Housing on Alto da Alegria community by social buildings and urbanisation areas of the hydrographic system of the main water reservoir of the city of São Paulo. The intervention in Alto da Alegria community participates in the objectives common to the Programme of the Secretary of Spring, which refers to the sanitation of the hydrographic system of the main water reservoir of São Paulo city but also the urban qualification of precarious settlements and the definitive housing assistance to families removed from areas of geological risk.

Linking the project to the indicated SDGs
The Alto da Alegria community has more than a thousand families with their homes built, over the years, on top of an illegal rubble dump around an environmental protection area in a high-grade geological hazard setting. The removal of these houses will give way to a residential area of social interest that solves social issues of access to housing, elimination of risk of landslides and urbanisation of environmental protection areas.

Author(s):
Elisabete França (secretary), Maria Teresa Fedeli (general project coordinator), Alonso López (project coordinator), Mario Biselli (architect), Arthut Katchborian (architect)

Organisation: Consórcio Mananciais São Paulo
Project Location: São Paulo, Brazil
Geographic Coordinates: 23° 44’ 40.97” S, 46° 41’ 29.79” O
Built Area: 78,801 m²
A SELF-SUSTAINING TECHNICAL SCHOOL: A MODULAR DESIGN APPROACH TO EVOLVE A RESILIENT COMMUNITY

Project Description
Not bound by the site, the project is a low-cost modular approach towards skill development centres in Pakistan to improve the lives of the youth. The are fastest growing population but have limited opportunities and face economic deprivation. Pakistan is grappling with an accelerating illiteracy rate with out of school children ending up in child labour which affects health and personal development. Low-cost skill development centres can be an indispensable contribution for youth to learn, develop and explore architecture.

Linking the project to the indicated SDGs
This project implements goals 1 (no poverty), 4 (quality education), 8 (decent work and economic growth) and 10 (reduced inequalities).
**Project Description**

Yong’an Village is surrounded by a sinuous mountain landscape with multiple ethnic groups co-existing here. The hub’s aim is to reshape the spiritual dwellings and venue memories of the villagers in the future. The project starts with local architecture typology study. Modern parametric design tools find their way to encounter traditional building craftsmanship. It inherits and develops local architectural heritage using non-local design approaches under a global scope in the digital age. Its design novelty should be valued. In general, the project’s endeavour to encourage ethnic pluralism, community improvement, public welfare, heritage preservation, area conservation, and sustainability should be considered and appreciated by the steering committee.

**Linking the project to the indicated SDGs**

The community hub is funded and donated by Tongji University as part of an ongoing social welfare programme since 2012. This programme is non-profit and equal opportunity, aiming to improve local people’s living conditions by building their diverse communities. Most construction materials, such as soil, stone, timber, steel are sourced locally, reducing price budget and carbon footprint.

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Author(s): Philip F. Yuan
Organisation: Tongji University & Archi-Union Architects
Project Location: Dali, China
Built Area: 480 m²
Year of Conclusion: 2020
ASHRAY REC FOUNDATION
OLD AGE HOME

Project Description
A community village for the elderly with Shelter Services – Modular, comprehensive & elder-friendly, also envisaged as a Wellness, Geriatric health care centre, and day-care centre, designed keeping in mind the vulnerability of the cold desert region as well the comfort of the people, especially during winters. The special feature of the project is its use of indigenous construction techniques. With the involvement of local artisanship and wisdom at building and Masterplan level, the site as a resultant is a secure habitat for the elderly. The building is designed by ‘rammed earth’ mixed with concrete balancing strength with insulation keeping in mind the low temperature and harsh winters of the cold desert region. It uses solarised walls, especially for bathrooms (“Tombe” walls), which have specially insulated and south facing walls for sunshine which prevents water freezing in the conduits from the tank to the pipe outlet. The landscape allows for a certain kind of local feel to the built environment.

Linking the project to the indicated SDGs
The old age home at shay, Ladakh is envisaged as a small village for the elderly who either have been abandoned by their own family or have no one to care for them. The land for the site was donated by a local politician after the 2014 flash flood in Ladakh. Sustainability here is not a choice but a way of life, the learnings from traditional wisdom and local artisans have helped make the project an all-year habitable space. The temperature at site varies from +30 degrees to -30 degrees. The design is thereby an affordable, low maintenance, energy efficient model for the entire region. It promotes well-being for elderly but also provides wisdom to the young.

Author(s): Shiekh Intekhab Alam (architect), Nazir Din (engineer), Amrita Kaur Slatch
Organisation: EMARA Architecture and Urbanism
Client: Help Age India
Project Location: Leh, India
Built Area: 1,456 m²
Year of Conclusion: 2022
**Project Description**

The project includes the restoration of the Cristo monument, street urbanisation around it and new living spaces for the community. Located in an area previously marked by social vulnerability and violence, Alto do Cristo, had its requalification based on the creation of spaces for interaction, accessibility and appreciation of the neighbourhood. The project, which aimed to requalify one of the main landmarks of the city, benefited not only the surrounding residents, but the entire population of Sobral, which now has 20,500 m² of requalified public space, with a panoramic view of the entire city.

**Linking the project to the indicated SDGs**

With the aim of revitalising the area and bringing more visibility, lighting and security to the local population, the requalification project that transformed the old ravine that housed the Christ monument into a leisure area with more than 20,000 m², also provided an inclusive urbanisation and safe housing for surrounding residents. This is done by working topography, accessibility and drainage through gardens between its levels, in order to reinforce resilience and adaptation to climate change.

**Author(s):** Antônio Carlos Campelo Costa, Marcely Luíza Barreira Portela, Marília Gouveia Ferreira Lima

**Organisation:** Prefeitura de Sobral

**Project Location:** Sobral, Brazil

**Geographic Coordinates:** 3.6870901688283912, -40.3594916115337

**Built Area:** 20,500 m²

**Year of Conclusion:** 2019

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**Image:** Image 1 is a panorama of Sobral, Brazil, with the Cristo monument visible in the background. Image 2 shows a close-up of the Cristo monument. Credit: Prefeitura de Sobral.
It is time to rethink how we grow, share and consume our food in more sustainable ways. If done right, agriculture, forestry and fisheries can provide nutritious food for all and generate decent incomes while supporting people-centred rural development and protecting the environment.

Right now, our soils, freshwater, oceans, forests and biodiversity are being rapidly degraded. Climate change is putting even more pressure on the resources we depend on, increasing risks associated with disasters, such as droughts and floods. Many rural women and men can no longer make ends meet on their land, forcing them to migrate to cities in search of opportunities.1

To find out more about Goal #2, visit:
https://www.un.org/sustainabledevelopment/hunger/

1 Extract from UN’s Sustainability Goals:
https://www.un.org/sustainabledevelopment/hunger/

The built environment contributes to the securing of food supplies through planning, landscape and building designs that protect existing ecosystems and prioritise the preservation and expansion of areas for food production.

Creating conditions to support sustainable farming must be an integral part of building development, especially where fertile land is scarce due to urban density, harsh climatic conditions or restricted access. Planning, landscape and building design can contribute by developing built environments that favour land use for food production in many scales. Examples of this can be found in urban farming projects, micro-gardening initiatives for refugees, production cooperatives and regenerative landscape design. Furthermore, the built environment can help to maintain and rebuild species diversity in open land as well as in suburban settlements and even in dense urban areas. This requires working with local geography, climatic conditions and locally adapted crops in the design of areas for food production.

The design of areas for food production, on a micro scale as well as on a larger scale, must be robust and geared to cope with climatic changes, such as more extreme weather, drought and floods. Also, a local production ecosystem can co-exist between the production of building materials, like timber or bricks, and food, making it important to consider how the food production interacts with the production of building materials. Finally, building and landscape design must involve end users when designing areas for food production to ensure the relevance and longevity of the production.
**Project Description**

Sustainable food production and consumption are critical societal demands all around the world. In a scenario of scarcity of natural resources, frequent climate change and a society heavily hit by food insecurity, expanding access and supply of food with less environmental impact while reducing losses and waste should be a priority. The Agroecological Pavilion is an urban farm that aims to combine the production and commercialisation of affordable food with uses aimed at education and professionalisation in a building lined on the premises of sustainable architecture and open to community participation in order to reduce the negative environmental impacts of traditional food production methods, food insecurity, and food waste. Additionally, it enables a generator of employability, income, and education targeted for people who are in social vulnerability. The entire building is designed to function as a productive ecosystem that seeks to renew natural resources rather than exploit it. The Agroecological Pavilion presents itself as an experimental project that seeks, through architecture, a solution to reduce food insecurity in urban centres while recovering the environment rather than exploiting it.

**Author(s):** Ana Carolina Borile (author), Patrícia de Freitas Nerbas (professor adviser)

**Organisation:** University of Vale do Rio dos Sinos (UNISINOS)

**Project Location:** Porto Alegre, Brazil

**Geographic Coordinates:** 29°58'51.9"S 51°11'24.9"W

**Built Area:** 16,922m²
Linking the project to the indicated SDGs

Urban agriculture emerges as a potential solution not only to food insecurity but also to a variety of other urban problems, including waste management, health, land use, the possibility of promoting new consumption and production relations, the recuperation of idle city spaces, the use of household garbage, and the development of an income-generating activity to help combat poverty. Further, it can actively impact city adaptation to climate change and sanitary crises.

The Agroecological Pavilion, in addition to producing and marketing food with less environmental impact, counts on the participation of the community, occupying jobs and enjoying workshops in agriculture, cooking, composting, and nutritional education in order to teach the population, especially the most vulnerable portion, to produce food in their communities, prepare nutritious meals, and develop a professional vocation in these areas. Further, the farm allocates spaces for research in technology related to agriculture, and the community is able to participate in pedagogical visits to get to know the production and have contact with fresh products, seeking to resignify the relationship that society has with food.
**Project Description**

The project is made up of a network of semi-autonomous units in a steel structure, focused on work, education, research, commerce and culture. The set was designed to be replicated in a scalable way. Among the units, as a way of complementing the project’s educational programme, there will be planting areas destined for “Unconventional Edible Plants”, responsible for alleviating hunger in times of crisis and which are little known, all of this within an unused area in a floodplain on the periphery of São Paulo, Brazil. “An urban farm: architecture and scarcity” portrays a problem that had already been resolved and which has abruptly reappeared in the periphery of Brazil: hunger. From the perspective of a marginalized region of São Paulo, hunger is treated as a form of scarcity, social insecurity and a portrait of a period marked by a pandemic that intensified latent inequalities in the global south. In this way, the project proposes multipurpose structures in an unused floodplain area aimed at the community of Jardim Piratininga, east zone of São Paulo. They are workstations, study, research and commerce, focused on the production of food for the city and also for the community.
Linking the project to the indicated SDGs
The project seeks to strengthen the local community, based on a self-sustainable and inclusive management model, support local economic growth, in the form of a multidisciplinary and mixed approach, combining the emergence of a new regional business environment with research and development, and guarantee effective social assistance, based mainly on the production, commercialisation and distribution of food for the metropolitan region of São Paulo as a whole. In this way, it seeks to provide the necessary tools to face hunger and poverty in the peripheries through the community’s own means of production, aimed at the community, the city and its entire region.
**Project Description**

“SUSTAINABLE DEVELOPMENT: [...] Both the 1338AD fresco called ‘Allegory of the Good Government’ and the United Nations 2030AD Agenda are prehistorical documents showing some heroic attempts to stop or at least curb the destructive drift of the terrestrial society before its own collapse and the consequent first settlements on the nearest outer planets. The sustainable equilibrium of the space colonies was actually reached only hundreds of years after their birth [...]”

ENCYCLOPEDIA GALACTICA

* All quotations here reproduced are taken from the CXVI Edition published in 1020 F.E. by the Encyclopedia Galactica Publishing Co., Terminus, with permission of the publishers. (Isaac Asimov op. cit.)

Most human needs can only be satisfied by living together. The community is born in response to these needs. Law puts in writing and details private and public relations, arts weave their dresses, architecture comes last and gives it concrete shapes; the city, home of the community, hosts and is the built result of these forms and relations. Therefore cities, laws and relationships are common goods, to be fed, cared for, and renewed as the skeleton and organs and nervous system of the living organism of the Community. Any strategy to reach a sustainable equilibrium must be based on the concept of Common Good, either in the 1338 small Republic of Siena or in the nowadays globalised world.

**Allegory and Effects of Good and Bad Government**

Ambrogio Lorenzetti, Palazzo Pubblico di Siena, 1338-39

**THE COMMON GOOD**

Author(s): Ambrogio Lorenzetti, Paolo Caroli

Location: Siena, Italia

Geographic Coordinates: 43.318107779725345, 11.332068623275342

Author(s): Ambrogio Lorenzetti, Paolo Caroli

Location: Siena, Italia

Geographic Coordinates: 43.318107779725345, 11.332068623275342
Allegory of the Common Good

Rules for a sustainable and peaceful equilibrium: there is a graphic analogy between the 2030 Agenda and Lorenzetti's fresco, actually a detailed representation of the benefits of the Common Good and its consequences on urban and rural society and landscape. Every single SDG has been anticipated and can be identified in the Allegory, as a harmonic frame that joins and merges all 17 of them together, meaning that the Good of the World Community is either the base or the target of the 2030 Agenda.

The front wall containing the 'Allegory of Common Good' can be seen as a pattern of democracy, where SDGs 5, 10, 12, 16 find their rightful place within the separation of the three powers. The 'effects on the city' portion contains details showing a flourishing development of all activities in peaceful coexistence (CONCORDIA) among citizens that can be easily related to SDGs 1, 2, 3, 4, 6, 8, 9, 11; while in the 'effects on the country' part the supervision of the angel of Security allows agriculture, farming and hunting to thrive and shape the landscape, enabling the achievement of SDGs 7, 12, 14, 15.

Pursuing the Good of the whole community means 'leaving no one behind'. And vice versa.
Project Description
Given the current scenario of the Fishermen Community ‘Of Kakapir’ in Karachi, the rising unsustainable development has been threatening the whole region for years and the village is now on the verge of disappearance. WWF can be seen working with fishermen and community-based organisations to rehabilitate mangrove forests and provide alternatives to unsustainable harvests, but the ongoing programme is not able to serve its main purposes. This project aims to create sustainable and uplifting solutions for the fishing community by enabling architecture to coexist in harmony with nature. It seeks to understand design methods that can achieve this goal.

A design programme is divided into three parts, including work units for fishermen, a mangrove nursery for researchers, and connecting bridges and ramps for exploration.

The modular design features convertible walls and roofs that allow for adaptable space and the potential to form clusters. The architecture is versatile and can be disassembled and relocated to other sites to restore ecosystems. After 40-50 years, the design anticipates the bridge becoming a natural pathway for eco-tourism.
Linking the project to the indicated SDGs
The materials and design strategies used in a project highlight project's sustainable quality. The modularity of the internal composition enables the exploration of diverse spatial solutions. In anticipation of rising water levels during the rainy season in the mangrove forests, lightweight materials were chosen to ensure the modules remain floatable in flooding scenarios. The true essence of this architectural design lies in its ability to seamlessly assemble in emergencies. By sharing walls, a single module can be replicated multiple times, allowing for the formation of clusters. The materials were carefully chosen to include bamboo, waste boat wood, plastic, and water drums, all of which contribute to sustainable development and recycling waste.

The module's wall panels are categorised into four types based on the materials employed: bamboo panel, waste wood panel, cloth panel, and bamboo curtain panel. The cloth wall panels feature traditional fabrics, known as "ralli," specially crafted by the women of the 'Kakapir Village'. The use of these materials reflects a conscious effort to create an environmentally friendly and socially responsible project.
Project Description
As the global community strives to address the pressing challenges of environmental degradation and social inequality, the role of architecture in promoting sustainable development has gained unprecedented significance. This project explores the intrinsic connection between architecture and sustainable development, focusing on Egypt as a case study. Egypt, with its rich historical heritage and rapidly urbanising cities, presents a unique context to investigate how the built environment can contribute to achieving the Sustainable Development Goals (SDGs) outlined by the United Nations. The main target is to afford sustainable cities and communities, responsible consumption and climate change. Case studies include two locations in Egypt as inspirations for the future projects to solve problems; Downtown in Cairo and Nubia-Aswan, where ideas were introduced towards better quality of life. Challenges include hot weather, equal opportunities for education, preserving heritage and equity.

Concept
The design concept choosing the triangle by which its three vertices suggest the 3 pillars of the sustainability concept: social, environmental and economic. Contribution to the SDGs part of the solutions includes using local materials, overlaying shadings to reduce high temperature with rooftop plantings, playing areas for children. It also has workshops and places for playing, interacting and learning. The project also integrates vernacular architecture features.

BOUNDARIES

Author(s): Vitta Abdel Rehim Ibrahim, Manar Mohamed Eltanbouly
Organisation: Pyramids Higher Institute (PHI) for engineering and technology/ Cairo University Faculty of Engineering Architecture Department
Location: Egypt, Cairo
Geographic Coordinates: 1st: (Attaba- Cairo) 30.0494682 N, 31.2490398 E
2nd: (Nubian - Aswan) 24.0808449 N, 32.8940075 E
Built Area: 400 -700 m²

Vernacular Architecture Features of Nubian
Long-term farming towards sustainable farming and self-efficient. women and children engagement, educating others, preserving Nubian Culture and Arts/ local materials
Cairo/Attaba

The proposed concept is to suggest solutions towards enhancing the high-density places between edges of buildings to create community participation, social activities and relations dissolving the time and place barrier, using recyclable materials, vertical farming, self-sufficient crops/zero hunger (eat or sell), improve the quality of life (good health and well-being)

The concept of green farms on building facades emerges as a contribution. These vertical farms not only enhance the physical environment but also encourage community members to come together for shared activities like tending to the greeneries. The idea is based on a flexible approach — adaptability of space, moving parts of shadings, interactive design, smart materials and applications using clean energy and, self-cleaning. There is also an interactive wall that changes according to user’s preferences or environmental change conditions as well as, energy exchanging materials, biological concrete to filter carbon dioxide

Inspiration

Challenges in Downtown in Egypt

Creating a green lung into the city: The design idea of vertical farming is to rebuild species diversity in downtown Cairo; dense area

This revitalises face-to-face interactions, re-establishing a sense of connection in urban environments while embracing the advantages of modern technology. These green farms symbolise a harmonious blend of traditional community values and the possibilities of the digital age, bringing people together in both physical and virtual spaces.

Flexible Approach
Adaptability of space
Movable parts
Shadings
Interactive Design
Smart materials and applications

Aiming to:
Social relations
Community participation
Sustainable (using recycled materials)
Self-sufficiency of some crops (eat or sell)/ help community (Zero Hunger)
Improve quality of life
Designing with Nature and equity.

Sustainable farming part of building system rebuild species diversity in downtown Cairo; dense area
THE MAIN EXHIBITION HALL OF TIANFU AGRICULTURAL EXPO PARK

Project Description
The Tianfu Agricultural Expo Park project is located in Chongzhou City. The main exhibition hall is located in the agriculture exhibition area and includes an agricultural exhibition hall, conference centre, Tianfu Agricultural Civilization Museum, cultural and creative incubation, characteristic commercial neighbourhood, outdoor exhibition space and other functions, with a total construction area of about 132,000 m².

The project uses five arched scaffolding to interpenetrate with the surrounding pastoral landscape and adopts prefabricated steel and wood structure scaffolding combined with colourful ETFE enclosure system to create a semi-outdoor non-energy consumption space that embodies the concept of green development and environmentally friendly design.

The plan adopts a finger-shaped penetration layout pattern, which is mutually infiltrated with the pastoral landscape. At the same time, to reflect the characteristics of the agricultural expo exhibition and consider the basic needs of wind and rain shelter, it mainly adopts the form of an outdoor exhibition venue with a roof.

Through appropriate passive green building technology, the Organisation of air flow is guided to create a comfortable semi-outdoor activity space.

The exhibition part has achieved the goal of near-zero energy consumption, truly realising the green ecological concept that is in line with the agricultural expo.

Author(s): Cui Kai, Kang Kai
Organisation: China Architecture Design & Research Group
Client: Sichuan Tianfu Agricultural Expo Park Investment Co., Ltd.
Project Location: Chengdu, China
Geographic Coordinates: 30.4227°N and 103.8467°E
Built Area: 130,000 m²
Year of Conclusion: 2022
Linking the project to the indicated SDGs
Tianfu Agricultural Expo Park project illustrates the reflection on and response to SDGs 2 and 4. The green, open, energy-saving and environmentally friendly architectural landscape design concept provides a solid foundation for the development of sustainable agriculture and provides effective technical models for the construction of agricultural-related infrastructure.

The farmland is fertile and vast and the colourful film arch shed of the main exhibition hall blends with the bright yellow of rapeseed flowers, the oil green of rice seedlings, the golden orange of wheat ears and the deep brown of fertile soil to present seasonal changes. On the west side of the five arch sheds is a demonstration field for scientific agriculture. Farmers spontaneously integrate farmland together, optimise field ridges lines, plant new varieties of crops, and introduce intelligent irrigation equipment to achieve full-cycle automatic monitoring, batching and planting. High-quality agricultural development provides technical support and feasible solutions for eliminating hunger worldwide and achieving food security.
Ensuring healthy lives and promoting well-being for all at all ages is important to building prosperous societies. Yet, despite great strides in improving people’s health and well-being in recent years, inequalities in health care access still persist. ¹

Many more efforts are needed to fully eradicate a wide range of diseases and address many different persistent and emerging health issues. By focusing on providing more efficient funding of health systems, improved sanitation and hygiene, increased access to physicians and more tips on ways to reduce ambient pollution, significant progress can be made in helping to save the lives of millions. ²

Architecture plays a crucial part in creating a built environment that supports good health and well-being. Access to health systems, sanitation and hygiene plays a major role in a healthy life, and in reducing the spread of diseases, as does spatial planning that allows social distancing in public spaces and at work.

Furthermore, most people spend the majority of their lives indoors, making indoor climate an influential factor of health. Building design must thus enable a healthy indoor climate concerning light, acoustics, air quality and exposure to radiation and degassing. This is important in all buildings, but especially so in buildings with vulnerable users, such as hospitals. Building design must further avoid the use of environmentally hazardous materials and substances.

Transmission of diseases and illnesses often happens within the built environment. Building design and the layout of settlements and urban areas are crucial to curb the spread of diseases and exposure to bacteria and viruses, such as the novel COVID-19.

Furthermore, infrastructure, health institutions and the design of urban areas affect citizens’ access to exercise opportunities. Buildings, settlements and urban areas must therefore be planned so that they allow and encourage physical activity. Urban layout also influences the risk of accidents, for example in traffic, and this too can be addressed through design.

How architecture interacts with health varies greatly, and examples of this can be found in housing that reduces the risk of infection with malaria, in patient-community buildings and in the design of public spaces.

To find out more about Goal #3, visit: https://www.un.org/sustainabledevelopment/health/

¹ Extract from UN report WHY IT MATTERS – Good Health and well-being – PDF
² Extract from UN’s Sustainability Goals: https://www.un.org/sustainabledevelopment/health/
FUTURE EDU SPACE (FES) PROTOTYPE

Project Description
The FES classroom has been envisaged to promote and inspire the creation of creative, sustainable, and comfortable educational spaces. It has been designed to transform learning experiences, considering that many Chilean schools in the Bio-Bío region have deficient infrastructure that critically affects the student community. FES used an interdisciplinary approach, linking areas as diverse as architecture, design, education, and engineering. Public and private entities contributed to specific solutions, with the region's key actors involved in a highly participative process. This prototype has a demonstrational role for the region's architecture and design offices, wood companies, and builders about schools and technology transfer.

The FES prototype is an educational space that combines flexibility, adaptability, and variety in its use. Its design was developed based on interdisciplinary and collaborative work involving actors from education, design, architecture, construction, and wood industrialisation. The BIM method was used throughout the design process, combined with virtual reality tools. To break with the traditional classroom layout, it has been designed using a square neutral-style floor plan, which allows using the classroom in different senses and creating multiple educational scenarios. It has a total surface area of 100m², with a central area of 70m² for 35 students. It considers the design of flexible furniture to provide an easily adjusted multipurpose learning space.
Linking the project to the indicated SDGs

This initiative is aligned with:

SDG 3: It considers a biophilic design since its incorporation in educational spaces has been emphasised in recent studies, to promote children's health and well-being. For this reason, it integrates a visual connection with the outside through glazed walls to see the sky and nature.

It fosters sensorial stimuli, using a wooden covering with its warmth, texture, and insulation capacities.

Thanks to the lucarnes, it generates dynamic lighting that stimulates the Circadian cycle, which is key for the student’s well-being and behaviour.

SDG 4: FES contributes to improving classroom quality, providing a level playing field for learning environments, and eliminating gaps between different socioeconomic groups. It allows for the creation of better conditions for innovative teaching practices that are supported by the classroom’s spatial setting.

SDG 9: FES encourages innovation and the transfer of state-of-the-art models for school infrastructure, as it is linked with the construction industry through innovative construction systems. Modular prefabricated architecture has been evolving in its efficiency and sustainability, permitting a quick, adaptable, light, and quality construction.
Project Description
Development of a former industrial site into an independent quarter for residential, commercial, social, and cultural activities with open public spaces for events and other forms of entertainment. This year the Werksviertel won the prestigious German Urban Design Prize “Deutscher Städtebaupreis 2023”.

The Werksviertel understands the vitality and complexity of the existing development and uses the positive potential for the emergence of the new quarter. The existing activities are to be gradually cultivated, consolidated and updated, while new developments are initiated at the same time.

Urban diversity, spatial events and programmatic innovation are the focus of the design work, which is joined by several European architecture studios.

Linking the project to the indicated SDGs
The Werksviertel’s foundation rests on economic sustainability, achieved through efficient inventory management and the establishment of a diverse and distinctive range of tenants.

This creates a high degree of diversity, which is particularly reflected in the lively use of public spaces. The careful addition of previously non-existent spaces such as hotels/hostels, retail spaces, fitness centres, offices and apartments, generates a wide range of offers for most urban demands and a distinctive macroeconomic composition.

Author(s): Steidle Architekten: Johannes Ernst (principal architect, coordination), Jan Kretschmer (project leader urban design, werk4), Stefan Kissling (project leader werk3 and werk4), Jühling&Köppel; Landscape architects: Stefanie Jühling (landscape design), Christopher Hanuss (project leader); Participating architecture studios: NVO Architekten (werk7), MVRDV (werk12), Hild und K Architekten (werk17)

Client: OTEC GmbH & Co. KG
Project Location: Munich, Germany
Geographic Coordinates: 48.124713,11.605693
Built Area: 390.000 m²
Year of Conclusion: 2022
**YUNZhai COMMUNITY CENTRE**

**Project Description**

With integrated design of both interior and exterior spaces, a “multi-dimensional Chinese garden” has been formed. For locals, it is an auditorium for celebrations, films and lectures, as well as a leisure space for seniors and children. For visitors, it is a tourist centre for tourist receptions, services and cultural activities.

In a relatively small site area and building area, as well as a limited budget, the project aims to make much difference with little intervention. A series of design approaches have offered diverse options for villagers’ activities, including the ground-level courtyard, the roof terrace and interior areas. To save operation and maintenance costs, the community centre’s management is both time-dependent and zone-dependent. People of all ages from surrounding villages can come here at any time of the day for recreation or gathering, rediscovering the village’s long-lost vitality.

**Linking the project to the indicated SDGs**

Time & zone-oriented management facilitates the 24-7 operation of the community centre. To weaken the sense of full enclosure of the traditional courtyard system, various openings are planned on the walls to make the boundaries permeable rather than closed and solid. The boundaries, with their original function of enclosure preserved, provide easy access for people and bring landscape on both sides of the walls together, making the community centre highly open and shareable. The enclosed interior spaces, the exterior courtyards and the roof platform are connected with multi traveling routes and managed separately, so that during periods when interior spaces are closed, visitors can still enjoy the multi-dimensional exterior garden at any time of the day, thus saving operation and maintenance costs while maximising the utility of available spaces.

**Author(s):** Yehao Song, Xiaojuan Che, Dan Xie, Jingfen Sun, Yingnan Chu, Tianyu Kuang, Zhihao Huang, Yuyan Xia, Wenbo Yue

**Organisation:** SUP Atelier of THAD

**Client:** Changyuan Puxi Sub-district Government

**Project Location:** Changyuan, Hunan Province, China

**Geographic Coordinates:** 35.1852132NL,114.5872350EL

**Built Area:** 635 m²

**Year of Conclusion:** 2020
Project Description
Through invigoration and utilisation of the ruined courtyard, the design has presented a roofed space with 6 bamboo umbrellas for local people’s gatherings and leisure activities, doubling as an exhibition hall of local culture and history.

Make use of old and local materials: the team encouraged the villagers to collect usable black bricks, black tiles, stones, and timber for construction.

Open up the space to the public: the walls of the family house have been partially torn down, turning the private courtyard behind the walls into a public joint. Form a set of “umbrellas” with bamboo and integrate with the nature.

The design team picked bamboo as the main material for construction. The bamboo canopies were made to be easily disassembled and upcycled.

Linking the project to the indicated SDGs
“Village Economic Cooperative” “Migrant Association” “Rice Hoarding Association” were held to implement a social protection system.

These Organisations bring the villagers together to boost future development projects, such as operation hostels, the renovation for local homestays, the upgrading of landscape and infrastructure as well as, the promotion of cultural and tourism programmes, which can raise their incomes and share the benefits equally. An open roof can boost natural ventilation: the lounge could serve as a community school for villagers.

Author(s): Yehao Song, Jingfen Sun, Yingnan Chu, Dan Xie, Xiaojuan Chen, Haowei Yu
Organisation: SUP Atelier of THAD
Client: Anhui Provincial Department of Housing and Urban-Rural Development
Project Location: Shangcun Village, Xuancheng City, China
Geographic Coordinates: 30.2119181 NL, 118.7907107.301 EL
Built Area: 150 m²
Year of Conclusion: 2017
**Project Description**

The JSW Sanjeevani Multispeciality Hospital is a rural community hospital in Dolvi Village, Maharashtra, India, a stretch that earlier lacked access to medical facilities. Its strategic location along the Mumbai-Goa Highway also helps address accident cases. The hospital prioritises natural ventilation and wide corridors to help reduce airborne disease transmission and incorporates balconies and indigenous vegetation to promote patient engagement, recovery & and rejuvenation. The JSW Foundation offers over 15 specialised consultancies with competitive rates and free services under Indian government schemes, while employing 99% of its staff from within a 25 Km radius.

The 75-bedded hospital has successfully transformed a once barren and slag-filled site into a green zone. It is designed to express compassion, wellness, and beauty while promoting the physical and psychological well-being of all users.

**Author(s):** Shimul Javeri Kadri, Sarika Shetty, Sapna Rohra, Harshini Yohee, Bhavin Patel, Rishit Jain.

**Organisation:** SJK Architects

**Client:** JSW Foundation

**Project Location:** Alibaug, India

**Geographic Coordinates:** 18.70572996039238, 73.03910745124958

**Built Area:** 8,800 m² in phase 1 expandable to 12,750 m² in phase 2

**Year of Conclusion:** 2022
Linking the project to the indicated SDGs

Unlike urban hospitals, our attempt has been to naturally ventilate most clinical spaces and wide corridors to reduce the risk of patients and healthcare providers contracting airborne diseases in closed spaces. Smooth and calm recuperation has been at the heart of designing spaces such as balconies along patient rooms, facilitating their recovery through safe engagements like walking and sitting along these balconies. These also create possibilities for interactions among patients, thus speeding their path to recovery.

Clear spatial planning adjoins and circulation ensure ease of movement for staff, patients, and families even during times of distress. Greenery is synonymous with healing, and we have incorporated landscape features throughout the campus to connect people with nature. This thought has been extended into the art program integrated within the building, showcasing the tribal Gond and Kalamkari art forms, depicting nature as a method to engage, pause, and relax in times of distress.

The hospital conducts 20+ medical camps with an average participation of 150+ people for each, covering 15 village councils and 10 districts. The experience of interacting with patients and staff in the context of distress has been crucial in designing spaces that allow for direct interaction and education in closed spaces with healthcare providers. This approach also creates a more holistic and uplifting environment that complements the medical care.
The venue considers the needs of disabled athletes and spectators from the beginning, integrating accessible pathways in course and field design, and providing inclusive seating in the stands. Tailored courses were developed to cater to different types of disabled athletes. The key focus is to minimise the impact on nature. The fundamental principle of design is to reduce ecological impact, favouring temporary and removable infrastructure to meet Olympic requirements and allow post-event adaptability. Most structures are constructed with cabins or tents, while flexible walls are used.

**Project Description**

Kuyangshu Biathlon Centre is one of the main competition venues in the Zhangjiakou Zone of the Beijing 2022 Winter Olympic Games. During the games, it undertook all competitions of the biathlon of the Winter Olympic Games and the biathlon and cross-country skiing of the Winter Paralympic Games, setting a total of 11 gold medals of the Winter Olympic Games and 38 gold medals of the Winter Paralympic Games. It is the venue with the largest number of gold medals. After the Winter Olympic Games, the facility is accessible to the public, attracting visitors year-round through outdoor festivals such as biking, running, camping, and yoga, making it a vibrant destination for all.

**Author(s):** Weimin Zhuang, Wei Zhang, Hong Zhang, Jingxian Zhao, Jiazhen Gong, Xiangyi Li, Sisi Liang, Haiyang Huang, Yuan Jia, Siyu Lei, Zhonglin Gong

**Organisation:** Architectural Design & Research Institute of Tsinghua University (THAD)

**Client:** ZhangJiaKou XingYuan Investment Development Group Co., Ltd.

**Project Location:** Chongli, Hebei, China

**Geographic Coordinates:** 40.91196055715262, 115.4812234648245

**Built Area:** 8,735 m²

**Year of Conclusion:** 2021
Linking the project to the indicated SDGs

The design focuses on "Snow for All," carefully creating specialized shooting ranges and courses for perfect competitions. Disabled spectators enjoy equal rights and fun, with easy access to special seats. A dedicated path allows Winter Paralympic athletes direct access to the starting point. The design showcases equality and inclusiveness, demonstrating respect for disabled athletes to the world.

The design prioritizes post-event utilisation, with only 8,925 square meters of permanent facilities. The 13-kilometer courses follow the terrain, preserving trees and minimising environmental impact. Gravel pavement courses can be changed into mountain bike courses or just melt into nature. Instead of an extensive reservoir on the mountain, we created five small lakes among the courses, minimising the impact on nature.

Amid China's strong promotion of winter sports, the venue's post-event impact and vibrancy greatly contribute to local economic development and youth sports participation. It has successfully hosted numerous youth snow sports events and has become a vibrant venue for various outdoor activities throughout the year.

image: xiaobin lv, jingxian wang
Obtaining quality education is the foundation to creating sustainable development. In addition to improving quality of life, access to inclusive education can help equip locals with the tools required to develop innovative solutions to the world’s greatest problems.

The reasons for lack of quality education are due to lack of adequately trained teachers, poor conditions of schools and equity issues related to opportunities provided to rural children. For quality education to be provided to the children of impoverished families, investment is needed in educational scholarships, teacher training workshops, school building and improvement of water and electricity access in schools.

To find out more about Goal 4, visit: https://www.un.org/sustainabledevelopment/education/

Schools and educational spaces are a crucial part of our investment in the future.

Whether in a refugee camp, in informal settlements or in rural communities, access to schools and education is defining the future of our children. Schools, universities and other educational institutions all require architectural design that enables a productive learning environment. However, architecture also has a key role to play in creating affordable, accessible and inclusive educational solutions for all children, including children who are marginalised or have special needs, and for communities with limited resources to maintain conventional school buildings or limited access to an existing school system. Children from poor or marginalised communities, who are female or have disabilities, must not be left behind. This requires architectural solutions that are accessible and address the needs of all students.

Examples of this can be found in school facilities for minorities or marginalised groups, in schools that enable children to stay in their local community while studying, and in schools for children with special needs.

Furthermore, the built environment can provide training opportunities regarding the sustainable performance of buildings, settlements and urban areas for both users and craftsmen. In development, as well as in use, buildings and communal facilities can interact with and promote a sustainable culture of usage.

On the level of primary education, an increased focus on knowledge regarding sustainable design and crafts will be key in building the future sustainable development.
**Project Description**
The design for Euro School, Bannerghatta aims to break the conventional school model with an organic built morphology that weaves in nature with the manmade, fostering a respect for nature among students. The school’s design incorporates the site’s natural topography into its built mass, retaining all existing trees on site. Play areas and outdoor classrooms encourage students to spend more time outdoors—also reflected in the school’s curriculum. The zero-discharge campus employs pragmatic planning to minimally harm the site’s terrain such as using the natural swale to replenish the groundwater table. Employing local/recycled materials in the design also reduces the project’s carbon footprint.

**Linking the project to the indicated SDGs**
A student’s holistic development must foster sustainable values in them from an early age. The school employs strategies to provide outdoor learning opportunities where teaching takes place with and through nature. The school aims to be a model that considers the natural environment and built habitat as mutual entities countering the disconnect between the two in most metropolitan cities. By inculcating respect for the environment from an early age, the school aims to project a future of conscious young minds, vital to today’s age of limited resources and the climate emergency.

Through its design, the school aims to counter the disconnect with nature that we see in most metropolitan cities; a gap which is only widening with time.

**Author(s):** Vijay Gupta, Saurabh Gupta, Akanksha Gupta  
**Organisation:** Vijay Gupta Architects  
**Project Location:** Bengaluru, India  
**Geographic Coordinates:** 12.827191815111552, 77.58636995125342  
**Built Area:** 11,473.43 m²
Project Description
The urban project of Chácara Florida has as main objectives the basic sanitation, the depollution of the existing waterways, which serve as a supply of drinking water to the city of São Paulo, and the elimination of serious geological risk. For this, it is planned to create parks around the streams and on the bank of the dam, which today receive sewage directly from the surrounding houses, contaminants in the risk areas and the construction of small houses to resettle the residents affected by the work.

The Chácara Florida reurbanisation Project main idea lies in the fact that in Latin America we are daily faced with social injustice. This extends to the point where the most vulnerable are forced to move into areas such as riversides, wetlands or risky hills, which are included in our design area. Throughout a participative process, the design aims to not only be a role model of intervention of vulnerable areas, but also to prove that it is possible to overcome poverty with sustainable architecture.

Linking the project to the indicated SDGs
Through the urbanisation project of Chácara Florida, the sanitation of the more than 3,000 families that reside in the area will be carried out, in addition to the depollution of the dam that is part of the drinking water supply system of the city of São Paulo, which suffers from water crises every year.

Regarding sanitation, the favela will undergo a major urbanisation process with the execution of parks and public facilities, including a market and public garden that will serve as an incentive for sustainable consumption.

Author(s): Responsible architects: Ruben Otero and Monica Drucker.
Project team: Elisabete França, Maria Teresa Fedeli, Vanessa Padiá, Mariana Guimarães, Juliana Pedroso, Rodrigo Camara, Nicole Milko, Pedro Flósi Trama, Marise Jacobsen, Matheus Alves, Bruna Bonfim and Angelica Di Febbo.
Client: Consórcio Mananciais São Paulo
Project Location: São Paulo, Brazil
Geographic Coordinates: -23.729188, -46.774062
Built Area: 781,100 m²
Project Description

Vaulted school is built just minutes away from Dhorkin Tanda, a hamlet in Maharashtra inhabited by sugarcane-cutting labourers. The hamlet had one school accommodating a total of 30 students, which was dilapidated. What the old structure lacked, the new structure had it hacked: ample lighting and ventilation achieved with the help of vaulted roofs, stand-alone sanitation facility, a kitchen for mid-day meals, and an overall conducive environment for knowledge to reside in and foster with the ‘play and learn’ ideology. The vaulted school is designed to evoke and satisfy the curiosities children are capable of and answers them in the most natural way possible.

The classroom’s orientation responds evidently to the breeze pattern and sun path. Considering the soil conditions present, a pile foundation is constructed to strengthen the substructure on which the load-bearing brick walls find their ground. The process is furthered with the vaulted metal sheet roof that minimises the heavy structural cost and makes the form structurally rigid with minimal support.

The overall site of 305 m² offers a classroom equipped with storage shelves for books and educational toys, a staff room for the teachers, designed with storage units for examination papers and academic journals and lastly, multi-purpose hall which doubles up as an additional classroom or a dining hall if and when need be.

Author(s): Yatindra Patil, Vijay Kharade, Shubham Kapre, Bharat Yadav, Ajay Harsure.
Organisation: Craft Narrative
Client: Rajshri Deshpande, Nabhangan Foundation
Project Location: Dhorkin, Aurangabad, India
Geographic Coordinates: 19°37’08.0"N 75°23’49.3"E
Built Area: 102 m²
Year of Conclusion: 2022
Linking the project to the indicated SDGs

The school is a profound design for children to explore their curiosity amidst learning their native environment and craft. The spaces mould according to anthropometry and children’s usage, making them the first priority. The play in open and closed spaces provided noise buffers and adequate sunlight for learning and protected from the harsh climate of Dhorkin.

The spaces are carefully designed in the 102 m² build-up area to leave a colossal chuck as a playground. A free path for ventilation and light is created by the high ceilings, with non-reflective roofing material to reduce heat gain.

The classroom orientation, vaults and openings respond to the breeze to keep comfortable temperatures for students. This takes a step towards the green initiative, helps students concentrate and is cost-effective.

The vaults made of metal sheets are a cost-effective material that provides classroom volume for holistic and focused learning. The structure is made of local bricks and traditional patterns to continue the rooted aesthetics and create a cost-effective building with a grounded feeling to the elevation. The budget was a major constraint in the project; materials like epoxy for flooring, corrugated sheet and brick, which were readily available around the site, were used.
Project Description
The design was conceived as Knowledge pod. A place to learn, contemplate & play all around. Pod has the potential to form communal space, where villagers with diverse ages can gather, accomplish the reading habit and also a perfect setting for storytellers too. A deliberate attempt to insert the library pod within the existing rural school and our intent is to shape it as part of the school & surrounding. Pod amidst existing rain tree, pipal tree and also encircled by graffiti artworks created by local artists and students. It creates a colourful and shaded foreground. This inserted library pod serves as the two parallel worlds, one being an introverted bookshelf and other as vibrant scribble or black board. The Library Pod is an arena for knowledge that has the potential to form a communal space.

Author(s): Yatindra Patil, Vijay Kharade, Shubham Kapre, Bharat Yadav, Ajay Harsure.
Organisation: Craft Narrative
Client: Rajshri Deshpande, Nabhangan Foundation
Project Location: Pandhari, Aurangabad, India
Geographic Coordinates: 19°43'59.4"N 75°31'07.4"E
Built Area: 17.16 m²
Year of Conclusion: 2021
Linking the project to the indicated SDGs

The pod has a unique design where it borrows shade and seatings from trees and the buildings around it and offers its own. The library is designed as a quiet space with a bookshelf and seater. The back of these bookshelves turns into a blackboard that caters to several activities, provides an under-the-tree outdoor classroom, and caters for activities like storytelling and morning assembly. The library pod is positioned as a pause point for the school as well as villagers, to take their quiet time to read. It also provides a welcoming seat for anyone from the village who wishes to cultivate a habit or gain knowledge.

The material is mostly steel sections used for electric boards with an interlocking mechanism. The roofing was a simple corrugated sheet with a paint finish. The structure is kept light and according to the child’s anthropometry.

The library helps students understand their own culture and exposes them to other cultures, gives them the most recent information, and exposes students to fresh ideas, literature, and ideas, making them aware of the history and geography of both the near and far regions. An intervention like the library pod holds the potential to administer a thought and a change of wave.
Project Description
MJS is a newly founded private initiative with the aim of creating an exemplary kindergarten and primary school that provides an inspirational and practical education to the young children in its care. It is located near Sentema, a village 20 km west of Kampala. The inspiration for the design was to create a 'large home' for the children that functions as a comfortable enabling educational environment. The architectural ambition is not programmaticaly prescriptive, but rather to inspire teachers and students alike to inhabit spaces in multiple and creative ways, to (literally) think outside the box and to treat the entire school, not just the classroom, as a greater learning environment. Spaces are organically shaped and characterised by a warm, natural materiality accentuated by playful colours.

The thick, earthen, undulating external walls stop short of the roof allowing the flow of fresh air to cool down the spaces. Direct sunlight is filtered through the roof in selected areas filling the space with comfortable levels of natural light. Free flowing forms of internal teaching spaces resonate in the landscape design in fluid, flowing lines which seek to nurture curiosity for learning within children. The project seeks to improve biodiversity, re-create indigenous forests, whilst ensuring activities on the land are sustainable, enriching the overall environment. This is achieved through conservation agriculture, soil regeneration and sustainable indigenous timber plantations.

Author(s): Allan Semakula, Deborah Tusiime, Edson Agume, Felix Holland, Geoffrey Addah, Guy Namanya, Morgane Charron, Norbert Ahumuza, Paul Kyoma Asiimwe, Peter Ssemakula Mukiibi, Philip Matovu, Robert Mugisha, Sarah K Ndagire, Torsten Lorange, Wilson Sendikwanawa  
Organisation: Localworks  
Client: Friends of Mustardseed  
Project Location: Wakiso, Uganda  
Geographic Coordinates: 0°22'53.30"N 32°24'23.10"E  
Built Area: 1.146 m²  
Year of Conclusion: 2021
Linking the project to the indicated SDGs
Almost all of the building material is sourced and harvested on or within a 2km radius of the site keeping production costs low and the carbon footprint close to zero. The project also leaves the site with more biodiversity than it started with. Conservation agriculture, soil regeneration and planting an on-site forestry programme using fast growing indigenous species have been developed in concert with the school’s ecologically oriented curriculum. The non-stabilised earth building material not only prevents deforestation stimulated by the burning of commonly used clay bricks but also, all buildings retain the potential to be demolished with minimal damage to the site which can be easily repurposed.

Across Uganda, fast growing eucalyptus trees are being planted more and more frequently; it is a non-indigenous species that degrades the local environment. Whilst necessary to meet the high firewood demand for cooking, instead of eucalyptus, this project will use indigenous softwood trees, planted as part of a carbon-positive sustainable forestry programme. This effort promotes and encourages the return of local vegetation species that are slowly dying out.
Project Description
Since 2014, 52 schools have become operational. Many more are in the process of construction in every region of the country. Every school aims to serve its community, support teachers and students. School designs are inspired by the everyday, design cues can come from the rhythm of Thai dance, or a forest flower inspires roof shapes. The school design is based on four core principles: respect the surrounding environment; promote the indigenous spirit and traditional culture; take advantage of local materials and hire local workers; combine design suitable for modern education with traditional methods.

Linking the project to the indicated SDGs
Though varied in context and design, schools sprung up like “flowers of the soil”, representing justice, the spirit of integration and inspiration. They served to build strong social consciousness, contribute educational significance, and safeguard indigenous traditions. Just as importantly, they motivated disadvantaged communities to raise their voices and contribute to humanity’s rich and diverse culture.

Author(s): Hoang Thuc Hao & 1+1>2
Organisation: Hoang Thuc Hao & 1+1>2
Location: Ha Noi, Viet Nam
Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.¹ Yet, gender inequality persists worldwide, depriving women and girls of their basic rights and opportunities. Achieving gender equality and the empowerment of women and girls will require more vigorous efforts, including legal frameworks, to counter deeply rooted gender-based discrimination that often results from patriarchal attitudes and related social norms.²

To support a movement towards gender equality, the design of buildings, settlements and urban areas must be inclusive to all citizens regardless of gender.

The organisation of public spaces, institutions and services must prioritise the security of girls, women and LGBT+ citizens and help minimise the risk of abuse. The ability to move safely in public spaces, in public institutions and at the workplace is essential to the inclusion of women and girls in civil society and to women being able to hold a job outside of their home, which is key to being self-supporting. Also needed are affordable and secure buildings to provide health services, basic sanitary services and meeting places for women and LGBT+ citizens. Examples of this includes maternity clinics, community centres, safe houses or secure public bathrooms.

Design of playgrounds, public parks and sports facilities must offer girls, women and LGBT+ citizens equal access to leisure and physical activities and create conditions that encourage use by all.

The building industry itself must work towards equal pay, promote diversity and work to oppose sexual harassment. As part of this, the industry must support women’s ability to handle heavy construction processes that are otherwise reserved for men, for example by the introduction of lifting technologies. From design through construction, the industry must avoid a narrowly gendered work culture in order to promote diversity and co-ownership so that more women and LGBT+ professionals will be able to join the industry at all levels.

To find out more about Goal #5, visit:

¹ Extract from UN’s Sustainability Goals:

² Extract from UN’s SDGs Knowledge Platform:
https://sustainabledevelopment.un.org/sdg5
Project Description
City for Them is a transformative urban intervention in Morro da Penha, Manhumirim, Minas Gerais. Focused on empowering low-income Black women and enhancing urban inclusivity, this initiative has reshaped a designated street into an empowering space. With educational activities, expert lectures, and workshops on women’s rights and urban planning, the event fosters dialogue and collective learning. The intervention’s impact is evident in renewed self-esteem, increased awareness of women’s rights, and the distribution of informative booklets. City for Them stands as a beacon of change, inspiring equitable urban solutions.

The intervention’s ripple effect is tangible – women gain renewed confidence, heightened awareness, and informational resources. This initiative’s influence resonates beyond its location, inspiring equitable urban approaches nationwide.

Author: Anna Candida Valentim
Project Location: Manhumirim, Brazil
Geographic Coordinates: 20.3622° S 41.9581° W.
Year of Conclusion: 2022
Linking the project to the indicated SDGs

The urban intervention City for Them aligns directly with the United Nations’ Agenda 2030 and SDG 5 (Sustainable Development Goal), which aims to achieve gender equality and empower all women and girls.

By promoting the empowerment of low-income Black women, providing information on rights, female leadership, and combating gender-based violence, the City for Them intervention directly contributed to the realization of SDG 5. Additionally, the inclusion of women’s demands in urban planning and the pursuit of safer and more inclusive urban spaces are essential actions to achieve gender equality and ensure that all women have a voice and participation in shaping the cities they live in. Thus, the City for Them intervention not only had a positive impact on the Morro da Penha community but also exemplified how local actions can contribute to achieving global goals, such as SDG 5. Through collective engagement, the intervention showed that each step towards gender equality is fundamental in building a fairer and more inclusive future for all women and girls, not only in Morro da Penha but worldwide.
Project Description
The One University One Village (1U1V) Initiative aspires to bring together the expertise, knowledge, and human resources of “a university” to improve the livelihood of “a village” and its needy villagers in a strategic, systematic, and sustainable manner. The team conducted post-earthquake reconstructions and building renewal projects in southwest rural China with “high-science-low-technology” strategies and “local materials, local labour, and local technology” principles. This holistic strategy mended the environmental, economic, and social sustainability of poor rural areas. The Terra Centre has been built in Kunming as the working base to research, promote, train and knowledge transfer.

Instead of promoting the benefits of non-local industrial materials, 1U1V team determined whether the shortcomings of traditional rammed earth technology and the fragility of village life could be addressed in situ. The team explores the research and innovates rammed earth building technology to provide a safe, comfortable, and sustainable construction strategy that the villagers can afford, own, and disseminate. The villagers were empowered through the demonstration projects with craftsman training and co-construction. More than 80 village houses have been rebuilt and more than 9 villager craftsman construction teams (including a female construction team) were established till 2023.

Author(s): Edward Ng (co-founder and programme leader), Li Wan (co-founder and CEO), Xinan Chi (project coordinator), Wenfeng Bai (technical advisor), Fang Tian (project coordinator), Xiaoxue Liu (project coordinator), Lai Zhou (project coordinator), Jingwei Zhou (project coordinator)
Organisation: One University One Village team, The Chinese University of Hong Kong
Project Location: Rural areas of Sichuan and Yunnan province, Southwest Rural, China
Built Area: 36,000 m²
Linking the project to the indicated SDGs

The 1U1V programme increased villagers’ skills and incomes and improved building safety to avoid poverty caused by earthquakes (SDG 1). Rural craftsman training plans increased the number of adults who have technical and vocational skills (Target 4.4). The team engaged women into construction and gave women and men equal pay for equal work to promote gender equality (SDG 5). The establishment of village construction teams supported productive activities, decent job creation, entrepreneurship, creativity and innovation and encouraged the formalisation and growth of micro-enterprises (Target 8.3).

The team maximised the use of local and natural materials in a sustainable manner (Target 12.2). The villagers got relevant information and awareness for sustainable development and lifestyles and became interested in switching back from brick-concrete houses (Target 12.8). The team established long-term partnership for villagers, government officers, academics, professionals, and volunteers, and share knowledge, expertise, technology and financial resources to coordinate and explore this new sustainable way of rural construction (Target 17.16 and 17.17).
Project Description
The project was designed as the first large scale project with CLT and GLT structure in S-E Europe as flagship two-levels office building, based on utmost ecological and long-term sustainability. The building acts as a visual interface between two antagonistic spaces—an industrial platform used for production and a natural landscape with strong horizontal lines. The design workflow followed four major objectives: Sustainable prefabricated CLT and GLT construction, healthy and inclusive working spaces: individually room-controlled comfort and high-quality work environment, increased noise protection, passive construction for insulation and air-tightness, heat recovery ventilation system; ecology: use of geothermal energy, high efficiency biomass cogeneration plant for heating and electricity, optimisation of utilities costs, green roofs, enhanced daylight autonomy, increased degree of recyclable building; high quality architecture and landscape.

Author(s): Sergiu Catălin Petrea, Sabrina Ene-Butnaru, Cristina Mototolea, Sebastian-Ștefan Apostol, Dan Alexandru Roșu, Tania Victoria Bănciulă, Diana-Elena Fusea, Ovidiu-Ion Bălășoiu
Organisation: TecTo Arhitectura
Client: HS Timber Productions
Project Location: Reci, Covasna County, Romania
Geographic Coordinates: 45.854943589103854, 25.94300975962351
Built Area: 1,655 m²
Year of Conclusion: 2019
Linking the project to the indicated SDGs

The main challenge was to create an office building for around sixty people that had to provide healthy lives and promote well-being for all at all ages and achieve gender equality through operational use. The owner aimed to achieve full and productive employment and decent work for all through a sustainable building. The green roofs and the surrounding landscape collect and filter rainwater ensuring availability and sustainable management of water. Moreover, it restores to nature the built footprint and promotes sustainable use of terrestrial ecosystems, enhancing local biodiversity. The building has a heating and cooling system based on a well with enhanced heat collection and a heat pump with hot/cold puffer system and a biomass cogeneration plant for heating and electricity while the ventilation system uses heat recovery to minimise consumption.

This ensures sustainable consumption and production patterns and acts as an example of fighting against climate change. The project strategy uses resilient infrastructure and promotes inclusive and sustainable industrialisation. Finally, it is an example of good architectural practice to show how a built environment may become inclusive, safe, resilient and sustainable, its awards in several competitions backing up the idea.
PRODUCT DEVELOPMENT & MARKETING OFFICES,
KHURRIANWALA, PUNJAB, PAKISTAN | CREATING EQUALITY/INCLUSIVENESS IN THE WORKPLACE-A CATALYST FOR CHANGE

Project Description
The project is located in a peri-urban area in an industrial estate. The new offices of product development & marketing are connected to a production facility. The design is conceived as an open plan inclusive and nondiscriminatory workplace. The new building incorporated principles of biophilia, passive design and energy conservation. The locality of this project is important as the preconceived notion of women's subservient status is prevalent in society. The design of the new offices enabled gender equality in the workplace through an open plan by placing women with ease next to their male colleagues, thus normalising the feminine presence.

The shared workspaces were interspersed with occasional meeting areas to encourage collaboration, cultivating gender interaction. The open plan fostered communication between various management levels. Facilitating the rightful candidate to rise in the hierarchal order in the company. Gender-specific spaces were created to give women privacy, security, and comfort.

Author(s): Amina Qayyum Mirza
Organisation: Office of Metropolitan Design, Pakistan
Client: Navid Fazil, Interloop Pvt Limited
Project Location: Khurrianwala, Punjab, Pakistan
Geographic Coordinates: 31.448165, 73.315977
Built Area: 1858.0608 m²
Year of Conclusion: 2015
Linking the project to the indicated SDGs

Pakistan is the fifth most populated country in the world, with more than 50% female population. (Pakistan population 2022). The engagement of women workforce benefits the country’s economy and helps alleviate poverty. At a micro level in the peri-urban area, these projects act as a catalyst for change in the perception of built space and work environment. It created an empowering equitable unbiased environment lessening the gender divide.

The project had a significant impact on the company’s policy for inclusion and recognition of gender-specific needs. Leading to women empowerment as an integral part of Vision 2025. At a macro level, it improves the lives of citizens of the country as women prioritise the well-being of their families and invest all their earnings in improving the future prospects of their children.
**Project Description**

Through the cooperation with Kunming University of Science and Technology (KUST), One University One Village (1U1V) team improved the technology and performance of traditional earth construction in Southwest China. In order to carry out artisans training, to provide space for conducting experiments, research and practical study, and to showcase the achievements of innovative earth construction, 1U1V team built the Terra Centre in KUST campus. It is also a research and education tool for villagers, government officers, and experts. The result verified an appropriated solution of the rural construction that provides references for national and local policies and earthen architecture standards.

Terra Centre applied scientific method and appropriate technology, with local materials, local labour, and local technology, to encourage endogenous and sustainable development in rural China. Proper passive design strategies have been selected based on local climate conditions, so that no HVAC system is needed. 89% of the building materials (by weight) are local natural materials. No industrial stabiliser was added into the wall. Industrial materials are limited and efficiently used in key structural parts to ensure building safety and quality. The result of a series of seismic tests shows that the seismic performance of this innovative rammed earth building can match the seismic codes perfectly.
Linking the project to the indicated SDGs

The team trained villager craftsmen during and after this project to increase the number of adults who have new sustainable construction skills (Target 4.4). Craftswomen have been engaged in construction to promote gender equality (SDG 5). Several villagers’ construction teams have been established to encourage the formalisation and growth of micro-sized enterprises (Target 8.3). Preferential use of local and natural materials responds to the Target 12.2. No industrial stabiliser was added in the wall, i.e., the wall of this building is 100% recyclable and pollution-free. It reduces the construction waste caused by building construction (Target 12.5). The villagers got relevant information and awareness for sustainable development and became interested in learning innovative rammed earth construction (Target 12.8). The Terra Centre established partnerships for villagers, government officers, academics, professionals, and volunteers, and shared knowledge, expertise, technology and financial resources to coordinate and explore this new sustainable way of rural construction (Target 17.16 and 17.17).
**Project Description**

Banati Para is a remote village in Kuakata, Bangladesh - an area prone to frequent cyclones and having a high salinity level. These climatic conditions lead to a scarcity in the availability of safe and clean water, with the women and adolescent girls of the community being among the most affected, struggling to maintain proper hygiene and sanitation. "Botol Bari" is a low-cost lightweight community hub built for the women, by the women, where they can congregate and collaborate with each other while also having access to proper toilets and bathing facilities within a secure and clean environment.

Botol Bari takes its shape from a framework of locally sourced bamboo added to the existing columns of a defunct structure, creating a form that is able to withstand strong winds and water surges during a cyclone. Additionally, to ensure a low-cost and easily replicable wall material, discarded plastic bottles and old fishing nets from the locality were combined with mud and cement to form a homogenous green wall held together with the bamboo framework. The roof was designed to harvest rainwater and act as a simple filtration system using natural materials, local vegetation and old plastic bottles. It also houses an underground bunker that has been repurposed as a communal storm room.

Author(s): SILT  
Organisation: IAB - Institute of Architects Bangladesh  
Client: ActionAid Bangladesh  
Project Location: Kuakata, Bangladesh  
Geographic Coordinates: 21.961756, 90.301026  
Built Area: Approximately 90 m²  
Year of Conclusion: 2020
Linking the project to the indicated SDGs

Botol Bari provides women and young girls of Bariati Para a safe space to engage with each other freely, build a resilient tribe, and gain access to proper hygiene facilities - needs that are hard to meet in a disaster prone and water starved location.

The space is built entirely by combining locally available materials with repurposed waste in innovative ways, leading to a reduced construction cost and carbon footprint. Built in collaboration with local skilled labour and the community at large, the construction of this project was halted during the onset of the pandemic in March 2020, right before the roof could be completed. Since then, Botol Bari has survived multiple cyclones in its current form. Most notably, cyclone Sitrang in 2022.

The active involvement of women from the community in this endeavour has been remarkable. They picked up the technique to construct the walls very quickly and enthusiastically participated in constructing the shelter. This empowering engagement created a sense of ownership, transforming the hub into a space that truly belonged to them.
Access to water, sanitation and hygiene is a human right, yet billions are still faced with daily challenges accessing even the most basic of services. Clean, accessible water for all is an essential part of the world we want to live in, and there is sufficient fresh water on the planet to achieve this. However, due to bad economics or poor infrastructure, millions of people including children die every year from diseases associated with inadequate water supply, sanitation and hygiene.¹

Adequate treatment and disposal of sewage, access to clean drinking water and access to handwashing and cleaning are crucial to human health and to stopping the spread of bacteria and viruses, such as Schistosomiasis.

Buildings and public spaces must be designed so that access to handwashing and cleaning is accessible to all citizens. Furthermore, to take advantage of rainfall where clean water is scarce, buildings must be designed so that rainwater can be collected, purified and used as drinking water.

In areas where rainwater does not need to be collected for drinking water, buildings and urban areas must be designed so that rainwater can enter the groundwater without being mixed with wastewater or being polluted in other ways. As for sanitation, the buildings, services, sewage systems and infrastructure must be planned and designed to keep bacteria and contaminated water separate from clean water and out of contact with citizens. A key part of this is to ensure access to toilet facilities that are designed to handle the waste produced. Building materials that do not contribute to groundwater contamination should be chosen, whether during extraction, construction or in use.

Furthermore, urban areas, settlements and buildings must be designed to withstand climate change related to water, such as more extreme precipitation, drought and floods. Landscape architecture and urban planning must protect freshwater resources through conservation projects and the design of recreational areas that protect, collect and handle water.

Examples of this are found in water-handling features at building level, in climate adaptation projects on an urban scale, and in communal toilets and washing facilities.

¹ Extract from UN’s Sustainability Goals: https://www.un.org/sustainabledevelopment/water-and-sanitation/
The linear park under the Rio-Niteroi bridge creates opportunity for alternative sustainable mobility by tram and bikes. It contributes to the generation of clean energy by wind, sea tides and the movement of the waves. It supports restoration of the once exuberant marine life of the Guanabara bay. The project also includes support for container facilities that host hotels, restaurants, cultural equipment and, social housing close to Rio de Janeiro's City Centre, as well as luxury homes with amazing views in the middle of the bay subsidised social housing.

Guanabara Bay. Is the greatest natural asset of Rio de Janeiro. Its waters were home to hundreds of whales and dolphins before the pollution, destruction and death caused by the ostensible occupation of its banks by 7 million humans. After 5 centuries of predatory occupation, the current understanding of sustainability made a structure crossing the bay to support one single means of transport obsolete and, the least sustainable of all. Due to its strategic position, the possibilities for optimising the use of the bridge structure range from sustainable urban mobility to the generation of clean energy; from mitigating the housing deficit to creating quality public spaces.

Linking the project to the indicated SDGs
The Re-Bridge project ensures healthy lives and promotes well-being for all by creating opportunities for active means of transport to connect Rio de Janeiro and Niteroi, the biggest cities in the region, in more inclusive, and sustainable ways. The construction of the bridge in 1978 allowed the original route between the neighbouring cities, to be reduced from 85km, or 2 hours by car, to 13.3km, or 20 minutes. However, with the urban population growth and the popularisation of cars in Brazil, the new route can now take up 2 hours again for those who need to use it during peak hours. The construction of a second layer underneath the bridge to support a tram line, a bike lane and pedestrian space will make it possible to cross the bridge within the same 2 hours, but in much healthier ways.

It also ensures sustainable management of the water and promotes sustainable use of the marine resources with research facilities to work on the restoration of the bay. It uses the waves, wind and sea tides to generate sustainable energy for public use and to support the diverse equipment that will be added to the complex, using the existing pillars and additional structure.
Project Description

Taking 10 years to conceptualise, 1 Lasam is the first GBI Platinum Building in Perak. Its V-shape footprint is designed to maximise the footprint, with a courtyard carved out in the centre for natural ventilation throughout. Fully built with exposed red-bricks and concrete, this green building is also entirely powered by solar panels. Lush greenery occupies breakout spaces for the worker who enjoys views out to nature. Double layered brick walls at the west facing facade cut down heat gain substantially. Being the first building in the country to win PAM Awards in SDGs category, 1 Lasam has fulfilled eight categories in this United Nation’s standard.

A central courtyard was carved in the centre, to allow more daylight into the office spaces. Nako windows were installed at high levels of all office spaces for natural cross and stack ventilation through the central courtyard, so that no air conditioning would be required during a cool day.

The 5-story office block comes with majority workspaces with ancillary spaces e.g., conference room, gallery space etc. The design team explored the concept of floating boxes which further developed into box-in-box geometry. The higher floors were lifted up supported by a bold V-shape column, to allow for vehicle circulation on the street level. With the neighbouring army camp, many restrictions in building design were imposed.

Author(s): Shyuan Kuee (principal architect), Shukri Mohamed (senior associate), Foong Wai Toh (senior designer)
Organisation: Kuee Architecture
Client: Nurilim Sdn Bhd
Project Location: Ipoh, Malaysia
Geographic Coordinates: 4.5966458, 101.0926556
Built Area: 2,787.1 m²
Year of Conclusion: 2022
Linking the project to the indicated SDGs

SDG 3: waterproofing sealant with no formaldehyde (target 3.9); 10 m of outdoor building smoking area away from building openings (target 3.A). SDG 6: storm water control meeting MSMA requirements (target 6.3); rainwater harvesting leads to 51% reduction in portable water; greywater recycling leads to 12.03% reduction in portable water; potable water for ALL landscape irrigation is NOT needed, reduced annual potable water consumption by 67.55% (target 6.4). SDG 7: solar PV panels for renewable energy (40kWp) (target 7.2). SDG 11: up to 37.10% of the total material cost to have recycled content, dedicated recycling bins during construction stage, at least 75% of construction waste is diverted to recycling centres; dedicated recycling bins during construction stage, at least 50% of construction waste is diverted to recycling centres (target 12.6); real time energy and water usage display (target 12.8). SDG 13: use zero ODP products (target 13.1). SDG 14: storm water control meeting MSMA requirements (target 14.1). SDG 15: project complies with local town planning requirements (target 15.1), 100% of all timber products (mainly doors) were certified by MTCC/ FSC (target 15.2).
Project Description
The Concept WRRF Yixing, is a future-oriented Water Resource Recovery Facility & factory. The aim of the project is to upgrade conventional sewage treatment plants to environmental-friendly and recycling-oriented plants. Alleviating the not-in-my-backyard effect, the upgrade will transform a closed pollution-control plant into a sustainable and future-oriented infrastructure project that is environmental-friendly, open to the public, harmonious with its neighbourhood and available for science education.

The overall planning of the plant is implemented in pursuit of an intensive layout, the efficient use of land, the integration of landscape and buildings as well as, care for humans. The wastewater will be treated into clean water, fertilisers and energies, such as biogas and thermal energy. The clean water will irrigate farmland and return to nature. The fertilisers and energies are sustainable products from waste resources.

A special “Tank Cafe” clings to the southern wall of a secondary sedimentation tank. The specially designed space can be also transformed into a multi-functional conference hall or exhibition hall, serving for both professional and popular science activities. Several small courtyards scattered in the coffee shop have optimised views and positions of openings while covering structural elements and separating different zones.

Author(s): Yehao Song, Jingfen Sun, Dan Xie, Shi lei, Chen Xiaojuan, Chu Yingnan, Loo Huixin
Organisation: SUP Atelier of THAD
Client: CSD Water Service
Project Location: Yixing, Jiangsu Province, China
Geographic Coordinates: 31.449348NL,119.792381EL
Built Area: 14,601 m²
Year of Conclusion: 2021
Linking the project to the indicated SDGs

The aim of the project is to upgrade conventional sewage treatment plants to environmental-friendly and recycling-oriented plants. Alleviating the Not-in-my-backyard effect, the upgrade will transform a closed pollution-control plant into a sustainable and future-oriented infrastructure project that is environmental-friendly, open to the public, harmonious with its neighbourhood and available for science education.

The wastewater will be treated into clean water, fertilisers and energies, such as biogas and thermal energy. The clean water will irrigate farmland and return to nature. The fertilisers and energies are sustainable products from waste resources.

The overall planning and architectural design of the plant area respect and integrate the design of sewage and sludge treatment processes and achieve the four goals of water quality sustainability, resource recycling, energy self-sufficiency, and environmental friendliness.
Project Description

No House Without Bathroom is a housing improvement programme implemented through technical assistance provided by architects in homes of low-income families. It is based on the Federal Law which ensures free technical assistance for social housing (ATHIS) as a public housing policy and aims to meet household sanitation needs relating to water use, hygiene and the proper sewage disposal by building sanitary facilities in houses where there is no bathroom or where one is in precarious condition. The sanitation solutions are designed on the site according to the needs of each family, environmental conditions and infrastructure installed in the community, so it seeks to optimise resources in its implementation. In the midst of the Covid-19 pandemic, the Council of Architecture and Urbanism of Rio Grande do Sul conceived the programme No House Without Bathroom, as a way to claim for mobilisation of the public authorities regarding the urgent need for investments in household sanitation. The inter-institutional cooperation established between governments, institutions of public interest and architects’ entities underpinned its implementation. The programme is being developed in a dozen cities. So far, has invested around US$ 3 million with public funding and benefited 1,200 families in Rio Grande do Sul.

Author(s): Tiago Holzmann da Silva, Paulo Soares and Sandra Becker (general coordinators, CAU/RS), Fausto Leiria (lawyer assistant, CAU/RS), Roberto Luiz Decó (local coordinator, SEACA), Isabel Valente, Eduardo Bialdauf and Josiane Scotton (supervisors, SEACA, IAB/RS, SAERGS).


Organisation: Council of Architecture and Urbanism of Rio Grande do Sul (CAU/RS), Association of Engineers and Architects of Canoas (SEACA), Institute of Architects of Brazil, Rio Grande do Sul Department (IAB/RS) and Syndicate of Architects in State of Rio Grande do Sul (SAERGS).

Client: State Department of Housing (SOP/RS), City Hall of Canoas and 359 low-income families.

Project Location: Canoas, Rio Grande do Sul, Brazil.

Built Area: 3,6 m².

Year of Conclusion: 2023 (in progress).
Linking the project to the indicated SDGs

The main purpose of the No House Without Bathroom programme is to promote technical assistance for social housing, as a public policy that combines access to water and sanitation with the right to adequate housing and the city (SDG 6 / SDG 11), in order to contribute to the achievement of the sustainable development goals and targets defined by United Nations Urban Agenda 2030. No House Without Bathroom programme also contributes to reducing maternal and child mortality related to drinking water, hygiene and sanitation and the transmission of waterborne diseases, e.g., Ascaridea, Cholera, Leptospirosis, Hepatitis, Typhoid, etc. (SDG 3) and promoting social inclusion by ensuring equal access to public goods and services for all, regardless of economic conditions (SDG 10).

Concerning the encouragement and promotion of partnerships, No House Without Bathroom is part of a joint effort between several public institutions and civil society, mobilising financial, technical and management resources to support the implementation of the programme (SGD 17).
**Project Description**

During the Covid pandemic, a family of seven swapped their hectic life in São Paulo for a quiet routine in Valinhos, a country town 100 kilometres away, on a farm they had bought two decades earlier. The existing house was dark and couldn’t cope with the daily routine of all the residents. The rooms were dark, there was inadequate ventilation and the energy and water infrastructure, which had been sufficient for weekend living, was no longer able to cope with more intense use.

Casa SL is a single-family dwelling built with prefabricated materials and designed to embrace the sun, wind, light and surroundings through passive bioclimatic design. Our office was called in to build a house quickly, which could be designed and built within a year, with the aim of transforming the 10,000m² site into their permanent home.

The design of the SL house has been thought out so that it can interact in the best possible way with the terrain and its landscape. The social area (ground floor) explores more intensely the relationship with the terrain, while the intimate area (first floor) creates a more intense visual relationship with the landscape and is oriented according to the east position of the sun.

The rotation between the two blocks emerges as a result of the strategies adopted and creates spaces for conviviality and contemplation.
Linking the project to the indicated SDGs

6- Capture and use of rainwater for irrigation and cleaning, reducing the usage of water up to 70%.
6- Low-flow faucets, showerheads, and toilets to achieve water savings.
7- 100% of the energy used by all structures on the 10,000m² property (2 houses, leisure pavilion, swimming pool, vegetable garden and workers house) is produced by solar panels on the roof of the SL house.
8- Hiring of local labour, reducing the need to travel and stimulating the local economy, while at the same time increasing the building’s sense of identity and belonging to the place where it is located.
9- Production and use of prefabricated parts reduces rubbish and increases the efficiency of production reducing the time amount to build and assemble.

11- Passive bioclimatic design allowing the House to stay between 19°C and 24°C without the use of air conditioning. All the rooms have cross-ventilation and the interior of the house has a 4m x 4m atrium with double-height ceilings that allows the roof to be fully opened, stimulating the creation of a vertical chimney that increases the wind flow due to the difference in pressure caused by the venturi effect.
PAJEÚ FILTERING GARDENS

Project Description:
The gardens benefit the aquatic ecosystem and the quality of life of citizens residing around the area by improving water quality in addition to landscaping the Pajeú Park. Considered the largest built in public areas in Brazil, the Biofiltering Gardens of Pajeú Park have 1.19 km of linear gardens, totaling 12,000 m², acting as a natural set of sewage treatment through aquatic plants and substrates, without using chemical products, through a system of natural and constructed wetlands, operating by gravity, promoting the local fauna and flora, in addition to cleaning up the Pajeú creek and Lagoa da Fazenda.

Linking the project to the indicated SDGs
In addition to the main objective of improving water quality and subsequent depollution of Riacho Pajeú and Lagoa da Fazenda using Nature-Based Solutions (NBS), the project included the urbanisation of the surroundings of the stream, providing a safe, inclusive, public space accessible and green while strengthening resilience and climate adaptation capacity, restoring a formerly degraded area, reducing the effects of droughts, floods and loss of biodiversity in Pajeú Park.

Author(s): Ursula Priscyla Santana Nóbrega.
Organisation: Prefeitura de Sobral
Project Location: Sobral, Brazil
Geographic Coordinates: 03.679416339676847, -40.346823688953066
Built Area: 5,846.59 m²
Year of Conclusion: 2019
Our everyday lives depend on reliable and affordable energy services to function smoothly and to develop equitably. In fact, energy is central to nearly every major challenge and opportunity the world faces today. Be it for jobs, security, climate change, food production or increasing incomes, access to energy for all is essential.

Focusing on universal access to energy, increased energy efficiency and the increased use of renewable energy through new economic and job opportunities is crucial to creating more sustainable and inclusive communities and resilience to environmental issues like climate change.

However, the challenge is far from being solved and there needs to be more access to clean fuel and technology and more progress needs to be made regarding integrating renewable energy into end-use applications in buildings, transport and industry.

Examples of this includes the use of daylight, natural ventilation or a choice of materials that support heating or cooling, such as heavy exterior walls in a hot and dry climate. Solutions that would consume a high level of energy in use in a given context must be avoided, such as exposed all-glass facades in a hot climate. The built environment can also contribute through the development of solutions that employ innovative sources of renewable energy.

Building and planning must be approached with a focus on total energy consumption through the whole life cycle. As part of this, energy-intensive materials and materials produced with non-clean energy, such as coal-fired bricks, must be phased out or find new forms.
Project Description
CEIDAHS will be a space for technicians, specialists and the general society, to plan, manage and carry out innovative projects that improve their living conditions. They and become involved in the decision-making processes along with other stakeholders. This project is designed so that different stakeholders in habitat management can dialogue, learn, and collaboratively generate knowledge on eco-technologies, bioclimate, participatory governance methodologies, development of public policy instruments in housing and innovation, incubation and strengthening of social entrepreneurship; and technological tools related to industry 2.0.

CEIDAHS aims to contribute in the medium and long term to overcoming social backwardness, territorial inequities, and inequalities in fair access to habitat through forms of public action that consider the systemic dimension of the problems in line with the SDGs.

The building will have green spaces designed to generate hygrothermal comfort for users, green roofs for experimenting with urban agriculture, solar chimneys, and passive air conditioning. This design will reduce the use of artificial air conditioning by 45%.

Author(s): Fernando Córdova Canela, Hiram Eduardo Urías Barrera, Carlos Emmanuel Aguilar Méndez, Abril Casas Cervantes, Belén Olaya García
Organisation: Universidad de Guadalajara/ Laboratorio Nacional de Vivienda y Comunidades Sustentables
Project Location: Guadalajara, México
Geographic Coordinates: 20.464063 N, -103.415044 W
Built Area: 1,100 m²
Linking the project to the indicated SDGs

SDG 7: The formation of new technological development and energy efficiency practices can improve the quality and affordability of housing. In turn, socio-technical transitions and the application of knowledge in the domestic and neighbourhood environment in relation to bioclimatic building materials and accessible eco-technology will help reduce the consumption of fossil fuels and promote energy savings. The CEIDAHS constitutes this space for dialogue between different actors to learn, analyse and apply eco-technologies at the household and neighbourhood scale.

SDG 11: Inclusive urbanisation requires increasing the capacity for action and planning from the communities in conjunction with the actors who manage and study the territory through knowledgeable dialogue.

CEIDAHS as a meeting and learning space will enhance the collaboration of different stakeholders in the development of new policies, processes, and actions that promote energy efficiency, renewable energy production, and waste management to significantly reduce the environmental footprint of cities.
Project Description
Small-scale sharing space in a leisure park that can be booked by residents through an intelligence system. Moreover, through collaboration with the BREEAM system in the UK and LEED system in the US, the project serves as a zero-energy consumption demonstrative project in cold areas of North China, aiming to reduce energy consumption, improve thermal comfort, and promote sustainability through theme activities of mitigating the increasingly severe environmental problems. Main structures of prefabricated timberwork and louvers of prefabricated carbonised wood correspond to the zero-carbon concept from perspectives of materials and construction. Architectural elements of the 3 units were classified into various groups of standardised modules with green technology.

The project borders a community playground on the south. Unlike the centralised layout often seen in sustainable projects, the main building consists of 3 similar units that are scattered among trees as small-scaled landscape buildings: a fitness centre, a lounge and a book cafe (doubling as a showroom of popular science), which can be operated separately. The 3 units centre on a sunken courtyard paved with permeable gravel. Users can enter this small building cluster via a wooden walkway through the rain garden. The overhead wooden walkway and the pipe trenches underneath connect the 3 units with a half-earthed energy & smart control centre, forming a “3 driven by 1” mode.

Author(s): Yehao Song, Xiaojuan Chen, Dan Xie, Zhenghao Lin
Organisation: SUP Atelier of THAD
Client: Cifi Group
Project Location: Beijing, China
Built Area: 157 m²
Year of Conclusion: 2017
Linking the project to the indicated SDGs

SDGs 3: The main building consists of 3 similar units that are scattered among trees as small-scaled landscape buildings: a fitness centre, a lounge and a book cafe, which can be operated separately.

SDGs 6: The 3 units centre on a sunken courtyard paved with permeable gravel. Sustainable drainage strategies have been integrated into the landscape too: green roofs and a permeable courtyard can purify and retain rainwater.

SDGs 7: The applications of renewable energy include film glass, photovoltaic power generation and a hybrid heating system powered by both solar thermal power and air-source heat pump.

The buildings are equipped with intelligence control systems. Through real-time monitoring of the environmental indicators, the energy system can be controlled automatically to save energy and reduce emission.

SDGs 13: This project is located in a cold area, where heating and cooling energy consumption are both huge. High-performance envelopes with thermal indicators greatly outperforming the minimum code. Passive design strategies, such as projected roofs with air-ducting devices and composite façades with photovoltaic double glazing and prefabricated double-layered wooden envelope, can boost natural ventilation.
Project Description
Located in central rural China, the project creates an indoor playground and lecture hall with natural ventilation and natural lighting and invigorates the regularly planned campus. Located in central rural China, the project accommodates an indoor playground and lecture hall and invigorates the regularly planned campus. The building stretches across the altitude of the site with the main space at the higher part and service room at the lower part. Natural ventilation and lighting serve as major sustainable strategies to improve thermal comfort. Prefabricated materials and construction methods are chosen to reduce the cost of equipment and maintenance of the project.

Linking the project to the indicated SDGs
The project is being used as a shared teaching facility for villagers and students to reduce poverty, improve education quality and create sustainable communities. It retains the trees of the current land, uses recyclable and prefabricated materials for construction, and integrates innovative passive design strategy to reduce construction cost and energy consumptions. The colour puzzle façade design originates from the local lake and popularized the concept of sustainable architecture in daily use.
Project Description
The project is an exhibition pavilion with passive house certification, within which the sustainable architecture strategies and the edge-cutting building techniques could be introduced to the public. The pavilion is targeted at PHI standard combined with sustainable strategies and architectural interests of the team. The basic prototype is made of two wedges, an atrium inserted into the main body improving interior ventilation and a terraced atrium connecting exterior and interior. The north side is sheltered with earth merging into landscape, highly reducing the thermal losses. The curtain wall on the south side works as a solar collector in winter and helps to prevent the interior from overheating with an automatic sun-shading system. As for landscape, traditional Chinese garden features are adopted to create interesting experiences outdoors.

Linking the project to the indicated SDGs
The project aims to create a healthy, comfortable and eco-friendly nZEB building using passive strategies and active strategies and introduce a low-carbon lifestyle to the public. The project is also an experimental platform for scientific research-practice linkage to promote the development of sustainable building, cultivating high-quality contractors and workers, practicing design strategies and edge-cutting techniques and laying the foundation of carbon neutrality. During the whole process of the project, female participants play important roles in each decision-making process.
THE-STUDIO  
(TSINGHUA ECO STUDIO)

Project Description
THE-Studio (Tsinghua Eco Studio) is both a practical demonstration case which deeply integrates sustainable design strategies with ecological technologies. It is also, an experimental platform for sustainability, aiming to build technologies that can truly suit the local conditions of climate and culture. In THE-Studio timber frameworks are employed in the large-space exhibition hall and the prefab light-steel modules are used at both sides. Sustainable service systems are mostly plugged into the cavity of facades. The modular double-skin facade system is a unique integration of vernacular rattan-weaving craftsmanship with industrial prefabrication technology, highly expressing site-specific characteristics.

The passive design methods responding to local climatic factors of natural wind, solar radiation and daylight are further contrived by the design team. The design team highly encourages usage of renewable materials and promotes the employment of vernacular materials and craftsmanship which can decrease the carbon footprint during.

Author(s): Yehao Song, Jingfen Sun, Xiaojuan Chen, Zhenghao Lin, Dongchen Han, Dan Xie
Organisation: SUP Atelier of THAD
Project Location: Guian New Area, Guizhou Province, China
Geographic Coordinates: 26.449274 NL, 106.500365 EL
Built Area: 701 m²
Year of Conclusion: 2015
Linking the project to the indicated SDGs

THE-Studio can provide a high-quality research space for both men and women to enhance their professional competence. The design team placed great emphasis on passive design strategies that respond to local climate factors. First, the double-skin facades consisting of double-glazed, and the rattan-weaving double skin are typical climate responsive design. Second, the use of renewable energy has greatly reduced the waste generation. Building adopts the passive air-conditioning system. It also combines rainwater recycling and ecological landscape. Using renewable materials can both decrease the carbon footprint during whole life span. In the construction process, the design team mobilised the local community, provided a large number of jobs, and brought opportunities and development to the industry. In the future, local community can replace the rattan weaving on the facade by themselves.
Project Description
The Sunlighthouse is the first CO²-neutral single-family-house in Austria. The challenge was to develop an energy and ecological concept that would eliminate the ecological footprint for the next thirty years.

The building equipment includes a high performing heat pump, 48 m² mono crystalline photovoltaic roof panels, 9 m² thermal solar panels for hot water and a controlled air system with heat recovery. The roof and facade windows were strategically positioned to maximise passive solar energy, to enable optimal, natural ventilation during summer and to minimise the thermal losses during winter. The Sunlighthouse will produce more energy than the construction as well as the usage of the house consumes.

Linking the project to the indicated SDGs
Our team took the big challenge to create a house that will produce more energy in 30 years than it will need for building, transport, heating and electrical use all together. That means that after this period it will produce even more energy than it ever consumed and will therefore be some kind of a small power station. We also focused on the use of new well performed materials that need very few or no CO² to be produced.
Today, roughly half the world’s population still lives on the equivalent of about US$2 a day with global unemployment rates of 5.7%, and having a job doesn’t guarantee the ability to escape from poverty in many places. This slow and uneven progress requires us to rethink and retool our economic and social policies aimed at eradicating poverty.

Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs that stimulate the economy while not harming the environment. Job opportunities and decent working conditions are also required for the whole working age population.

To find out more about Goal #8, visit: https://www.un.org/sustainabledevelopment/economic-growth/

The built environment interacts with decent work and economic growth on both a planning level and on a building level.

Safe public spaces and affordable transit routes to the workplace are crucial for finding employment. The ability to move from home to a workplace, and the time spent in transit, determines what jobs are available, making healthy and safe public space and transportation systems key to citizens’ access to work. Cities and settlements must also be planned and designed so that poor and marginalised citizens have access to a business outlet, such as a marketplace, where local produce, handicrafts and other services can be bought and sold. Workplaces must be designed so that they support healthy, accessible and productive work environments for all employees, including access to sanitation and a spatial organisation that makes social distancing possible when needed. Investing in good working conditions backs a company’s economic growth through higher productivity and fewer sick days.

In the building industry, focus is needed on decent working conditions and safety for workers. This entails the use of materials extracted and produced in safe and clean working environments as well as secure and controlled working conditions on building sites and in demolition processes. Furthermore, by emphasising investment in human resources, the industry can develop towards more sustainable economic growth by using increased skills and knowledge to reduce the amount of raw materials and energy needed, while improving productivity.

Examples of this can be found in planning projects for informal settlements, in state-of-the-art office buildings and in capacity-building initiatives.

To find out more about Goal #8, visit: https://www.un.org/sustainabledevelopment/economic-growth/

1. Extract from UN’s Sustainability Goals: https://www.un.org/sustainabledevelopment/economic-growth/
**Project Description**

The Neo-Arid City ideological dimensions are sustainable urban pattern, passive housing, low-cost eco-friendly construction and renewable. Combining urban and architectural design of the neighbourhood on a climate-economy responsiveness basis can radically raise an urban green and circular economy through the related construction industries. This is especially the case at the time when we need to break the dominance of heavy energy consumer and high-cost urban construction materials such as steel and cement to generate a new era of a world class city character and identity at the time of climate change. More details are here: [http://dx.doi.org/10.13140/RG.2.2.33085.64485](http://dx.doi.org/10.13140/RG.2.2.33085.64485).

Present global environmental and economic challenges, urge to anticipate the coming problematic years with low-tech but preserved city image. Neo-Arid City, as the sustainable urban form design track for 5th generation city emerged by coupling urban-building design with climate-economy responses at four sites in Egypt, combines semi-compact pattern with court-yarded clustered low-cost microclimatic housing and neighbourhood PV roofs. Compactness had to be adjusted neither as very compact vernacular urbanism where wind can be blocked nor as very open dot urbanism which is a heat gain mess even in many cold regions facing heat waves. Applying the recipe of arid free planning heritage values retrieved sustainability measures while regenerating a future city image consistent theory on the other side of urbanism coin.

**Author(s):** Mohammad Fahmy  
**Organisation:** ESTIDAMA Centre  
**Project Location:** Aga, New Afteh, New Obour, New Cairo, Egypt  
**Built Area:** From 7000 m² to 1,500,000 m²
Linking the project to the indicated SDGs

The Neo-Arid City Inspiration for Future (Project no. IFF-48) is listed in the UIA Guidebook 2023 under SDG8, Decent Work and Economic Growth as it proposes raising the green and circular low-cost neighbourhood construction economy paradigm for locals. Moreover, it has been designed as a climate action motor as such radical action (SDG13) targets an integrated co-benefiting bundle of SDGs. The neo-arid city urban form design is semi-compact with whole roofs micro-climatically oriented towards maximal solar radiation acting as an Affordable and Clean Energy (SDG7) bank through PV on roofs. This semi-compact urban form itself utilises attached housing architecture with passive design strategies. The main strategy is thermal walls retrieved from applying low-cost eco-friendly construction, which is composed of bearing walls' courtyarded clusters and manufactured with compressed earth blocks. This urban form maximises parallelly shading with thermal resistant envelope masses of the neighbourhood clusters. Such a climate change radical adaptation design manifesto is serving at the same time to improve thermal comfort, reduce heat gain, energy consumption and carbon emissions as an environmental metrics that completes the targeted SDGs bundle with Sustainable Cities and Communities (SDG11) climate change mitigation paradigm.
**Project Description**

The historical and cultural essence of a city holds paramount importance, an essence intricately interwoven with the area known as the old Terminal do Bispo, which turned out to be the stage for the work of renovation. The designated area finds its place nestled along the estuaries of the Anil and Bacanga rivers. The work reimagines and reclaims public spaces that once lay dormant, especially in an area full of inequality and urban fragilities, within the context of the revitalization programme for the historic centre of São Luís. This endeavour was spearheaded by the Special Projects Secretariat (SEMISPE) and fortified by financial support from the Inter-American Development Bank (IADB).

The project prioritises sustainable and communal transportation systems, enhancing the cultural, recreational, and athletic allure of the area, constituting its foundational principles. A resplendent public realm and a more pedestrian-centric urban design are at the heart of this pursuit.

Encompassing a stretch from Avenida Vitorjão Freire to the Bus Terminal, an integral section of the Circular Road encircling the old centre, the project seeks to dissolve the unintended barriers established by the road network, while entails a comprehensive redesign of the transportation infrastructure, meticulously catering to diverse modes of movement while affording leisure and sports spaces.

**Author(s):** Manoela Machado and Pedro Lira (coordination), Camila Reis and Camila Sanches (project leaders), Jalia Marini, Juliana Yoshida, Juliette Tellier, Renata Peres, Raquel Araruna, Renan Ferreira, Roberto Zocchio and Fernando Botton (team), Adriana Vasconcelos (social worker), Viviane Oliveira (historical research), Rodrigo Dias (local technical support), Hproj Planning and Projects, Daniela Dezideria (complementary projects coordinator), Alexandre Ferreira (complementary projects coordinator), Deniti Nakazato (civil engineer), Célio Benito (civil engineer), Paulo Maffei (civil engineer), Júlio Masuda (civil engineer), Cláudio Vidrih (Forest engineer), Joice Ferreira (civil engineer) and Vitória Pezzano (civil engineer).

**Organisation:** Natureza Urbana

**Client:** Inter-American Development Bank and City Hall of São Luís

**Project Location:** São Luís, Brazil

**Geographic Coordinates:** -2.537679, -44.301340

**Built Area:** 225,850 m²

**Year of Conclusion:** 2020
Linking the project to the indicated SDGs
The work development has been characterised by active participation from both the community and public institutions, a process facilitated through participatory workshops. Comprehensive social assessments and meticulous analysis of existing merchant dynamics informed a comprehensive proposal, harmonising local aspirations and requisites. Concurrently, spatial analyses, buttressed by the insights from social assessments, guided the placement of commercial hubs and the delineation of typologies. The renovation endeavours champion equitable commercial distribution while eradicating existing physical and perceptual barriers. This transformation yields intimate squares adorned with amenities and urban furnishings, fostering an environment conducive to vibrant communal life.
Project Description
Zhuguanglong Tea Leaf Market featured a multi-functional tea leaf market, aiming for a boost in tea leaf economy and better public spaces for local people. A large-span space was proposed for various functions at different times of the year based on earlier bamboo construction experience, fundamental functions of the market and other demands by the public. Apart from seasonal tea leaf trading, the market can be used for farm product trading, villagers’ short stay and children’s sports activities. The project’s structural form inspired by a sort of traditional woven arch structure built with local raw bamboo.

The design team thoroughly studied building technologies of “rainbow bridge”, a sort of traditional wooden arch bridge achieved with ancient people’s wisdom, searching for solutions. The team found that the shelters could both be built with simple traditional building methods as the rainbow bridge with refined bamboo construction technologies. Finally, through craftsmen’s simple processing of raw bamboo, which Zhuguanglong township was richly endowed with, a woven bamboo structure with an 18-meter span was completed.

Author(s): Yehao Song, Jingfen Sun, Yingnan Chu; Wenwu Wang, Mengjia Liu, Xinran He, Dan Xie, Xiaojuan Chen
Organisation: SUP Atelier of THAD
Client: Zhuguanglong
Project Location: Fujian Province, China
Geographic Coordinates: 27.341807, 119.566734
Built Area: 460 m²
Year of Conclusion: 2020
Linking the project to the indicated SDGs
SDG 1: The project was built to equal the local Tea leaf trade economy resources, provide the villagers with a quality public space for sharing business opportunities instead of decentralised tealeaf transaction. SDG 2: The small-scale vegetable farmers has raised their incomes. SDG 3: An open roof could boost natural ventilation and daylighting, reducing operational costs. SDG 4: The project sometimes serves as a community school for villagers. SDG 5: The township head is a lady, who participated in decision-making of the project. SDG 6: The rainwater drainages are well organised and all rainwater above the roof were imported either to the Greenland or to the canal to mountain stream. SDG 7: The design has made full use of sunlight for indoor lighting and natural ventilation in summer for better environment. SDG 8: The project improves the tealeaf trade, makes the local economic growth, promotes safe and healthy working environment for tea farmers.
SDG 9: The project encourages the bamboo construction industry, the local rammed earth construction industry, which are the sustainable industrialisation. SDG 10: The market is an open space for all tea farmers to share the trade information and resources, to reduce the income inequalities. SDG 11: The project is constructed by the local people with recycled materials, local technologies, so the cost is extremely affordable. SDG 12: The main materials of the project are bamboo and rammed earth from natural resources, which could be get from the surroundings environment easily. SDG 13: The project is built by the biodegradable low-carbon material such as bamboo and earth, in low-carbon maintenance and operation. SDG 16: This project is a result of democratic decision-making. The bamboo roof construction is supported by local villagers and governments. SDG 17: The project served as tealeaf market, which brings more trade resources and popular tourist scenic spot, brings more local income and benefits, also more revenue collections for the township.
Project Description
Bamboo Symphony, the office of Manasaram Architects is a beacon for a new era of office design. The building embodies the core principles of the firm being a zero energy sustainably built development. The openness of the office layout fosters collaboration among the staff and initiates them seamlessly into becoming ambassadors of climate change. The open-air interior space is stepped into the rugged terrain in a spiralling configuration, reminiscent of a billowing fabric canopy that wraps around the rainwater harvesting pond directing the shell roof’s stormwater runoff into the water feature. Protected yet open to the elements, the office employs bio-climatic design to its fullest. The foundation and curved retaining walls are made of local granite topped off by mud blocks made from construction waste. A sweeping freeform BFRC (Bamboo Fibre Reinforced Concrete) roof covers a lattice grid made of bamboo splits over a network of bamboo beams and columns based on traditional fishing platforms. The structural system was developed by experimentation, research and working on site with artisans and employing vernacular knowledge. The bamboo fibres in the concrete reduce the overall weight of the slab and minimises cracks. Other recycled elements include fly ash, wood, scrap metal, stone and debris. The project showcases bamboo as a 21st Century construction material.

Author(s): Neelam Manjunath (principal architect); Sanjita Harwalker (team); Gopal Prasad Tanti (chief mason); Anand Lal Marandi (bamboo artisan). Consultants: Building material & Technology – Centre for Green Building Material & Technology, Bangalore. Rainwater Harvesting – A. R. Shivkumar, IISc, Bangalore. Wastewater Treatment CDD Society, DEWATs, Bangalore. Compressed Stabilised Earth Blocks – Dr. Yogananda, Mrinmayee, Bangalore.
Organisation: Manasaram Architects
Client: Manasaram Architects
Project Location: Bengaluru, India
Built Area: 210 m²
Year of Conclusion: 2010
Linking the project to the indicated SDGs

SDG 8: The open spatial plan of the building along with natural landscape makes it a perfect collaborative invigorating workplace enhancing productivity.

SDG 9 (9.5 & 9.b): The project was constructed with research and development of local traditional technologies, taking it to the next level with grassroots innovation. It will provide an excellent building system for the developing countries especially in the global south.

SDG 11 (11.3, 11.6 & 11.b): The project promotes inclusive and sustainable urbanisation through use of bamboo; With Ventilation, daylight, RWH & closed loop systems for waste and water management, the project reduces the environmental impact of building; use of bamboo and waste promotes inclusion, resource efficiency and disaster risk management.

SDG 12 (12.2, 12.7, 12.8 & 12.a): Using local natural as primary building material and waste this design illustrates the practice of responsible construction and advocates and promotes sustainable lifestyles.

SDG 13 (13.3) The inclusive approach of R&D, design and execution of the building has been studied widely by professionals and scientists as a beacon of building design for the future for climate mitigation.
Project Description
Globalisation has brought the world together, but it has obliterated and vanished identities. The purpose of the project is to create a relevant living environment for each specific community.

In order to bring happiness to the users and the society, protect the cultural architecture diversity in general and particularly in residential architecture, we advocate research and practices according to the “1+1>2” philosophy, which is vernacular core values incorporate with vanguard academic knowledges. All together towards enhance and acculturate local identity, contribute to shaping lifestyle, inspire people and permeate vernacular culture. Crucially, architects must comprehend which core values and innovations are appropriate for each particular community.

Linking the project to the indicated SDGs
Practicing in settlement architecture has help us reveal the beauty of local lifestyles, it also shows us the unlimited ability of architecture to connect and support people, raise happiness for the users, for the buildings and for the architects themselves. Sustainable environment is essential, but more important is to create a sustainable lifestyle respecting history and future. That is the motivation in our creativity.
Project Description

The oil mill and cannery project is a concept fully integrated into the site, from picking to bottling and labelling. It is also an attempt to rehabilitate a fringe of territory by infusing new productive energy. An energy that creates values, jobs and well-being. Respecting the waxworks of organic farming, the olive growing complex now allows the production of very high-quality organic olive oil following a process fully integrated into the site. The chosen location maintains a privileged dialogue with a water reservoir as well as a basilica from the Byzantine period. The project is part of the logic of a confluence, an emergence built by the directional multiplicity of the natural and "civilisational" components of this unique place. The foundations of the new building are nourished by the historical roots of the place whose Byzantine remains remain.

Author(s): Adel Hidar
Organisation: Tunisian Order of Architects
Client: Biolive Company
Project Location: Zaghouan, Tunisia
Geographic Coordinates: 36° 20' 44.9" N 10° 18' 35.5" E
Built Area: 1,485 m²
Year of Conclusion: 2017
Linking the project to the indicated SDGs

SDG 1: The development of agricultural areas neglected by the country’s youth is a curbing the rural exodus and illegal immigration to Europe.

SDG 2: The income generated by this fair trade, insofar as it also benefits rural families living in the region, makes it possible to feed the interior regions of the country.

SDG 5: Olive growing traditionally represents an annual income for rural women in Tunisia.

SDG 8: The fact of combining the functions of an oil mill with those of a cannery has made it possible to offer employment positions throughout the year.

SDG 9: The creation of a fully autonomous and integrated infrastructure for the production of olive oil and certain derived agricultural products is a first in Tunisia.

SDG 10: The project aims to ensure stable and decent jobs in the interior regions of the country. It therefore reduces inequalities and curbs rural exodus and irregular immigration to the northern Mediterranean.

SDG 12: Organic olive growing sets in motion a whole series of eco-sustainable parameters in its production.

SDG 13: An ecological architecture mainly based on local materials and resources combined with a programmematic study to ensure full employment for the inhabitants of the region are assets that contribute in their scales to these great ambitions for humanity.

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, as well as halt and reverse land degradation and halt biodiversity loss.

SDG 17: The production of high-quality organic olive oil in Tunisia makes it possible to compete with Italian and Spanish producers.
Economic growth, social development and climate action are heavily dependent on investments in infrastructure, sustainable industrial development and technological progress. In the face of a rapidly changing global economic landscape and increasing inequalities, sustained growth must therefore include industrialisation that first of all, makes opportunities accessible to all people, and secondly, is supported by innovation and resilient infrastructure.¹

The building industry is producing massive amounts of waste and consuming large amounts of natural resources and energy. Further to this, the transportation and production of building components globally rather than locally carry environmental as well as humane costs.

Advancing sustainability in the built environment requires a development of industry and industrial infrastructure away from current practice and towards new ways of producing and assembling. We must develop our industry, its services, products and transportation systems to pollute less, tie up less energy, produce less waste and provide solutions that are safer and healthier than current standards.

The building industry is by nature site specific, and we must aim at utilising local industries and advancing the development of sustainable products locally, in all countries. This requires the development of both physical and digital infrastructures to promote more sustainable trade and coexistence, including much more focus on the industry’s use of local materials and resources. Where advanced industry is available, the focus is on the development of products that improve existing standards and raise the level of sustainability, for example by moving from a focus on no waste in production to a focus on no waste in a life-cycle perspective. This requires training and the development of new competences at all levels in the building industry as well as research and prototypes for testing the potential of new tools, processes and solutions. The resulting innovations in industry must continuously be measured against a culturally and climatically site-specific impact on sustainability.

¹ Extract from UN report WHY IT MATTERS – INDUSTRY, INNOVATION AND INFRASTRUCTURE – PDF.
**Project Description**

Lake Jará is a structuring component of the Juruti landscape, bearing dual significance as both a defining feature and a particularly vulnerable area necessitating stringent regulation and preservation. The focal aspiration of this endeavour is the cultivation of a deliberate framework for public engagement along the lake’s periphery. Central to this ambition is the meticulous control of urban sprawl, safeguarding against encroachments that could transgress its boundaries. Concurrently, this undertaking assumes the responsibility of cultivating a heightened consciousness among the populace regarding the intrinsic value of the lake.

The strategic framework for planning starts with the establishment of an environmental park. A multifaceted approach is adopted, encompassing not only the cultivation of income-generating activities within the locale, but also the cultivation of sustainable practices that harness the region’s natural resources judiciously.

Through these concerted efforts, the project endeavours to yield a harmonious coexistence between human activity and environmental preservation. The park’s design is divided into three zones. The Urban Zone is a vibrant hub, addressing cultural needs, recreation, and tourism. The Connection Zone bridges regions with lush, unspoiled landscapes for reflection.

**Author(s):** Manoela Machado and Pedro Lira (coordination), Giulia Corsi (project leader), Victor Navarra and Andrea Farley (team).

**Organisation:** Natureza Urbana

**Location:** Juruti, Brazil

**Geographic Coordinates:** -2.157105, -56.081139

**Work Built Area:** Unbuilt
1) screen-covered nursery;
2) vertical slatted sun protection;
3) raised floor;
4) cross ventilation, thermal inertia, photovoltaic panels and led lighting;
5) coverage in paxiúba straw and walls in mud (wood and earth).

Linking the project to the indicated SDGs
The concept integrates elements from vernacular, indigenous, and riverside architecture. An innovative modular approach utilising local construction techniques has facilitated the creation of cohesive spaces adapted to the natural surroundings. Central to this concept are modular components fashioned from rammed earth, a prevalent technique within the region. Within the residential quarters and open expanses of the park, a conscious selection of permeable, recyclable, and certified materials prevails.

This meticulous selection considers the complete trajectory of the building, from its inception through utilisation, upkeep, and eventual repurposing. In response to the nuances of thermal comfort dictated by the indigenous climate, paramount consideration has been afforded to passive and bioclimatic strategies. This architectural endeavour reverently underscores the cultural heritage of the Sateré-Mawé, an esteemed Native American Brazilian tribe, encapsulating their legacy within the fabric of the territory.
Project Description
The Morocco Pavilion at the 2021 Expo in Dubai showcases how traditional Moroccan design and construction techniques can find new relevance in contemporary design and urban development efforts. The Pavilion’s exterior envelope is composed of a 4,000 m², 33 m high rammed earth facade, an ambitious technical feat pioneering in its advancement of rammed earth construction methods. Rammed earth, a traditional building material in Morocco, plays a key role in passively regulating indoor conditions in hot and arid places. To achieve the heights of the Morocco Pavilion’s facade, raw and compacted rammed earth was formed into prefabricated panels coupled with a lightweight concrete frame. Its use in the Pavilion proves that it is a material at once traditional and innovative, offering an example of how traditional building methods can serve to inspire more sustainable models of urban development. In line with this commitment to sustainability, after the conclusion of the 2020 Expo, the Pavilion is converted into a housing complex, with existing facilities adapted into apartments and communal spaces.

Linking the project to the indicated SDGs
The Pavilion’s 34-metre-high rammed earth façade is an ambitious technical feat pioneering in its advancement of rammed earth construction methods. Rammed earth, a traditional building material in Morocco, plays a key role in passively regulating indoor conditions in hot and arid places. To achieve the heights of the Morocco Pavilion’s façade, raw and compacted rammed earth was formed into prefabricated panels coupled with a lightweight concrete frame. Its use in the Pavilion proves that it is a material at once traditional and innovative, offering an example of how traditional building methods can serve to inspire more sustainable models of urban development.
Project Description
Two primary schools on an area of 2000 m² located in immediate adjacency to Kidepo Valley National Park in Karamoja/ North-eastern Uganda. One school was built in the park buffer zone and another in a farming village nearby, both with the ambition to multiply their influence among each of their 750 school children, their immediate families, and their surrounding communities.

In total, 21 buildings across 2 schools, each with 9 classrooms reinforce the vision of African Wildlife Foundation (AWF) to integrate stunning landscapes within the schools that are friendly to the environment on which they are placed and elevate the perceptions of indigenous materials.

The Kidepo area has beautiful local stone which was utilised for near-carbon-neutral foundations and plinth walls. The stones were gathered by the locals within a 3km radius of the site and arranged in semi-dry-stack formations creating a water-mitigating substructure. Walling utilises fair-faced, manually compressed stabilised soil blocks (CEBs) formed on site, a material that presents a much more ecological alternative to the commonly used “village brick” which is a main cause of deforestation in Uganda. Sliding and top-hung steel louvre panels form windows and doors, multicoulored as inspired by the local jewellery design, provide a sturdy, maintenance-efficient response to shading and security requirements.
Linking the project to the indicated SDGs

Existing trees and shrubs were protected to an extraordinary extent, local species added, and innovative forms of appropriate agriculture introduced in the form of demonstration farms and gardens. Geremech was designed in the image of a ‘savannah school’ while the Sarachom school reflects its location within an agricultural zone in the structure of a demonstration garden. Each building is completely dependent on passive ventilation to achieve indoor thermal comfort. A combination of thermal mass and building orientation used to minimise direct ingress of sun has proven to be an effective passive strategy to avoid overheating without deploying high-tech energy intensive equipment. The steel roof trusses were designed using very thin steel profiles, of the size more commonly used for windows and doors; in order that the entire primary roof structure of two schools would fit into a single truck to minimise transport costs and reduce the weight of each truss to such an extent that they can be hoisted in place by muscle power. Appropriate technologies include a semi-centralised rainwater harvesting, solar power, fuel-efficient wood stoves and ‘aquaprivy’ toilets.
Krushi Bhawan is an administrative office for the government of Odisha’s Department of Agriculture and Farmers’ Empowerment. The project was envisaged as a symbol for a new Odisha—rooted in tradition yet projecting into the future. Civic infrastructure in India occupies prime real estate but rarely offers public access. Krushi Bhawan subverts this preoccupation by referencing Otto Königsberger’s original vision for Bhubaneswar, with the Capitol complex being “a lively point of public life.” The building bridges the gap between bureaucracy and the populace by incorporating ample community functions that instill a sense of collective ownership amongst ordinary citizens and farming communities.

The department offices, which require controlled access, are raised on the upper floors, creating an open, stilted ground level. The garden, courtyard, and semi-covered plinths thus build a porous ground plane connected to the main street, hosting farmers’ markets, seed expositions, and other initiatives. Public amenities such as galleries, an auditorium, a library, and training rooms further promote public engagement, making Krushi Bhawan an integral part of the city’s social infrastructure. The building’s distinctive visual identity is inspired by Odisha’s ikat textile-weaving craft, created using clay in five colours that allude to the colour of the soil from different parts of the region.

Author(s): Design Team: Ambrish Arora, Sidhartha Talwar, Raman Vig, Sachin Dabas; Sustainability Consultants: Psi Energy - Dr Nishesh Jain and Gaurav Shorey
Organisation: Studio Lotus
Client: State Government of Odisha (Department of Agriculture & Farmers’ Empowerment)
Project Location: Bhubaneswar, India
Geographic Coordinates: 20.274806376037496, 85.82805925323945
Built Area: 12,073.40 m²
Year of Conclusion: 2018
Linking the project to the indicated SDGs

Krushi Bhawan has achieved an Energy Performance Index of under 40 kWh/m²/year—far exceeding the highest benchmarks for green buildings. The building’s primary facade is along the north-south axis and around a central courtyard to exploit natural heat gain and loss. Only 20% of the building is cooled using conventional air conditioning; the rest uses a low-energy night-purge mechanism integrated with the façade, in which cool air at night is circulated via a simple extraction system, activated only when temperatures drop below a given threshold.

Over 100 local artisans were commissioned to create a contemporary narrative of traditional Odia craft at an unprecedented architectural scale, promoting craftsmanship and regional scopes of employment. The integration of craft is achieved by keeping expenditure low—demonstrating the feasibility and scalability of the approach; this also serves as an example of how the government can become a key patron of local crafts and sustain the communities built around them. Krushi Bhawan thus seeks to embody the idea of truly inclusive architecture—created for and built by the people and representing their collective cultural identity.
Project Description
Energy Efficient Bamboo House confirms that using natural materials for construction, as bamboo, is the most viable means to reduce embodied carbon in buildings, inspiring new architectural languages.

The Energy Efficient Bamboo House, built for the first International Bamboo Architecture Biennale, stands out for its golden proportions and modular design, facilitating assembly of the bamboo canes even by unskilled workers. It is an excellent illustration of BooTech construction system, using mechanically applied joints to connect the bamboo canes. Unlike mainstream approach, which uses cement as a filler, BooTech leaves the cane intact making it possible to replace when needed.

Linking the project to the indicated SDGs
Bamboo plant tackles 7 SDGs, using it for construction with a proper technique, as BooTech, offers a truly expendable alternative to the use of polluting steel and concrete, enabling us to rethink architecture in eco-friendly ways, in keeping with the SDGs. Energy Efficient Bamboo House is a resilient architecture that promotes inclusive and sustainable industrialisation and sustainable use of terrestrial ecosystems, fosters innovation, combats climate change and can be globally implemented.

Author(s): Mauricio Cardenas Laverde
Organisation: Studio Cardenas Conscious Design
Client: ArtSpring Shanghai Ltd
Project Location: Baoxi town, China
Geographic Coordinates: 28.005967, 118.761755
Built Area: 320 m²
Year of Conclusion: 2016
Project Description
The Mata Virgem Urban Park provides open public spaces and a light and permeable elevated route within an environmental preservation area, offering well-being and quality of life to the residents. The intervention area is located between the cities of São Paulo and Diadema, in a socially vulnerable environment. Its goal is to preserve the existing water spring, stabilise and enhance the hillside, promoting the use of these spaces and the interaction of users.

The project promotes environmental preservation between the two cities. There is an elevated route that surrounds a water source and connects two areas with 26 meters of level difference, with stairs that provide sights and a safe and pleasant pedestrian walk. The choice of a hexagonal platform layout has allowed the articulation of this path and provided permeability to the block, prioritising walking, visibility, and pedestrian safety.

To enhance the staircase access, two plazas have been proposed, one at each level of the park. On the higher level, connected to an existing nursery school, there is a platform that extends the sidewalk, creating an observatory deck with panoramic view, living areas and public leisure equipment.

Author(s): Renata Coradin (coordination) Amanda Santos; Caroline Moura; Felipe Maike; Giovanna Sambugaro; Ian Araújo; Juliana Ponti; Juliana Watanabe; Leticia Ferreira; Soraya Tamate; Suellen Pivato (architecture team). Guilherme de Souza; Paulo Gonçalves (landscaping team). Alexandre Horiy; Daniela Dezidera; Joice Lopes (engineering team). Ana Clara Gurgel; Elisabete França; Fernanda Silva; Maria Teresa Fedeli; Mayra Rodrigues; Ricardo Sampaio; Vanessa Padiá (project management team).

Organisation: Casa Cidade Arquitetura e Urbanismo
Client: Consórcio Mananciais São Paulo
Project Location: São Paulo, Brazil
Geographic Coordinates: -23.705490, -46.622293
Built Area: 2,658,17 m²
Year of Conclusion: 2023
Linking the project to the indicated SDGs

In a socially vulnerable context, the implementation of the Urban Park Mata Virgem aims to improve the quality of life for residents and visitors of all ages and genders by providing them public spaces for socialising, leisure, and interaction. To ensure the preservation of the environmentally protected area, a light and permeable structure was proposed to only rest on the ground, allowing a connection between the two territories. The project envisions minimal intervention in the territory and adds a sense of sustainability to the location, both in terms of construction and in the possibilities of the space used by people. The main route shortens the day-to-day path between the two neighbourhoods, while also safeguarding the existing spring, aligning with the ninth Sustainable Development Goal: Industry, Innovation and Infrastructure.
Inequalities based on income, sex, age, disability, sexual orientation, race, class, ethnicity, religion and opportunity continue to persist across the world, within and among countries. Inequality threatens long-term social and economic development, harms poverty reduction and destroys people’s sense of fulfilment and self-worth. This, in turn, can breed crime, disease and environmental degradation.

Most importantly, we cannot achieve sustainable development and make the planet better for all if people are excluded from opportunities, services and the chance of having a better life. To reduce inequality within and among countries is therefore a key issue.1

The built environment can act as an amplifier and enforcer of inequalities. To reduce inequalities, planning and building must prioritise design that ensures inclusion and accessibility for all, including citizens that are marginalised, at risk or living with a disability.

Citizens with disabilities risk being restricted to their homes, or unable to hold a job, because stairs, steps, information systems, acoustics and other design features can make streets, transportation systems and institutions inaccessible. Religious and ethnic minorities, LGBT+ citizens and women experience being confined to designated areas or secluded from educational institutions and leisure facilities. Landscape qualities, like a beach or a view, can be closed to the public through design and planning that make them accessible only to owners or customers.

To reduce inequalities, architecture must be designed and executed so that it is socially responsible, inclusive and takes into consideration the needs of all members of society, leaving no one behind. Buildings, settlements and urban areas must be designed with accessibility as a core functionality, from ensuring even surfaces, lifts, ramps and wayfinding features to giving attention to doorways and the height of utilities. It also means that social responsibility and inclusiveness must guide the programming, planning and design of buildings and urban areas so that they support and allow use by all, with respect to local culture and needs. Examples span from state-of-the-art institutions adhering to universal design, over initiatives supporting specific at-need groups, to communities designed to include and prioritise marginalised citizens.

To find out more about Goal #10, visit: https://www.un.org/sustainabledevelopment/inequality/

1 Extract From UN report WHY IT MATTERS – REDUCED INEQUALITIES – PDF
Project Description
Designated as one of UNESCO’s seven natural wonders and a world natural heritage site, Iguazu National Park (INP) was established in 1939, sprawling over 186 thousand hectares. Situated at the convergence point of the Brazilian border with Argentina and Paraguay, it holds a strategic position within the geographic heart of Mercosur (The Southern Common Market). Conceived by a multidisciplinary team, this project constitutes a pivotal component of a comprehensive series of studies focused on the concession aimed at delivering public services to bolster visitation, rejuvenation, modernization, operation, and maintenance of tourist amenities within INP.

Beyond the proposition of tourism-oriented services, the initiative introduces novel infrastructure to support visitation and advocates for the enhancement of existing assets and facilities for public enjoyment while fostering an intimate rapport with nature via sustainable interventions.

The project’s guiding principles, pivotal to shaping the new concession framework, rested on the pillars of innovative public utilisation management, accessibility, sustainability, and an expansive approach to visitation encapsulated by the mantra “park for all”. Through this renewed concession, the park received impetus to concurrently prioritise societal benefits alongside environmental preservation.

Author(s): Pedro Lira and Manoela Machado (coordination); Camila Sanches (project leader), Camila Reis, David Couto, Fernanda Morais, Julia Ximenes and Laura Figueiredo (team)
Organisation: Natureza Urbana
Client: National Bank for Economic and Social Development (BNDES), Chico Mendes Institute for Biodiversity Conservation (ICMBio), Ministry of the Environment
Project Location: Foz do Iguaçu, Brazil
Geographic Coordinates: -25.473662, -53.813407
Built Area: Unbuilt
Linking the project to the indicated SDGs
The project is founded on holistic sustainability, transcending environmental, cultural, social, and economic realms. Beyond sustainable technologies, it embodies an ethos interwoven with surroundings and designed for its lifecycle improvement. Integrative strategies yield responsible solutions for user comfort and minimal ecological impact. Accessibility and inclusivity are central, woven into interventions via material choices, construction methodologies, and park policies. Architectural configuration prompts an intersectional approach, catering to diverse demographic needs. Solutions meld with the environment, immersing users. Biomimicry and low-impact methods draw from nature, inspiring innovative strategies while minimising disruption. This synthesis of sustainability and equity-driven design curbs inequalities through accessibility and responsible practices.
Project Description
A Retrofit housing in Gujjarnala Karachi slums, Pakistan, an equitable and ethical design solutions to negotiate with the existing building/structure/system to improve inhabitants’ life. With more than 55% of the world’s population living in cities, and half of the metropolis citizen lives in informal settlements, it is fundamental to explore design by means of bilateral negotiations and architecture which fulfill citizens’ needs. Retrofit Housing typology is explored based on residents’ needs, cost-effectiveness and encourages communities to rebuild their homes to improve community engagement through design to improve liveability.

Linking the project to the indicated SDGs
The project will address SDGs 10 and 1 to reduce inequalities and end poverty by improving liveability by implementing resilient and retrofit housing solution SDG 11. Further providing school, community centre and clinic promoting opportunity to quality education and well-being will satisfy SDGs 4 and 5. Improving the dying need of the neighbourhood and city by implementing wetland to improve sanitation and improve city ecology will support SDG 6.

Author(s): Muhammad Nafeel Qureshi, Wajiha Siddiqui Mehdi, Muhammad Mehdi
Organisation: WM Creative Studio – Relab
Project Location: Gujar Nala, Karachi, Pakistan
Geographic Coordinates: 24.920493, 67.0469142
Built Area: 50 m² (housing unit)
**THE BAITUSSALAM SCHOOL**

**Project Description**
A primary school in Jacobabad, Pakistan, conceptualised to counter education system vulnerabilities & climate emergencies with sustainable modular design, bamboo framework, and child-centric Spaces. It is a reimagining of schools in a significantly challenged education system in Jacobabad, one of the hottest rural regions of Pakistan, which was also severely affected by the catastrophic floods of 2022. The adaptable module comprises two rooms and a courtyard, facilitating integration for flexible indoor/outdoor, formal/informal learning spaces. The school also features a step farm, renewable energy rainwater harvesting/solar energy, and an emergency refuge double roof covered with fabric.

**Linking the project to the indicated SDGs**
This school will address SDG 17 through partnerships with the local community and Organisations to create a sustainable and affordable learning environment. It will support SDG 13 by utilising sustainable construction materials and step farming to promote climate action. Job creation in construction and permaculture will satisfy SDG 8 and 2. SDGs 10 and 4 will be supported by reducing inequalities in education and designing secure child-centric learning spaces.

**Author(s):** Muhammad Mehdi, Wajiha Siddiqui Mehdi, Muhammad Nafeel Qureshi, Ilsa Ahmed, Nihal Ahmed Barry, Muhammad Bilal
**Organisation:** WM Creative Studio – Relab
**Project Location:** Jacobabad (Sindh), Pakistan
**Geographic Coordinates:** 28.2758526, 68.4909777
**Built Area:** 150 m²
**Project Description**

On the call of our PM Modi’s Swach Bharat Abhiyan, we designed and built FlexiSanShell - a prefabricated toilet unit to fulfill the most basic need of sanitation for the society. Its uniqueness lies in its ability to completely collapse on itself, be manufactured and stored ready for transportation and erection for emergencies with a simple mechanism. It can be converted into a permanent toilet when required through bamboo crete walling system. The structure can be deployed as a single unit or clusters of different forms based on the context. A standalone unit can metamorphosize into a larger unit with various permutations and combinations. FlexiSanShell was developed by CGBMT in collaboration with local communities after several months of testing and prototyping. A rapidly deployable toilet shell with portability at its heart, with a lightweight structure, it also serves as a blueprint for community level initiatives for rapid fabrication. Few unskilled labourers can build and assemble up to 50 units per day.

The structural members are made of bamboo and the skin is of tarpaulin, both locally sourced, eco-friendly and affordable materials. The flexibility and versatility of FlexiSanShell allows it to be deployed in disaster prone areas, temporary camps, village fairs, ecologically sensitive areas, community gatherings, events etc.


**Organisation:** Centre for Green Building Materials Technology

**Project Location:** Global application, developed in Bengaluru, India

**Year of Conclusion:** 2015
Linking the project to the indicated SDGs

SDG 3: Prevent the spread of diseases by providing a safe and hygienic sanitation solution in areas without proper toilet facilities like rural areas, expeditions, eco-tourism in biodiversity hotspots, fairs etc.

SDG 6: We can provide access to basic sanitation facilities in areas without proper sanitation infrastructure.

SDG 8 (8.1, 8.3, 8.8) Its production will provide sustainable economic growth, innovation and support job creation and enterprise development; its deployment can create safe and hygienic workspaces.

SDG 9 (9.1, 9.2, 9.8) Sustainable, resilient and inclusive sanitation infrastructure, FlexiSanShell can be manufactured at the cottage industry level providing livelihood options to the marginalised, it also supports domestic technology development and diversification.

SDG 10: We can help to reduce inequalities by providing access to basic sanitation facilities for hygiene, particularly for the rural, tribal, marginalised and vulnerable communities.
Project Description

The kindergarten is a two-story building with a capacity for 252 children. The plot is 5,030 m², of which 1,530 m² is underground floor, and the rest is green open space (playground) and parking plots (bikes and vehicles). Simple, yet powerful superposition of shapes, volumes and accented colours is evident in the floor plans/spatial conception. The design is: innovative (following the principles of neuro architecture for children); inclusive (without architectural barriers in/outside the buildings); green and sustainable (passive solar design, energy efficient, environmentally friendly, renewable energy sources), beneficial to the overall well-being of all occupants; and economically viable.

It was designed to be green, sustainable, inclusive and adapted to the needs of every child. The playrooms and nurseries have favourable orientation and are provided with natural sunlight and ventilation throughout the year.

All spaces are designed to benefit the memory of the children and improve their cognitive capacity while mentally stimulating them. The building has: clear floor plans and spatial circulation (central space and gallery halls that lead directly to each classroom on the ground and on the first floor); landmarks for better orientation (colours and shapes); social spaces; enriched environments; and open views to the green landscape surrounding the kindergarten.
Linking the project to the indicated SDGs

SDG 3: Healthy indoor climate in buildings with vulnerable users - children at their early age (natural ventilation/cooling/lighting, good acoustics, open views).

SDG 4: Quality early childhood development and care (creating spaces that enable productive learning environments that benefit memory/improve cognitive capacity (neuro architecture design principles).

SDG 7: Implementation of renewable energy sources: PV panels (renewable electricity production on site, connected to the electrical installation and the air heat pump); solar collectors for solar water heating (for central generation of sanitary hot water).

SDG 10: Accessibility and inclusiveness for all children (no architectural/physical barriers in or outside the building).

SDG 13: Minimum energy consumption (passive solar system design) - favourable building orientation (maximum use of sun); compact building form (reducing heat loss); high energy class building envelope elements; air source heat pump (with heat recovery) connected to the HVAC system; underfloor central heating system, water- and energy-efficient devices; green roof (thermal insulation, sound absorption, purification of the air, temperature reduction).
Project Description
Our project is a series of shelters located at the entrance of low-income communities, designed to promote a sustainable and child-friendly environment over the past three years of the pandemic.

The entrances of the old neighbourhood were in a state of disrepair, with crude tents providing the only cove. The architects and local residents collaborated to engage over a hundred children in the design of the public spaces. The architects utilized recyclable paper tubes and beer crates as the building material, resulting in a quick-to-build, prefabricated, reconfigurable structure that is waterproof, fireproof, and does not damage the foundation.

These places have now become iconic symbols.

Linking the project to the indicated SDGs
Over 100 children have participated in this project to decorate bicycle parking spaces and showcase their drawings. The project uses sustainable, environmentally friendly, and recyclable construction materials, drawing inspiration from traditional construction patterns to achieve rapid construction without burdening the environment.

The project is creating quality spaces at the entrances of old neighbourhoods, aiming to reduce the inequality of environmental decay caused by low income.

Author(s): Sisi Liang, Wei Zhang, Guande Wu, Yue Wang
Organisation: Tsinghua Architectural Design and Research Institute
Client: Malianwa District Government
Project Location: Beijing, China
Geographic Coordinates: 116.284105, 40.027943
Built Area: 123 m²
Year of Conclusion: 2021
Cities are hubs for ideas, commerce, culture, science, productivity, social development and much more. At their best, cities have enabled people to advance socially and economically. With the number of people living within cities projected to rise to 5 billion people – 60% of the world’s population – by 2030, it is important that efficient urban planning and management practices are in place to deal with the challenges brought by urbanisation.1

Many challenges exist to maintaining cities in a way that continues to create jobs and prosperity without straining land and resources. Common urban challenges include congestion, lack of funds to provide basic services, a shortage of adequate housing, declining infrastructure and rising air pollution within cities.

To find out more about Goal #11, visit: https://www.un.org/sustainabledevelopment/cities/

1 Extract from UN’s Sustainability Goals: https://www.un.org/sustainabledevelopment/cities/

The built environment is crucial to the development of sustainable cities and communities.

Architecture, design and planning contribute in multiple ways to make cities and settlements inclusive, safe, healthy, resilient and environmentally sustainable. Among key contributions are design and planning that secure affordable, accessible and healthy housing, access to sanitation, as well as buildings, public spaces and infrastructure which help to reduce the spread of diseases through design. Furthermore, public infrastructure can enhance mobility and accessibility, both between parts of a city and its surroundings, and can contribute to the reduction of pollution from transportation by enabling walking and biking.

Urban design can contribute to including all citizens by spatial organisation and designs that reduce risks of intimidation and crimes, such as assault. Consideration of the needs of marginalised and disenfranchised citizens should be included from the early stages of planning, and all levels of stakeholders should be involved in the process. Urban design should also help reduce and counteract the environmental impacts of overuse, traffic, waste, noise and light pollution in urban areas. Individual buildings, as well as building complexes and settlements, must be developed to increase resilience and robustness in the face of climate change and include vegetation and green areas to help counteract the loss of vegetation and biodiversity caused by urban growth.

Examples of this span broadly and can be found in urban renewal projects, in climate adaptation plans, in the transformation and reuse of outdated buildings and structures, and in initiatives aimed at the inclusion and support of marginalised citizens.
Project Description
A Biophilic Child Development Centre
Land Area is 15900 m². BUA is 7000 m².
The centre is G+4. designed by Architect
Mohamed Hendawi, P.H. D founder of
MH Architects based in Cairo, Egypt.
Project Location is MASQUT, Oman.

Project Summary: The main objective
is to create a place and spaces that play
a vital role in the healing and recovery
process based on scientifically proven
knowledge and human well-being needs.
Architect Mohamed Hendawi mainly
applied the BIOPHILIC Design Concept
the concept of integrating nature with
built environment to create restorative
architecture. He created shaded cooled
echo garden full of different activities
for the children and their families to
interact directly with nature even during
the very hot and humid period of the
year. MH had considered and applied the
following design principles in OMAN’s
Child Development Centre:

- Integrating nature with built
  Environment;
- Connecting users with nature;
- Create nature analogues in our
  structure elements;
- Natural materials for façades’
  cladding;
- Create shaded zones every-where;
- We increased the number of water
  ponds;
- We increased the amount of living-
  things;
- Bring vegetation to each level of the
  building;
- Creating green roofs on different
  levels to reduce the heat gain;
- One total floor area is “the shaded
  ECO GARDEN,” to create positive
  liveable places.

The design was created based on the
following equation

Human + Ecology + Science + culture +
Art + Design

Author(s): Mohamed Hendawi
Organisation: MH Architects
Project Location: Oman
Geographic Coordinates:
Built Area: 7,000 m²
The Biophilic Child Development Centre design integrates nature with the built environment to create spaces and places that positively impact the human psychological, and physical conditions. The designer used a high level of vegetation, green roofs, and a single-loaded building with sun breakers to create a healthy, liveable, and low energy consumption-built environment. Oman is a hot country. Thus, the designer created an Eco-shaded/cooled garden to allow the users to be integrated with nature, which fastens the recovery process.

**Linking the project to the indicated SDGs**

The Biophilic Child Development Centre design integrates nature with the built environment to create spaces and places that positively impact the human psychological, and physical conditions. The designer used a high level of vegetation, green roofs, and a single-loaded building with sun breakers to create a healthy, liveable, and low energy consumption-built environment. Oman is a hot country. Thus, the designer created an Eco-shaded/cooled garden to allow the users to be integrated with nature, which fastens the recovery process.
AMONG RIVERS, LAGOONS AND STREAMS: FROM THE AMAZON'S SELF-PRODUCTION TO BONDING WITH WATERS

Project Description
This project is an Amazon-based arrangement of a housing prototype that adapts to different aquatic contexts by stilts, enabling self-constructive efforts, flexibility, and low-environmental impact assets by a wooden arched geometry, to achieve SDG 11 focusing on societal bonding to waters. Flooding events are urban concerns worldwide being intensified by climate change. It threatens people by spreading infectious diseases, damaging mobility, buildings and the environment, especially in areas experiencing urban poverty. In this regard, housing shortage is a structural problem that excludes people from multiple devices and deepens segregation. This project aims to tackle it by valuing Amazon's social and constructive knowledge presenting a self-constructive response through Da Vinci’s Arch, stilts and bioclimatic studies, gathering technologies and practices easily embodied and reproduced with local assets and regional heritage to achieve SDG 11.

Linking the project to the indicated SDGs
From John Turner’s ideas and climate justice concepts, taking slums and traditional societies by their potential of social cohesion and socioenvironmental conception, this proposal approaches how informal settlements could be a source of transformative practices by turning the lack of urbanisation into alternative solutions to the relationship with the environment. Therefore, to build sustainable cities and communities, the project lights the millennial power inscribed in so-called “The Hybrid Men” in the Amazon region, of self-constructing houses and villages over and among waters, adapting and comprehending environmental dynamics and through them managing communities more concerned with carrying capacity and sustainability.

Author(s): Ananda Oliveira Henklain, Rui do Rosário
Organisation: The Federal University of Roraima
Project Location: Boa Vista, Roraima, Brazil
Geographic Coordinates: -6.6514 2° 49′ 10′ N, 60° 40′ 17′ W
Project Description
This project targets the construction of a museum that will gather and represent as faithfully as possible the characteristics of the region, highlighted in the form of a local traditional household. The future Forest-Land Museum (Pădureni Museum) will comprise of two buildings - a larger building conformed to the shape of the local churches’ typology, that contains the museum and a smaller building, following the shape of the local dwellings containing a study centre. The design team followed the principles stated by F. Schumacher in the book “Small Is Beautiful”. Instead of a major ordering gesture, the museum benefits from the community’s contribution, both as a supplier of labour and materials. Old wood and stone elements, artefacts and personal items are combined with modesty to outline a familiar, yet modern space, open to contemporary experiences. The use of local materials, saving of resources and the close association between what was built, and the natural environment were all important goals established by the community and the partner NGOs.
Among the villages threatened with extinction, it was proposed to build a commemorative space, to bring together the elderly people who are still in the area, the young people who return to develop small sustainable businesses and the researchers interested in the cultural, ethnological and anthropological peculiarities of the place. It aims to build resilient infrastructure, promote inclusive and sustainable building methods and be an example of safe and resilient human settlements.

Faithful to the “cradle to cradle” principle, the project uses elements recovered from abandoned buildings and natural materials, sustainably exploited from local sources ensuring healthy lives and well-being for all at all ages. Reinterpreted traditional elements, arising from the use of local craftsmen, shape a natural background for cultural and manufacturing activities that address inclusive and equitable quality education and promote lifelong learning opportunities for all.

The project aims to give back to the community a certain territory, a location between familiar limits by using iconic shapes and familiar materials, achieving gender equality, productive employment, and decent work for all. Locally sourced and produced sustainable and reliable energy empowers the building systems ensuring low consumption that tries to combat climate change effects. The built assembly and the surrounding landscape restore to the natural environment and promotes sustainable use of terrestrial ecosystems, enhancing local biodiversity.

**Linking the project to the indicated SDGs**

The project is aligned with the following Sustainable Development Goals (SDGs):

- **SDG 11: Sustainable Cities and Communities**
  - Promotes sustainable building methods and resilient infrastructure.
  - Ensures healthy lives and well-being for all at all ages.

- **SDG 4: Quality Education**
  - Promotes inclusive and equitable quality education and lifelong learning opportunities for all.

- **SDG 5: Gender Equality**
  - Aims to achieve gender equality, productive employment, and decent work for all.

- **SDG 7: Affordable and Clean Energy**
  - Empowers the building systems with sustainable energy, ensuring low consumption.

- **SDG 13: Climate Action**
  - Combats climate change effects by using sustainable and reliable energy.

- **SDG 15: Life on Land**
  - Restores the natural environment and promotes sustainable use of terrestrial ecosystems, enhancing local biodiversity.
Project Description
To improve the living quality of the campus, a new building is built with multi-functions as canteens for students and professors, lecture hall and exhibition hall for the campus, office and service hall for the Tsinghua Career Centre and food storage for all the canteens at the centre of the campus of Tsinghua University. The core idea of design is to repair the urban texture in the campus context, to improve the fluency of the site, to make it easy to get in for the public from all directions. The section design takes the full advantage of the terrain of the site, creates a three-dimensional indoor street for the public, through ground floor on east and B1 floor on west. The entrance floor of the building on the one hand is functional and solid and on the other hand is a kind of cluster of open public space.

Linking the project to the indicated SDGs
The project transformed the site of former canteen and integrated as a convenient and complete public place for the campus. The terrain of the site is in good use for easy accessibilities in all directions. The trees and vegetation are preserved to keep the continuity and sustainability of the environment. Sustainable strategies, especially passive design strategies are adopted in the project to make the space more comfortable and reduce the cost and energy consumption in operation.

Author(s): Yehao Song, Jingfen Sun, Dan Xie, Xiaojuan Chen, Lina Wang
Organisation: SUP Atelier of THAD
Client: Tsinghua University
Project Location: Beijing, China
Geographic Coordinates: 40.00514445NL, 116.32873889EL
Built Area: 21,000 m²
Year of Conclusion: 2015
Project Description
The Jardim Apurá project consists in the creation of public spaces providing environmental recuperation in the margins of the Billings Reservoir qualification leisure, sports and housing areas. The Jardim Apurá Project was developed to reconcile guidelines that ensure environmental preservation, with opening new public spaces and improving local housing conditions. It resulted in an urban park with approximately 30,000 m² that promotes sports and leisure activities, as well as the recomposition of the territory and its community through the main goal of land property regularization in its entirety.

Linking the project to the indicated SDGs
The "Jardim Apurá" Project was developed in 2019 in compliance with the Sustainable Development Goals. It visualised the reduction of social vulnerability. The project considered the implementation of essential infrastructure networks in addition to the implementation of the Park and recovery of the Apucás and Guacuri Basins. It was possible to improve and recover the waters and the terrestrial biome. All of the actions aim to improve the quality of social housing for those who remain.
Project Description
A public welfare project conducted by a team of university student volunteers, located in a village named Xiaowopu. The village, as the water source of Beijing, is a site of the project Mega-cities and their Watersheds: Nature-based Solutions for Sustainable Drinking Water Sources funded by EU China. Since 2017, over 200 volunteers have worked in this village. Taking “Architecture as Social Process” as the principal idea, the project has built a series of public spaces and facilities including a school, an open-air theatre, a public square, a community kitchen, a bridge, a water-taking facility and barrier-free structures, and provided various social services, such as environmental education, clean energy promotion, medical consultation, smartphone using skill training and craftsmen training, to improve the living environment and social vitality of the community, and enhance its sustainable development.
Linking the project to the indicated SDGs

The project involves 12 SDGs: 6, 7, 12, 13 and 15 focus on the environment, and are positively correlated with each other; 3, 4, 5, 8 and 10 centre around the community members and can be realised through shared means such as education provision and facility building.

SDG 3: Through giving health knowledge lectures and introducing doctor volunteers to serve the village, the situation was improved.

SDG 4: The project not only provided diverse learning materials for children, but also advocated lifelong learning and offered knowledge and skill training to villagers of all ages.

SDG 5: Women’s Organisations were cultivated through collective activities and asked the women to help run the community kitchen and environmental education centre, increasing women’s participation.

SDG 6: A water-taking facility was built allowing multiple villagers to get water in a hygienic, convenient and safe way.

SDG 7: Examples for reducing energy consumption in construction were provided: renovating existing buildings, designing flexible facilities for multiple needs, using solar panels and solar lighting, introducing energy-efficient cookers in the community kitchen.

SDG 8: The project provided employment opportunities in construction activities and increased the villagers’ income.

SDG 10: Women were encouraged to participate in public affairs, provided barrier-free facilities for the elderly, and offered learning materials to children.

SDG 11: By providing public space, reviving traditional activities, and encouraging young people to return, the community’s sustainability was improved.

SDG 12: The project encouraged decreased use of plastic packaging and chemical products harmful to the environment, promoted environmental-friendly alternatives and built garbage incinerators.

SDG 13: The project repaired the open-air theatre for the rain-praying ceremony and relieved the villagers’ anxiety in a cultural way.

SDG 15: The project established natural resource archives and a digital museum for the village and gave lectures to enhance villagers’ awareness of environmental protection.

SDG 17: In addition to young architect volunteers, NGOs were introduced to provide financial support and volunteers majored in agriculture, medicine, anthropology are organised to work together.
Sustainable consumption and production is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Its implementation helps to achieve overall development plans, reduce future economic, environmental and social costs, strengthen economic competitiveness and reduce poverty.

Worldwide material consumption has expanded rapidly, as has material footprint per capita, seriously jeopardising the achievement of Sustainable Development Goal 12 and the Goals more broadly. Urgent action is needed to ensure that current material needs do not lead to the overextraction of resources or to the degradation of environmental resources, and should include policies that improve resource efficiency, reduce waste and mainstream sustainability practices across all sectors of the economy.

The building industry is a major consumer of natural resources and contributor to waste.

When buildings are demolished, most of the value of existing materials and components are lost. The same applies to renovations, which transform vast amounts of already extracted and treated materials into waste. Even the process of constructing new buildings is producing waste; from cut-off bits of gypsum board over discarded formwork and the wrapping that components are delivered in, to materials damaged by weather or mistreatment.

Designing for long lifetime, steady maintenance and keeping what we already have, by careful adaptation of existing buildings, are keys to sustainable consumption in the built environment. Design considerations for durability and life cycles can reduce the value loss and waste production in the building industry and in individual components, buildings and structures.

Ideally, the design of buildings allows them to transform into different uses over time so that the materials and other resources invested in the structure retain their value even when a given use changes or becomes obsolete. Additionally, individual components and materials should be designed and employed so that they can be recycled and upcycled.

Design and construction of new buildings must give priority to reducing the amount of material resources employed and waste produced. New architectural solutions and components must be developed that significantly reduce the use of resources overall, significantly limit the use of nonrenewable natural resources and emphasise the use and reuse of local materials.
‘THE LIGHT OF INTERNET’
WORLD CONFERENCE CENTRE

Project Description
In order to meet the functional requirements of the World Internet Conference and future diversified operation requirements, the pavilion is divided into four exhibition halls from south to north. The space can be used separated or merged. The site is located in the northwest corner of the heart of Wuzhen, surrounded by farmhouses, tourism projects and the first stage project of the exhibition pavilion area. The space can be used in series at large exhibitions, or it can be opened in parallel to accommodate various activities. Considering the space experience and applicability of the space of the independent exhibition hall, each section of the exhibition halls is high in the centre and low along the edge. The string beans are placed in the middle of the exhibition hall to form the big open space for the special function requirement. At the same time, there are openings at the top to introduce the skylight to improve the space quality. In order to achieve rapid construction of the entire pavilion, the dynamic modular system and the logic of the full prefabrication are applied to the overall skin construction of the entire pavilion project.
Linking the project to the indicated SDGs

The space can be used separated or merged, so it is possible to be used in series at large exhibitions or it can be opened in parallel to accommodate various activities. In order to achieve rapid construction of the entire pavilion, the dynamic modular system and the logic of the full prefabrication are applied to the overall skin construction of the entire pavilion project.
Project Description
Natural construction and bioclimatism are the elements of the project. Solar greenhouses and sunshades design the facades of the buildings. Public and private green spaces redesign the neighbourhood. An abandoned market area with environmental problems is reclaimed with a system of public and private green spaces and new NZeb residences. The project develops research themes in the Mediterranean area with passive bioclimatic contributions; solar greenhouses and a natural ventilation system mitigate the temperature of the flats made of hemp and lime materials, subtracting -800,000 kg of CO2 and reducing -3,000,000 liters of water.

Linking the project to the indicated SDGs
Project Description
Living Places Copenhagen demonstrates a new way of building homes with record low carbon footprint and delivers best in class indoor climate. The vision of Living Places Copenhagen is to lead the way within the building industry and show how rethinking buildings can help solve some of the global climate and health challenges. The concept holds the lowest CO2 emissions in Denmark, demonstrating that we do not have to wait for future technology to build homes that benefit both people and the planet.

The exhibition in Jernbanebyen showcases a total of seven prototypes—five open pavilions and two completed full-scale CLT and timber frame homes. The houses have been constructed for disassembly and are two storeys high, with gable roofs that embrace natural light and airflow. Each prototype is curated to show the synergy between how we live in homes and communities, emphasising the notion that sharing is a timeless tradition that creates better living environments for both people and the planet.

Author(s): EFFEKT, The VELUX Group, Artelia and Enemærke & Petersen.
Design group: Sinus Lynge, Kasper Reimer, Tina Lund Hansen, Daniel Veenboer, Marco Antonio Ravini, Juan Pablo Herrero Gil, Yulia Kozlova, Evgeny Markachev, Joel Brynielsson
Organisation: EFFEKT Architects
Client: The VELUX Group
Project Location: Copenhagen, Denmark
Built Area: 2,230 m²
Year of Conclusion: 2023
Linking the project to the indicated SDGs

Living Places Copenhagen demonstrates how we can develop low-carbon, healthy and socially-oriented communities by adapting existing solutions and technology to new problems. The concept is based on five key principles: homes should be healthy, affordable, simple, shared over time and scalable. These principles can be applied to new or existing buildings and communities. A complete Life Cycle Assessment has been carried out, which means that each material, design and building technique has been carefully considered and mapped in terms of the emissions they project compared to a typical Danish household. The homes achieve an independently certified annual footprint of 3.8 kg/CO2/m2/year, which is less than one-third of the Danish average – and to a price that matches the market price for a one-family house or rowhouses at scale. Furthermore, Living Places Copenhagen is designed with a strong focus on creating a healthy indoor climate using daylight and fresh air and it delivers best in class indoor climate. The project is the result of a visionary partnership involving close collaboration across the industry towards a common goal. As an official partner to the UIA World Congress of Architects in Copenhagen 2023, Living Places Copenhagen hosted a programme of debates and activities designed to drive and accelerate change in the building industry.

SDGs: 3, 9, 11, 12, 13, 17.
Linking the project to the indicated SDGs
This project aims to achieve Goal 12 of the SDGs by reducing the amount of material resources, waste, and CO2 emissions by upcycling existing buildings, i.e., reusing existing structures without demolition or new framework, and also contributes to Goal 15 by protecting hot spring and wood resources.
This method is not only effective in significantly reducing construction costs and time but is also desirable from an ESG investment perspective.
**BooTech Ecodome**

**Project Description**
BooTech Ecodome explores the use of bamboo, recycling one of the natural materials most suitable for construction, with a contemporary language and technique, following the UN 2030 Agenda SDGs. BooTech EcoDome, a geodesical bamboo dome designed for Interni Magazine event at 2009 Milan’s Design Week. Bamboo was reused from a previous pavilion, cut into slats and assembled using mechanical connections using no cement and specialised manpower, unlike mainstream approach. A disrupting construction system in a time of environmental crisis, designed with a precise geometry in harmony with the proportions of the Statale University’s renaissance main courtyard. Tradition vs Innovation.

**Linking the project to the indicated SDGs**
BooTech EcoDome refers to a physical transformation of the built environment asserting that the most viable means to radically reduce embodied carbon in buildings is to use natural materials for construction such as bamboo. Other than combat climate change, properly using bamboo for construction can tackle several SDGs by generating a new value chain, promoting inclusive and sustainable industrialisation, foster innovation, protecting ecosystems, bringing agriculture and architecture closer.

**Author(s):** Mauricio Cardenas Laverde  
**Organisation:** Studio Cardenas Conscious Design  
**Client:** INTERNI Magazine  
**Project Location:** Milan, Italy  
**Geographic Coordinates:** 45.46008574303175, 9.19453557013556  
**Built Area:** 40 m²  
**Year of Conclusion:** 2009
LDP

STRAW FLEA

Project Description
The project is conceived as a one-room house. It stands as a solitary self-confidently and naturally in the midst of the historical remains. In the southern, lower part is the living room with large, completely openable glazing to the garden and the small stream crossing the property. The building is entered via the northern part, where there is also a small sanitary unit and a sleeping gallery. The large panorama windows are aligned with the historical and landscape references and offer an unrestricted view towards the church, into the valley or to the remains of historical statues in the park.

Linking the project to the indicated SDGs
The project follows a holistic sustainable concept in planning, use and implementation. The house is elevated and only touches the terrain via the eight screw foundations. This means that no ground surface is sealed. Most of the materials used come from the immediate surroundings. The wood, both for the structural elements and for the surfaces, comes from the client’s own forests and was processed in the neighboring sawmill. Heat and energy are generated by the photovoltaic system on the roof.

Author(s): Mag. Juri Troy
Organisation: Juri Troy Architects, Caravan Atelier
Client: Severin Althann
Project Location: Murstetten, Austria
Geographic Coordinates: Latitude: 48.2397 – Longitude: 15.8274
Built Area: 46 m²
Year of Conclusion: 2022
Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more tomorrow. Weather patterns are changing, sea levels are rising, weather events are becoming more extreme and greenhouse gas emissions are now at their highest levels in history. Without action, the world’s average surface temperature is likely to surpass a 3 degrees centigrade increase this century. The poorest and most vulnerable people are being affected the most.

Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies. Climate change, however, is a global challenge that does not respect national borders. It is an issue that requires solutions that need to be coordinated at the international level to help developing countries move toward a low-carbon economy.1

To find out more about Goal #13, visit: https://www.un.org/sustainabledevelopment/climate-change/

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1. Extract from UN’s Sustainability Goals: https://www.un.org/sustainabledevelopment/climate-change/

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Project Description

The Incremental Development Manual provides an in-situ upgrading strategy for ger district residents of Ulaanbaatar, Mongolia. It includes affordable and energy efficient housing options to enable people to build according to their needs and in stages, based on their available budget. It offers a mechanism to upgrade infrastructure provision to improve sanitation and access to water. It transitions inhabitants away from burning coal as their primary heat source, reducing air pollution in the districts.

Over 840,000 people live in sprawling districts comprised of traditional felt tents, gers and self-built houses in Mongolia’s capital city of Ulaanbaatar. These ger districts lack basic infrastructure and households use an average of over 4 tons of coal for heating each year as winter temperatures drop below -30°C resulting in toxic air pollution. Current development plans require residents to exchange their land for an apartment.

The Incremental Development Manual is an alternative strategy for in-situ upgrading, including energy efficient housing and infrastructural components, that demonstrate how the districts could be improved towards a more sustainable future.
The Incremental Development Manual integrates energy efficient housing with in-situ infrastructural provision. It provides a mechanism to pivot the ger districts away from being a source of harmful air and soil pollution towards becoming a sustainable and climate resilient community, (SDG11 Sustainable Cities and Communities). The creation of energy efficient homes with improved insulation reduces energy consumption and the removal of coal burning stoves reduces air pollution, (SDG13 Climate Action). Currently, air pollution in the city is one of the worst in the world and correlates to numerous health related issues. The new housing provides direct access to drinking water, improves sanitation through showers, interior WC’s and septic tanks, replacing outside pit latrines, (SDG 6 Clean Water and Sanitation). This further improves the health and well-being of the community, reducing sick days for both workers and school children alike, (SDG3 Good Health and Well Being). The Manual is an alternative development strategy with the potential of creating demonstrable large-scale impact.
Project Description

The Athabasca Cultural Community Centre is a concept project created as a learning tool to demonstrate an interdisciplinary and integrated approach to designing a net-zero regenerative project. The project was designed with sustainable design strategies tailored to the context of a rural university campus, in the northern Albertan town of Athabasca, Canada. The integrated design process takes a three-step approach: Step 1) The programmatic needs are developed through a collaborative engagement of listening and dialogue with the local community; Step 2) Considering its cultural context, climate, and physical characteristics, a deep understanding of the site is formed; Step 3) The programme and natural systems are woven together to optimise the passive design opportunities while enhancing the celebration of the environment. The final design is characterised by a holistic understanding and adaptation to the site as an integrated living system.

The building’s massing and its sculptural form expresses a strong sense of place informed by the culture and identity of its location as well as indigenous interpretations of land and place. The use of sustainable and renewable materials including regional mass timber makes it possible to efficiently sequester carbon. The spatial and experiential design improves the indoor environmental quality, health and wellbeing of its tenants in addition to being accessible, inclusive and welcoming to all.

Author(s): Dr. Henry Tsang (Project Coordinator), Veronica Madonna (Architect), Dr. Trevor Butler (Engineer), Dr. Douglas MacLeod (Leader), Jessica Williams (Designer)

Organisation: Athabasca University RAIC Centre for Architecture

Project Location: Town of Athabasca, Canada

Geographic Coordinates: 54.7150° N, 113.3085° W

Built Area: 3,312 m²
Linking the project to the indicated SDGs

The design team composed of faculty members and students at Athabasca University’s RAIC Centre for Architecture worked collaboratively with many interdisciplinary experts in the development of the design to carry out an integrated design process, including architects, engineers, town and community leaders, university professors, students, and indigenous knowledge keepers (SDG 17). Together, they have developed this innovative project as a sustainable, accessible, inclusive, and safe community hub for the university and residents of the Town of Athabasca at large. (SDG 10, 11, 16). The building is designed with community-centric planning considerations that focus on the social and cultural values of the architecture, as well as the health and wellbeing of the occupants. (SDG 3) The numerous net-zero regenerative design strategies directly advance SDGs that focus on sustainable cities and communities (SDG 11), as well as climate action (SDG 13).
NAZARÉ ECOSYSTEM

Project Description

The Nazaré Ecosystem transforms a former eucalyptus plantation land into an educational centre meeting the contemporary sustainable demands using a simple and vernacular aesthetic, respecting the client’s desire for an architecture with the atmosphere of “a house that was born old, that has always been there”.

The Nazare Ecosystem has a complex architectural programme, including: a summer house, small rental units, a cultural space, an industrial kitchen, spa, swimming pool, and an art gallery.

Seeking the best efficiency, a modular structural system made of reforested wood was created using the minimum module of all parts is 300mm with a maximum span of 6m.

All rooms were designed with passive bioclimatic strategies using the sun, the wind and the natural elements in a sustainable approach.

Linking the project to the indicated SDGs

From the outset, the project aimed to meet the 17 SDGs:

1- Hiring of local labour, reducing the need to travel and stimulating the local economy, while at the same time increasing the building’s sense of identity and belonging to the place where it is located.
2- Extensive research and partnership with local institutes, choosing native vegetation and species with low water consumption, which stimulate the proliferation and attraction of local fauna and produce fruit that will be processed by the educational kitchen.
3- Creation of eco-tourism focused on local experiences of hiking, tree climbing, as well as offering free multi-sports courts for the local population.
4, 16, 17- Free educational programme offering courses in handicrafts, cookery, entrepreneurship, well-being, and elementary education for adults.
5- Hiring LGBTQI+ lecturers and employees to reinforce their presence in the community.
6- Recovery programme for 4 river springs through restructuring landscaping and removal of eucalyptus plantations.
7- Production of 100 per cent of the electricity consumed using the latest generation of solar panels.
8- Educational programme and subsequent leasing of the site in a subsidised programme for small local producers.
9, 10, 11, 12- Hiring local labour, carpentry and locksmithing.
13- Ecosystem conservation, offering courses on local fauna and discouraging hunting.

Author(s): Vitor Dahe, Pablo Mauleon
Organisation: Ubuntu Arquitetura
Client: Antonio Marcos Vieira de Faria
Project Location: Nazaré Paulista, Brazil
Geographic Coordinates: -23.266655, -46.442092
Built Area: 200,000 m²
Project Description
Cantinho do Céu project, located in São Paulo, Brazil, comprises the urbanisation of informal settlements and the recovery of a water reservoir’s edges through the implementation of a linear park. Cantinho do Céu urbanisation project was developed based on the understanding of the importance and urgent need of the territory’s urban qualification. Its main element is represented by the six phases that make up the linear park, which, in addition to creating spaces for sports and leisure, seeks to explore possibilities for bringing people closer to the water and, in an articulated way, respecting social structures and local morphology, resulted from collective construction.

Linking the project to the indicated SDGs
The project brings urban infrastructures and public recreational spaces to a community that lacked access to clean water, sanitation services and public spaces (SDGs 1, 3, 4, 6, 9, 10 and 11); reforests and preserves the banks of the reservoir and reverses the discharge of sewage into the water body (SDGs 13, 14, 15); and was developed alongside the community, ensuring community-generated interventions and the continuity and preservation of the project through social engagement (SDG 17).

Author(s): Marcos Boldarini (general architectural coordinator), Marcos Boldarini and Lucas Nobre (urban/landscape coordinator); Elisabete França, Maria Teresa Fedeli, Vanessa Padia, Letícia Tamisari and Laura Dallabrida Leite (project management).
Organisation: Boldarini Arquitetos Associados
Client: Consórcio Mananciais São Paulo
Project Location: São Paulo, Brazil
Geographic Coordinates: 23°44’19.3”S 46°39’29.0”W
Built Area: 1.4 km²
Year of Conclusion: 2022
Project Description
BooTech construction system is a balance between nature and artifice, applicable without cement nor specialised manpower unlike mainstream approach, makes it, when in commerce, the first of its kind. The symbiosis between nature and technology is the original characteristic of BooTech, a disruptive sustainable construction system in a time of environmental crisis. BooTech innovates through the dry-mounted application of bamboo, a natural product of nature, to achieve beautiful, cost-effective, low carbon architectural solutions of different geometrical forms and sizes. The elegant designed system can host bamboo poles of various available species that can vary from 50mm to 140mm diameter.

Linking the project to the indicated SDGs
Introducing BooTech into the building chain will promote shaping a circular industry ecosystem, a value network that will challenge the existing construction industry supporting life cycle thinking. BooTech is a conscious, innovative and strategic choice to radically reduce embodied carbon in buildings supporting the mitigation of climate change in line with the SDGs of the United Nations 2030 Agenda.

Author(s): Mauricio Cardenas Laverde
Organisation: Studio Cardenas Conscious Design
Project Location: Milan, Italy
Year of Conclusion: 2006
BooTech built projects since 2006
Project Description
A multi-use space where community members can gather for various formal and informal activities that promotes community building and provides a sense of unity. The space was built by a team of community members and students of architecture, mostly women. The building is made of traditional local materials such as bamboo, rope, mud and straw, which is about 98% zero-carbon. The octagonal structure is made of prefabricated bamboo wall panels, which could be also used as a disaster rehab building, since the panels could be made in a short period of time and can be transported easily with local transport available in the villages. The project inspired a community to build a structure with indigenous zero carbon materials that provided a sense of ownership and pride. It was made by students, local artisans and community members to strengthen capacity in the community, ultimately advancing sustainability’s long-term goals.

The students and community members, being mostly women, showed the ability of women in making a sustainable building - through preparing mud floors, treating bamboo, cutting structural members, weaving wall mats, and finishing straw roofs. This boosted their confidence in construction considerably. This prototype has been used as a disaster rehab building in some areas.

Author(s): Zainab Faruqui Ali, Emmat Ara Khanam Ema
Organisation: Brac University
Client: Worldwide Teach-In on Climate and Justice (OSUN Climate Education Grant)
Project Location: Jhenaidah, Bangladesh
Geographic Coordinates: 23.531817, 89.187021
Built Area: 31.22 m²
Year of Conclusion: 2023
Linking the project to the indicated SDGs

Bamboo Architecture offers a potential solution to the environmental, economic and social issues that society is currently confronting in Bangladesh. The structure is made of prefabricated bamboo wall panels which were handled with ease by the community members and students. The involvement of locals was efficient in terms of community resources and strengthened the strategy for sustainable eco-buildings.

Their active involvement in all project phases, from project conception to design to construction, helps sustainability’s long-term goals. Participation of mostly women members well illustrates the ability of women in construction. This prefabricated octagonal prototype is also being used as a disaster rehab building in many disaster-prone areas, and thus there is a need for quick building of disaster rehab structures in a short time.
Forests cover 30.7% of the Earth’s surface and, in addition to providing food security and shelter, they are key to combating climate change, protecting biodiversity and the homes of the indigenous population. By protecting forests, we will also be able to strengthen natural resource management and increase land productivity. At the current time, thirteen million hectares of forests are being lost every year while the persistent degradation of drylands has led to the desertification of 3.6 billion hectares. Even though up to 15% of land is currently under protection, biodiversity is still at risk.

The amount of built structures, buildings, settlements and cities taking up land, is rapidly growing.

Ecosystems and biodiversity are under intense pressure due to growing cities and settlements, farming, mining and the changing climate. To protect, restore and support ecosystems and biodiversity, buildings and settlements must include habitats for plants, insects and animals. This means that greenfield developments should be kept to a minimum and that planning and development of all new settlements must ensure sustainable conditions for local ecosystems, flora and fauna. Nature networks that allow plant life should be developed in existing settlements and urban areas so that insects and other animals can co-exist with the built environment. Examples are found at all scales; from pocket parks and insect hotels to large-scale planning projects establishing or re-establishing nature networks and biodiversity in both big cities, suburbia and farmland.

Furthermore, the building industry can help promote sustainable forestry and combat deforestation by using wood only from sustainable sources and by generally using materials that are renewable and sustainably produced and which do not compromise biodiversity and natural habitats. Local flora and fauna must form the basis of landscape design in buildings and settlements, including lawns and interior greenery, so that plants can interact with and support local ecosystems.

When done carefully, buildings placed in vulnerable ecosystems or in wildlife-parks can add to their preservation through sustainable tourism and raised public awareness.
Project Description
The project investigates the redefinition of the Greek countryside, aiming to become a model for the development of a new generation of farms where production, research and recreation are in balance.

The proposal transforms 50 hectares of agricultural land into an alternative agricultural typology, offering cultural and community facilities developed around farming and food production. Thus, it makes this new structure an active economic and social centre, forming a new model of the relationship between consumer and producer. The resulting programme variety reflects the entire food chain, from research, education, cultivation, and harvesting, to storage, sale, and consumption.
Linking the project to the indicated SDGs
The project studies new methods of cultivation and food production, suggesting the establishment of a new model of farms strategically positioned in the Greek countryside alongside major highways. In this way, a network of infrastructure can be created to connect the diffuse villages of the plain. New experimental crops are cultivated around the linear structure adopting the pixel cropping model. Architecturally, the proposal is based on the typology of the elongated pitched roof, allowing for easy future expansion of the structure, or even its transfer to a new plot, leaving the minimum possible footprint on the environment. The entire structure is built with CLT parts that have been cut using CNC and transported to the site.

To ensure optimal conditions for each one of the buildings, based to their use, the design incorporates skylights, elevated floors and varying lengths of the roof’s eaves. Moreover, the project integrates various sustainable features such as photovoltaic panels, rainwater collection system, a geothermal heat system and water management techniques.
PLACE BUILDING: ENHANCING URBAN RESILIENCE IN HAZARD-PRONE AREAS’ PUBLIC SPACES. THE CASE OF AREQUIPA, PERU

Project Description
This project proposes the concept of Place Building as a tool for integrating fragmented communities near seasonal ravines in Arequipa, Peru through low-cost and easy-to-implement urban elements in public spaces.

Linking the project to the indicated SDGs
Our concept of Place Building proposes creating communal identity by transforming so-called non-places. Unlike Placemaking, which is typically ephemeral, Place Building creates permanent, gradually developed communal infrastructure based on an initial module developed in collaboration with the community and local authorities. This approach enhances social capital and community resilience. Our proposal is based on the Urban Linkages project and is directly linked to SDGs 11, 15 and 16.

Author(s): Carlos Zeballos & Sheyla Chevarria
Organisation: Colegio de Arquitectos del Peru
Project Location: Arequipa, Peru
Geographic Coordinates: 16° 22.633’S, 71° 30.681’W
Built Area: 89,000 m²
THE MAIN PAVILION OF THE 11TH JIANGSU HORTICULTURAL EXPO

Project Description
The main pavilion of the 11th Jiangsu Horticultural Expo is a large-scale public building group with highly complex and diversified functions composed of 43 individual buildings. The original industrial building has a construction area of 12,500 m²; and the total construction area after activation and expansion is 52,000 m². The design takes the site of an abandoned private cement factory as the construction base. Restoring environment, repairing urban functions, creating a new public green space in the city and respect for “ecology” and “heritage” the primary value orientation during the planning and architectural design process of the main pavilion.

Author(s): Cui Kai, Guan Fei, Dong Yuanzheng, Fu Yifei, Liu Yadong, Bi Maoyang, Wang Deling, Zhang Jiashu, Guo Yiming, Liu Jianing, Wei Jiayin, Dou Qiang
Organisation: China Architecture Design & Research Group (CADG)
Client: Jiangsu Garden Expo Park Construction and Development Co., Ltd
Project Location: Nanjing, Jiangsu Province, China
Geographic Coordinates: 39.928 N, 116.404 E
Built Area: 52,000 sqm
Year of Conclusion: 2021
Linking the project to the indicated SDGs

The main pavilion of the 11th Jiangsu horticultural Expo is built on the site of an abandoned cement factory, focusing on creating a science popularisation platform with the theme of industrial heritage protection. The design strategy of light intervention also gives the building greater flexibility to meet the needs of multiple functions and types of spaces, while also considering post exhibition renovation and reuse. The design of the main pavilion intends to rely on the diverse industrial architectural relics and rich elevation differences within the site, using a slender steel structure system to achieve a lightweight modern exhibition hall community, making the green art garden diffuse and linger between the rough industrial factories, and using green space to bridge the damage caused by industrial production to the mountains and nature. Using a modular strategy to handle and adapt to complex sites, the prefabricated system enables pre planting of greenery, integrating horticulture and architecture. After the exhibition, the main exhibition hall park will serve as a public education base and a children’s forest experience place, continuously promoting plant and horticultural knowledge to citizens.
Project Description
Waterfowl Pavilion is a net-zero energy building located on an island with high ecosystem diversity and serves as a multi-functional building for bird breeding, exhibition and science advocacy.

To create a demonstration net-zero energy building under the limit budget is the initial target. Since the pavilion is a habitat for birds, the environmental quality is more complicated. The sustainable strategies need to be refined into specific goals for each engineering discipline.

The design emphasises being ‘invisible’ in the natural environment, which is not only reflected in visual level, but also the minimisation of interferences to ecological system and wild environment of the island.

Linking the project to the indicated SDGs
The pavilion employs PV, PVT and solar heating system to produce clean energy onsite. By combining passive design methods and active technologies together, the energy consumption during operation is minimised. (Goal 7)

The original micro-ecosystem is intactly preserved with the site handling strategies. An integrated wetland system is employed through a minimally invasive reform of the site section, which creates an excellent habitat for the waterfowl and the vegetation. (Goal 15).

Author(s): Yehao Song, Lina Wang, Jingfen Sun, Dan Xie, Xiaojuan Chen, Yifan Bai, Zhenghao Lin Junjie Li
Organisation: SUP Atelier of THAD
Client: Beijing Zoo Management Committee
Project Location: Xicheng District, Beijing, China
Geographic Coordinates: 39.94NL,116.34EL
Built Area: 335 m²
Year of Conclusion: 2013
Project Description
The project is located on Kongshan mountain in Nanjing, where quarrying caused ecological damage. A botanical garden, outdoor theatres and a hotel are built to restore ecosystem and bring life back. Respecting and reusing existing resources, we chose ecological restoration as our strategy. The old transport channel is reconstructed to provide a path to garden and blankets of fog at the pit bottom build a poetic landscape while adjusting temperature and humidity. The roof of botanical garden, a 16,000′ artificial lake covers the entire secondary mine pit, creating a special “underwater” experience. Then, open-air stages are set up against the cliff to project a huge light show and the hotel is elevated at the east end overlooking the whole park.

Linking the project to the indicated SDGs
By light intervening strategy, innovative technology and adaptive vegetation, we avoided new damage to the site and restore degraded forest and ecosystem. The abandoned quarry reshaped into a garden showcased new chances of sustainability, as well as offering a platform for public to look into biodiversity and eco-restoration. Restoring is not only recompensing, but also creating a new nature where human learn to coexist with our planet, and our architecture - when its water turns green with algae and its steel is covered with moss - will eventually be a part of it too.

Author(s): Kai Cui, Fei Guan, Qin Ma, Ling Yang, Xi Chen
Organisation: China Architecture Design & Research Group
Client: Jiangsu Yuanboyuan Construction Development Co., Ltd.
Project Location: Nanjing, China
Geographic Coordinates: 32.079799, 119.015811
Built Area: 98,000 m²
Year of Conclusion: 2021
Project Description
The project’s notion to knit the community while keeping the natural setting, comes from commemorating the visions of ‘The father of the nation’ who fought for the liberty of the people of Bangladesh.

It is situated on the bank of Madhumati River which has been left unutilised without development for decades with mono functional activities like boat docking and river-based transportation of goods which over the years caused the site to decay from extensive flooding and erosion.

The design proposal transforms the entire riverfront with an Indoor information centre, an outdoor public space as a contemplation zone that extends towards the river and terminates as a natural slope. The outdoor gathering area around the shallow pond is vegetated with the national flower of Bangladesh “The Lily” enclosed by a curved walkway linking the building mass with the river.

The main aspect of the project is its adaptability with seasonal changes of water levels and vegetation and inclusivity of nature within a public space. Proposed contours adapt with flooding and inundation of the site during monsoon that brings fertile soil, amplifies native vegetation growth, and attracts numerous shore birds. The safety enclosure of the curved walkway is formed with slender poles made of metal at different height that also acts as a perching zone for shore birds.
Linking the project to the indicated SDGs

The project ensures equal accessibility to people of all races, gender, age and religion. It works as a recreational space with well thought out inclusion for the elderly and specially abled and gives everyone the opportunity to connect with nature. Thus, it plays a vital role in maintaining the mental health of the inhabitants. It prevents the site from soil erosion which previously was a major threat to the mono-functions of this area. The proposed contours adapt to the site’s floods and inundation during the monsoon, which delivers fertile soil, amplifies natural flora development, and attracts a large number of shore birds. The circular walkway’s safety perimeter is built by thin metal poles of varying heights that also serve as a perching zone for coastal birds.
Peaceful, just and inclusive societies are necessary to achieve the Sustainable Development Goals (SDGs). People everywhere need to be free of fear of all forms of violence and feel safe as they go about their lives whatever their ethnicity, faith or sexual orientation. In order to advance the SDGs, we need effective and inclusive public institutions that can deliver quality education and healthcare, fair economic policies and inclusive environmental protection.  

Parliaments, courthouses, as well as civic institutions like public libraries, are cornerstones in a just and peaceful society while local community centres, places of worship and memorials can represent citizens’ commitment to social change and to an inclusive and compassionate society.

Architecture does not make an institution just, but the effort and values put into a building can represent society’s commitment to justice, democracy and inclusiveness. Examples of this span from prestigious public buildings to NGO-funded memorials and community centres. The built environment evolves continuously as new buildings, monuments and structures are added and older ones are developed or replaced. In this process, representation of equal justice for all citizens must find an architectural expression shaped through the inclusion of, and in dialogue with, all stakeholders.

To support society’s expression of its values through buildings and public space, architecture and planning must ensure that public spaces and institutions are inclusive, welcoming, secure and non-discriminatory. As part of this, public health measures and terror protection should be developed that are inclusive and inviting to all citizens and users. The design of libraries, community centres, memorials and places of worship must ensure safety, inclusiveness and affordability. The building industry itself must pay close attention to procurement and construction processes in order to discourage theft, corruption, bribery and all other forms of organised crime. The building industry must also ensure that the extraction, production and handling of building materials do not rely on abuse, exploitation, human trafficking or child labour.

To find out more about Goal #16, visit:

1 Extract from UN report WHY IT MATTERS – PEACE, JUSTICE AND STRONG INSTITUTIONS – PDF
The project aims to rethink architecture as an instrument of inclusion by providing educational facilities that embrace the sensory surprises of New York, offering new learning opportunities in the heart of Manhattan. The proposed architectural interventions aim to create new configurations of spaces for interaction and socialisation for schools, and especially for children growing up in a city where everything is tenfold. This new way of thinking about spaces was achieved through the use of sequences and variations that are omnipresent in New York. For the detailed development of the project, the intervention sites are located in a neighbourhood in the heart of Manhattan, along 8th Avenue. The new principle of extracurricular spaces forms a new qualitative resilient system that uses the existing qualities of the neighbourhood to build complementary spaces to the city’s schools. Through their structural design and their principle of openness to the city, the educational centres express a unique architectural identity in the urban fabric. Human interactions and acquisition of knowledge among children are enhanced by the extracurricular facilities offered, which can also be used by anyone requiring facilities such as those proposed. Schools have complementary spaces for teaching, learning, creating new opportunities for socialisation, etc. New learning methods are created by the stimulation between the activity of the streetscape and the extracurricular facilities.
Linking the project to the indicated SDGs

The district of the two sites selected for the development of the project is made up of businesses, offices, hotels, theaters and housing. Thousands of people pass through every day, there is an unmistakable proximity to the city’s points of interest because it is located in the heart of Manhattan. What is missing from these spots and what is the ingredient of a city, of a neighbourhood, are schools. Schools in which children have proper spaces for a good education, with outdoor spaces and work areas appropriate to their needs. Most of the schools in the area are located in old buildings where the playgrounds are missing, the interior spaces are too small and not designed for school facilities. Children are somehow cut off from the reality of what is going on in the city. The majority of large New York schools with spacious facilities, outdoor playgrounds and access to natural areas are located in the northern part of Manhattan, where there is very little human activity. However, realities of New York are characterised by this constant disorder where many events occur at the same time. The project proposes to introduce new learning opportunities in these areas through the creation of an educational centre offering additional spaces for educational purposes linked to high schools, elementary schools and kindergartens.
Project Description
The Redevelopment of Central Vista, New Delhi, is a historically and culturally significant project proposing the redevelopment over 440 Hectares of prime land. Reimagining New Delhi as a Garden City, the redevelopment proposal offers a possibility of bestowing it with an international iconic stature and creating a state-of-the-art futuristic and liveable vision of urban development. The overall master planning integrates elements of harmony, balance and rhythm to ideate a concept which is a comprehensive understanding of the challenges of the present times while leaving ample area for unhindered future expansion. The axis of the Vista extends more than 2 kms in length and is developed as a mixed-use cultural district. A natural stream balances the overall site and is flanked by extensively landscaped avenues and pedestrian spine on either side. By restricting vehicular movement on the outer roads, this street is kept pedestrian-friendly, becoming an eco-conscious zone.

The design also proposes a monorail concealed under the terraced landscape which links all buildings in the precinct and integrates with city mass transit significantly reducing vehicles in this district. Technological advancement is utilised to its fullest with features such as high-end security systems, display screens to help guide pedestrians with movement in and around the site, well-regulated parking for vehicles etc.
Linking the project to the indicated SDGs

Several active and passive sustainable design strategies are proposed to ensure the buildings have minimal environmental impact. At the master planning level, the dense vegetation acts as a heat sink, and the water channels have a cooling effect on the local microclimate. At the building level, the passive design strategies are centred around efficient channelling of air, water, and sunlight to create suitable indoor environments, thus reducing the dependence on artificial HVAC and lighting systems. Compact volumes enable mutual shading at the building level and minimise the solar heat gain.

Planned around a series of courtyards, the secretariat buildings receive ample daylight and natural ventilation. The regular misting of courtyards in the summers helps reduce the ambient local temperature by 10-12 degrees Celsius. These courtyards are integrated with pergolas for shading, water bodies for evaporative cooling, and roof gardens that act as heat sinks and thermal barriers. Double-skin facades with jalousies enable shading while serving as chutes for natural ventilation. Double-wall construction, insulated roofs and high-performance reflective glass further help in minimising the overall heat gain in the building.
Project Description
Under construction parish building in Maida, a small town located in the southernmost part of the Italian peninsula. Commissioned by the Diocese of Lamezia Terme, its aim is not only to provide spaces for catechism and other parish activities but also to establish a place that could become a reference point and network hub for humanitarian organisations across the entire district. The complex building embodies the commitment to social change toward an inclusive and compassionate society. It consists of two sections separated by a courtyard, metaphorically reminiscent of the streets of an ancient village. The project also includes exterior landscaping and connections with an existing public park.

Hospitality and a sense of community were the guiding principles in designing the building, which takes inspiration from the archetype of a village with pitched roofs. It establishes a formal dialogue with the historic centre located just over 700 metres away.

Its east/west orientation not only opens up to the panoramic view but also ensures clear identification of the main entrances. The two sections with the passageway entrance situated among them house the parish hall, three smaller rooms and restroom facilities. The main volumes differ not only in their floor plan sizes but also in overall heights, emphasising the correspondence between the volumes and functions even externally.
Linking the project to the indicated SDGs

In our current society, where virtual communities grow while physical ones are seriously in crisis, the importance of public space emerges as a place of experience in which to feel safe and free. During the pandemic period, we experienced boundaries and surrogates of interpersonal relationships thanks to the internet. The importance of physical relationships as a stimulus to creativity and to produce adaptability and resilience was even more evident. Our cities not only need to reduce emissions or improve their efficiency but also create new spaces that encourage interaction between people.

Promoting public space also means supporting a more equitable, inclusive and sustainable alternative to closed and gated communities which are increasingly taking hold as an exclusive development model reserved only for the luckiest and wealthiest. Specifically, in an area marked by a long history of illegality in which what is public is often seen as a conquest ground, the parish building takes on the meaning of a bulwark of universal and inalienable values.
Project Description
An art school with character and presence within its surroundings, designed to maximise contact among disciplines and students, but also with the city. An art school with “character” where functionally different areas are structured with a courtyard system, but where students are familiar with all the activities taking place in the building, feeling they are part of the whole school, not only doing activities from their own specialist area. The maximum visual and physical openness possible, as a key part of the learning and training process.

Mies van der Rohe Award Nominee (2013).

Linking the project to the indicated SDGs
The property requirements, according to the official educational programme, reserved little space for areas without a “specific” use. In the teaching of art, personal exchange, relationships and non-regulated information are all a vital part of the maturing process. Space where this can occur were implemented. Also, visual connections among areas were encouraged. For example, the double height area in the “entrance hall” is crossed over the top with the walkway which closes off the circle of hallways on the first floor. This has allowed the teaching team to organise a catwalk for fashion students to show their work.

Author(s): Primitivo González
Organisation: CCAE
Client: Ministry of Education, Junta de Castilla y León
Project Location: Burgos, Spain
Geographic Coordinates: 42.34177127067092, -3.7332334766674378
Built Area: 6,915.89 m²
Year of Conclusion: 2011
**Project Description**

An obsolete and old building, presenting an image of being inaccessible, is transformed into a contemporary courthouse, with a sense of closeness to the citizens. There are public buildings that transmit a feeling of being “inaccessible”. This renovation of a 19th century courthouse in a neo-classical style, represents a radical change in the access and layout of the building. The entrance steps have been removed, and the semi-basement floor converted into the ground floor of the building, housing all public services. The result is an accessible building, with enough space for its use, well communicated as placed in the city centre and giving a modern image of the justice institution. The project received an Honourable Mention in the UIA Award “Friendly Spaces Accessible to All” (2014).

**Linking the project to the indicated SDGs**

Faced with the common alternative of moving the courts from the building to a purpose-built campus on the outskirts of the town and making them less convenient to get to, the Ministry of Justice addressed the possibility of renovating the old building. The project firmly celebrates and supports this option, presenting strategies for adapting the building’s characteristics to current needs. We have managed to secure the survival of a building which is important in itself as a part of the urban landscape. The creation of an accessible, pleasant “new building” is conveyed in the image of the building, that brings closer the institution closer to the citizens.

**Author(s):** Primitivo González  
**Organisation:** CSCAE  
**Client:** Ministry of Justice  
**Project Location:** Burgos, Sapin  
**Geographic Coordinates:** 42.338267, -3.706156  
**Built Area:** 13,226 m²  
**Year of Conclusion:** 2012
Right to the City: the housing policies developed in the last 50 years through the five-year plans of the successive governments have yielded access to strategic urban soil of privileged characteristics and have enabled the construction of these 100 social housing units overlooking the sea. Our tower intends to continue and reaffirm this dialogue of social, cultural and urban integration, restoring Gasometer 5 as the symbolic reference of a possible metaphor. A welcome addition to an emblematic space within the city, it accommodates a variety of typologies as it considers economic and administrative constraints. The building is inserted into the public promenade within a neighbourhood that has an identity and a history of its own.
Linking the project to the indicated SDGs
Starting in the 1960s, the land reclaimed from the sea by the design of the coastal Rambla enabled the new *hygienist* proposals for high-rise social housing buildings that would come to define the new southern border between the city and the Río de la Plata. Rambla is one of the most prominent urban elements of the city and its quintessential public space. A place for the public expression of all citizens, and a site for the exchange of collective experiences. Our tower intends to continue and reaffirm this dialogue of social, cultural and urban integration, restoring.

Gasometer 5 part of the industrial heritage of the late 19th-century city. The Sur and Palermo neighbourhoods are known as the cradle of the Afro-Uruguayan culture. The parade of the llamadas and the musical style of candombe are a major contribution to the establishment of a sense of belonging.
A successful sustainable development agenda requires partnerships between governments, the private sector and civil society. These inclusive partnerships built upon principles and values, a shared vision, and shared goals that place people and the planet at the centre, are needed at the global, regional, national and local level.

Urgent action is needed to mobilise, redirect and unlock the transformative power of trillions of dollars of private resources to deliver on sustainable development objectives. Long-term investments, including foreign direct investment, are needed in critical sectors, especially in developing countries.¹

Every home, building and settlement is built by many hands. The development of a sustainable future similarly requires that we work together, in partnership. No single stakeholder can reach the UN 17 sustainable development goals alone.

The challenge of achieving the goals requires the involvement of all, from governments and institutional actors to researchers, businesses and citizens. Architects, designers and planners can contribute by sharing knowledge, promoting sustainable solutions and engaging in collaborations with research and institutional partners to develop and implement sustainable solutions. Examples span from non-profit partnerships providing homes for the displaced, to commercial partnerships developing new sustainable products and services to the building industry. Key to the partnerships is a willingness to include new knowledge, test new practices, engage with local climate, culture and resources and work with end users to ensure commitment and ownership in a life-cycle perspective.

Partnerships for the goals also include associations and networks of professionals who have committed to working with the goals. From the International Union of Architects (UIA), which brings together architectural associations from all over the world and represent 3.2 million architects, to local study groups sharing know-how of green roofing systems.

The challenges addressed by the goals are global; to achieve them we must work together across professional fields and national borders. Architecture interacts with each of the goals, and for each goal we must partner with other professionals, authorities, citizens and researchers to move towards more sustainable solutions everywhere.

¹ Extract from UN’s Sustainability Goals: https://www.un.org/sustainabledevelopment/globalpartnerships/
Project Description
Developed to bring more playfulness and solve traffic and mobility problems around the neighbourhood’s Early Childhood Education Centre, the Sumaré Square Pilot Project uses tactical urbanism to propose the requalification of its area through children perspective. Developed in partnership with Urban95, from children’s perspective and in an intersectoral way, the Sumaré Square Pilot Project, had the requalification of its small square by proposing expansion through painting, installation of beacons and recreational equipment indicated as a demand by the children living in the neighbourhood.
Linking the project to the indicated SDGs

Besides improving mobility around the Early Childhood Education Centre in the neighbourhood and renewing the square located immediately in front of it, the Sumaré Square Pilot Project had the effective participation of the children and other users of the space based on listening methodologies developed in partnership with Urban95 in order to outline guidelines, supporting project decisions and working on the feeling of belonging between the population and the intervention.
**Project Description**

The mosque in Baluchistan, Pakistan aims to redefine traditional religious structures by implementing sustainable development goals. The goal is to design a sustainable and communal space that promotes a sense of ownership through place-making strategies. Mosques in Pakistan are now limited to prayer, but in early Islam, they were community centres for social cohesion without discrimination. This project aims to design a sustainable place using a neo-vernacular approach respecting regional materials and construction with an open, nature-connected layout that is inclusive for all ages. The programme promotes community programmes like community kitchens, bazaars and safe spaces for play to increase visibility on the street.

**Linking the project to the indicated SDGs**

SDG 2 has been achieved by implementing a programme, community kitchen and farming, to address food scarcity. SDG 5 is achieved by designing an inclusive space that discourages discrimination and promotes gender equality. Goals 6 and 13 mitigate climate change by incorporating rainwater harvesting, sanitation practice and use of vernacular materials. Additionally, the project provides opportunities for local businesses to thrive, such as a bazaar, to uplift the regional economy in line with SDG 8.
INTEGRATED APPROACH OF SUSTAINABLE TERRITORIAL DEVELOPMENT, CASE OF THE VILLAGES OF NOUAJI AND TANMIRT

Project Description
The integrated project of the villages of Nouaji-Tanmirt is a living laboratory of a territorial development approach. It aims to improve the socio-economic conditions of the local population while carrying out urban regeneration and a community-based approach.

The Villages of Nouaji and Tanmirt are located in Benguerir, Morocco, an area that is a model of innovative projects, less than 3 km from the new green city and the Mohammed VI Polytechnic University.

To support this dynamic, the integrated approach consisted of an urban regeneration of these villages and an improvement of the population’s living conditions through the creation of income-generating activities in crafts and agriculture.

This approach is based on territorial integration by connecting the villages to the city, sectoral integration and finally a participatory approach with the stakeholders.

Author(s): Hassan Radoine, Ismail Hammoumi, Kaoutare Amini Alaoui, Mohammed Reda Lazreg e Fouad Maytoussi
Organisation: School of Architecture, Planning and Design (SAP+D), Mohammed VI Polytechnic University
Project Location: Benguerir, Morocco
Linking the project to the indicated SDGs

This project addresses the following SDGs:

SDG 4: Beyond the programme for the promotion of school life, we consider that the educational ecosystem, school and university, are the departure point for territorial transformation.

SDG 8: Through the creation of intra-village and inter-urban economic flows (villages - green city) and through the strengthening of the agricultural and artisanal fabric.

SDG 11: Through social cohesion, the creation of a green grid and the rehabilitation of a heritage of clay houses.

SDG 17: Through a collective intelligence of several partnerships and capacity building offers between the university, the community and the city’s stakeholders.
TRANQUIL ABODE

Project Description
A housing prototype located in rugged terrain adjacent to a farm in Uthal, Balochistan, Pakistan, created in response to the devastating floods of 2022. The Tranquil Abode is a culture-specific housing prototype, designed in response to the 2022 floods in Pakistan. Its introverted empathetic design prioritises privacy for women and employs simple construction techniques that can be easily adapted by the community. The prototype utilises affordable, local materials. Given the catastrophic loss of life during these floods, a double roof has been incorporated to provide temporary refuge in the face of future climate emergencies.

Linking the project to the indicated SDGs
SDG 17 has been achieved through a local NGO’s partnership with the locals and architecture students, which guided the project towards sustainable practices and adaptability benefiting SDGs 13 and 11 by mitigating the impact of climate change. Providing training in neo-vernacular building techniques to the locals, creating jobs and economic growth, satisfies SDG 8. The participatory design, prioritising privacy for women & utilising regional materials, furthers SDG 10’s aim of reducing inequalities.

Author(s): Muhammad Mehdi, Wajiha Siddiqui Mehdi, Muhamad Nafeel Qureshi, Ilsha Ahmed, Muhammad Bilal, and Nihal Ahmed Barry
Organisation: WM Creative Studio Re-Lab
Client: Baitussalam Welfare Trust
Project Location: Uthal (Balochistan), Pakistan
Geographic Coordinates: 25.833797, 66.621979
Built Area: 42 m²
Year of Conclusion: 2022
PARK DOM PEDRO REQUALIFICATION

Project Description
Led by the Forbes Under 30 entrepreneur Vitor Daher, the Dom Pedro Park Requalification is a reference in how to create a positive, innovative and sustainable partnership between companies, government and citizens. Muda Social is a third-sector initiative that combines architecture, urban planning, and marketing, allowing Private Companies to invest in Public Spaces, offering free educational activities to implement the 2030 New Urban Agenda into cities, favelas, and other human settlements, making them more inclusive, safe, resilient and sustainable.

The requalification of Dom Pedro Park allowed us to transform an area with the worst violence, security, and human rights statistics into an innovative and intelligent territory that serves 1.5 million people daily.

Linking the project to the indicated SDGs
1, 4, 5, 8, 10, 12: Free educational programming, taught by male, female and LGBTQI+ teachers with equal pay, focusing on entrepreneurship development with social impact.
2, 3, 6, 13, 14, 15: Implementation of native and productive landscaping, focusing on the regeneration of local fauna on land, water and air.
7: Solar energy powering the equipment and activities mentioned above.
9, 11, 16, 17: Creation of ESG projects tailored to each sponsor, creating a territory that offers benefits to all agents of society: Population, government and private initiative through a free and democratic cultural and educational agenda.

Author(s): Vitor Daher, André Teixeira, Alex Tessitore, Lili Silva, Gabriel Luqui, Gabriela Russo
Organisation: Ubuntu Arquitetura
Client: City Hall of São Paulo
Project Location: Sao Paulo, Brazil
Geographic Coordinates: -23.548870, -46.626612
Built Area: 3,600 m²
Year of Conclusion: 2019
Project Description
Microclimatic Pavilion is a first of its kind sustainable dry mounted bamboo bearing structure designed, unlike mainstream approach, to be easily assembled without the need of specialised manpower. It is in the Fabbrica del Vapore where it is possible to experience the Microclimatic Pavilion, built in 2006 in the context of Milan’s Salone del Mobile for DAGAD Association. An exhibition space, a comfort point for people and technology to meet and enjoy the pleasant effects of microclimate control where apparently distant worlds coexist: high tech metallic joints and low tech of bamboo. An urban oasis to protect against the effects of the heat island phenomenon, in line with the 2030 Agenda SDGs.

Linking the project to the indicated SDGs
The Microclimatic Pavilion’s objective, other than holding exhibitions, is that of contributing to reduce the urban heat island effect. Studies have found that local warming caused by this phenomenon significantly increases temperatures in addition to global warming. The project, as an urban oasis, promotes sustainable use of bamboo as a construction material, tackling at least 7 SDGs, and takes action to combat climate change ensuring health and well-being for a sustainable development.

Author(s): Mauricio Cardenas Laverde
Organisation: Studio Cardenas Conscious Design
Client: DAGAD Association
Project Location: Milan, Italy
Geographic Coordinates: 45.48632189450709, 9.175080936856814
Built Area: 250 m²
Year of Conclusion: 2006
UIA Guidebook for the 2030 Agenda