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## Arkitekturens bidrag til bærekraftsmålene

### AN ARCHITECTURE GUIDE to the UN 17 Sustainable Development Goals Volume 2

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Chief advisor, Architecture and UN17 SDG, UIA World Congress of Architects, Copenhagen 2023

# Architecture's Contribution to the UN 17 Sustainable Development Goals

The UN 17 Sustainable Development Goals represent the aspiration of the people of the United Nations for a more sustainable future.

The Goals define the challenges we need to address in order to achieve a better and more sustainable future for all. They address the global problems we face together, including those related to poverty, inequality, climate, environmental degradation, prosperity, health, peace and justice. The Goals are deeply interconnected, and, to leave no one behind, the world must move significantly towards achieving each Goal by 2030.

Architecture and the build environment are part of the current problems but also vital to the solutions we need in order to accomplish the Goals.

The more than 80 build projects in "An Architecture Guide to the UN Sustainable Development Goals, volume 2" illustrates how architecture can contribute, and shows that architecture interacts with each and every one of the Goals.



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#### The projects in the guide books demonstrate:

- Architecture interacts with all 17 SDGs
- You can reach for the goals regardless where you are from, your role in the industry and what budget you have
- Architects can contribute in all of architecture's scales, forms and materials
- Architecture is a collective practice



IBTASEM PLAYGROUND CatalyticAction, American University of Beirut, Center for Civic Engagement and Community Service, Kayana Foundation, ARUP, Vimala Foundation Photo by Lorenzo Conti

#### What does it mean to leave no one behind?

- A collective promise overarching all 17 SDG
- It is a shared commitment and therefore a shared responsibility that calls on all countries and professions to engage
- The physical frameworks of our societies have both an enormous responsibility and potential to ensure that no one is left behind
- As designers, planners, builders etc we have the tools and methods to create a more equal, inclusive and accessible society for everyone
- LNOB is an ideal a transformative promise that will lead us to think, design and build differently!



Habitat for Orphan Girls, Iran ZAV Architects, Dr Ahmad Maleki etc Photo by Tahmine Monzavi

### NO POVERTY End poverty in all its form everywhere

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.

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 per cent of the world 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.



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.

#### Empower Shack Housing Project Cape Town, South Africa

Urbanisation is a global tendency that creates huge pressure on cities across the globe. A lack of affordable housing for all results in inequality in urban societies and prohibits entire communities from reaching their potential. In Cape Town, this tendency is extreme even though South Africa's post-apartheid Constitution enshrined a 'right of access to adequate housing' for everyone.



## ZERO HUNGER End hunger, achieve food security and improved nutrition and promote sustainable agriculture

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.



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.

#### Micro Gardening in Refugee Camps Cox Bazar, Bangladesh

Displacement due to unrest, persecution and climate change-related natural disasters is a growing problem globally. Often poor, cramped or barren plots in neighbouring regions provide shelter for refugees with poor resources. Both the refugees and the host communities risk suffering from malnutrition and poverty due to the pressure of an increased population and a higher demand for the regions' natural resources.



## GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all at all ages

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.

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.



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.

### The Star Homes Project Mtwara, Tanzania

Saharan Africa will account for most of the world's population growth over the coming decades with the addition of a predicted 1.05 bn people by 2050.1 This will necessitate the construction of millions of new homes. New housing in hot, humid regions of sub-Saharan Africa usually consists of single-level, poorly ventilated concrete block structures that predispose families to a number of preventable diseases. Minimal airflow leads to a hot indoor climate which reduces the use of bed nets and increases malaria transmission. Cooking without adequate ventilation results in many women developing respiratory tract infections, and inadequate water supply and sanitation predisposes family members, especially children and the elderly, to enteric infections.



## QUALITY EDUCATION Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

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.



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

### South Harbour School Copenhagen, Denmark

Urbanisation is happening at a rapid speed globally, creating a high demand for new urban areas and suburbs to cities. But city development risks compromising the identity and quality of life in new urban dwellings if speed, efficiency and economy become the main factors defining the planning and development of a new area.

Sydhavn, Copenhagen's southern harbour area, is transforming from an old industrial area to a new residential mix-use area. While developers have invested in housing projects for the area, the city of Copenhagen has the responsibility to create public gathering points as well as quality education facilities capable of attracting citizens to the area.



## GENDER EQUALITY Achieve gender equality and empower all women and girls

Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.

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.



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

### Women's Opportunity Center

Kayonza, Rwanda

Countries and areas that have been exposed to war or disaster face great challenges. Often, infrastructure has been severely damaged and generations of knowhow lost. In Rwanda, the civil war from 1990-1994 left the country devastated and at a loss for resources both physical, economic and educational. Within the civil war was the genocide in 1994, which affected the population in Rwanda profoundly. After 1994, the majority of the population of Rwanda was female, in some areas up to 80%.



## CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all

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.



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.

#### Toigetation

Son Lap Commune, Bao Lac, Cao Bang Province, Vietnam

Access to basic sanitation is recognised as a human right. However, upwards of 2.5 billion people lack access to basic sanitation, and more that 1 billion people are still defecating outdoors. In Vietnam, it is common that schools cannot offer students and staff basic sanitation in the form of toilets and places to wash. Currently, 88% of schools in the countryside do not have toilets meeting the criteria set by the National Ministry of Health, and more that 25% have no toilets at all.



## AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all

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.



The The built environment is a major source of energy consumption throughout the life cycle of buildings and structures; from the extraction of raw materials and production of components, over the construction of buildings and structures, to the energy consumed throughout a building or structure's lifetime, to energy used in disassembly and finally disposal or reuse.

#### Lycée Schorge Secondary School

Koudougou, Burkina Faso

The building sector continues to grow, especially in Africa and Asian regions where urbanism is rapidly increasing. In order to reduce energy consumption in the sector, we need to reduce operational costs, the embedded energy in building materials, transport emissions, construction and maintenance. This can be one by sourcing locally, designing for disassembly, designing with awareness and the use of passive measures, using low impact materials, and sustainable and renewable energy.

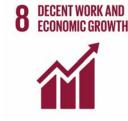


### DECENT WORK AND ECONOMIC GROWTH

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

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.1

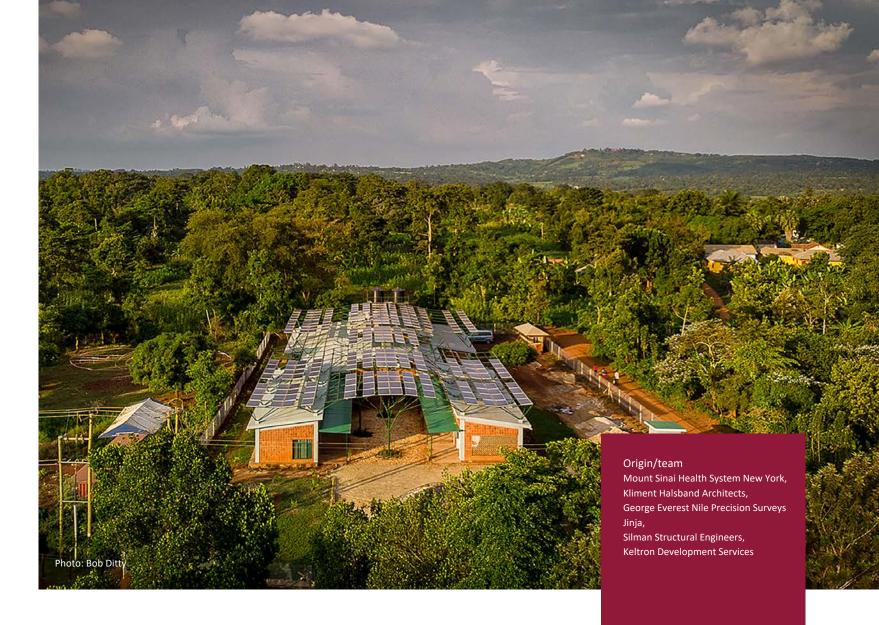
Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs that stimulate the economy while not harming the environment. Job opportunities and decent working conditions are also required for the whole working age population.



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. In the building industry, focus is needed on decent working conditions and safety for workers.

# Mount Sinai Ambulatory Surgical Facility Kyabirwa, Uganda

Access to qualified surgical therapy is essential to the treatment and cure of many illnesses. In developing countries, roughly five billion people lack any form of safe or affordable surgery, which results in millions of deaths each year. One of the main reasons for this situation is that the educational facilities to educate surgeons are not available and that local surgeons in rural areas lack professional peers, training and inspiration in order for them to maintain and develop their skills.



### INDUSTRY, INNOVATION AND INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

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.



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.

# Ilima Primary School Ilima, Democratic Republic of Congo

As globalisation continues to centralise societies' core institutions in large cities, the smaller and more remote communities risk being left behind. Many villages and communities are isolated and have limited access to education and work. Strengthening these remote communities, which experience a lack of infrastructure and are disconnected from supply chains, is part of an overarching agenda of sustainable development of local industry. To develop local industry and infrastructure we must spend more time on human capacity building, advancing manufacturing techniques and processes in the local context.



## REDUCED INEQUALITIES Reduce inequality within and among countries

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.



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.

### Farming Kindergarten Ho Chi Minh City, Vietnam

Reducing inequality is multifaceted and includes empowering women through education and accessible public service that helps support families and advance gender equality. In many developing countries, women have left the domestic domain to work, yet they still have the primary household and caretaking responsibility. Globally, women do three times as much unpaid care and domestic work as men, including the majority of childcare. Often, services that support working women are either not in place or are not affordable, and many women must rely on networks of relatives and friends to take care of their children or bring the children to their workplace. Therefore, highquality and affordable childcare services for working parents are a key part of a social protection system, as it allows women to increase their income, thereby boosting gender equality.



## SUSTAINABLE CITIES AND COMMUNITIES Make cities and human settlements inclusive, safe, resilient and sustainable

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.



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.

#### Artists' Residency And Cultural Center Sinthian, Senegal

Common space for formal or informal gatherings across cultural or social differences supports a sense of unity and community building in cities and communities. Architecture can support this sense of cohesion visually by using traditional craftsmanship that creates a sense of belonging, familiarity and ownership.

The cultural center designed by Toshiko Mori Architect in Sinthian, Senegal, offers a diverse array of community programmes, including a performance center, a studio and workshop for visiting artists, as well as a gathering space for markets and meetings. Complementing existing facilities on the site, these locations of social and cultural exchange provide a sense of common ground for a community consisting of approximately twelve different tribes.



## 1 2 RESPONSIBLE CONSUMPTION AND PRODUCTION Ensure sustainable consumption

and production patterns

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.



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

### Life Reusing Posidonia Balearic Islands, Spain

Since the 1950s, mass production has generally been regarded as the most cost-efficient production method. New transportation technologies and the industrialisation of concrete and steel modules helped answer the heavy population influx of the European cities after World War 2 and proved efficient to solve the housing and health crisis in the city centres. Working class families moved into new massproduced concrete housing in the suburbs, which was affordable and provided better sanitation and higher comfort. Today, we know that the building industry is one of the major contributors to waste, and we need to build differently – without compromising on providing affordable housing for everyone.



## 13 CLIMATE ACTION Take urgent action to combat climate change and its impacts

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.



The CO<sub>2</sub> footprint of the built environment must be reduced, and buildings and settlements must be adapted to the changing climate.

#### Minghu Wetland Park Liu Panshui, China

In the past ten years, disastrous floods and rainstorms have hit several cities in China, which has acted as a catalyst for the so-called 'Sponge City' planning movement. The movement reintroduces ancient Chinese flood management, turning paved impermeable surfaces of cities into green and wet, resilient urban areas. 30 cities have now been designated as 'Sponge Cities', and by 2030, the government wants 80% of its cities to have 'sponge abilities', which means being able to either capture, reuse or infiltrate at least 70% of storm water runoff, and in this way prevent future flooding caused by climate change.



LIFE BELOW WATER
Conserve and sustainably use the oceans, seas and marine resources for sustainable development

The world's oceans – their temperature, chemistry, currents and life – drive global systems that make the Earth habitable for humankind. Our rainwater, drinking water, weather, climate, coastlines, much of our food, and even the oxygen in the air we breathe, are all ultimately provided and regulated by the sea. Throughout history, oceans and seas have been vital conduits for trade and transportation.

Careful management of this essential global resource is a key feature of a sustainable future. However, at the current time, there is a continuous deterioration of coastal waters owing to pollution, and ocean acidification is having an adversarial effect on the functioning of ecosystems and biodiversity. This is also negatively impacting small-scale fisheries.

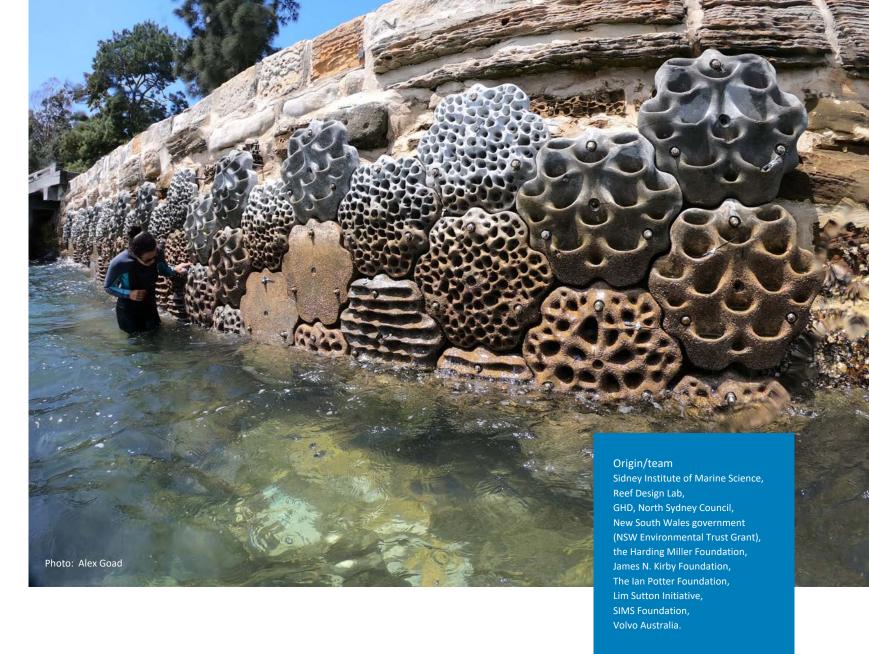


Most of the built environment is situated on land, but buildings, settlements and infrastructure, as well as the production and construction of built structures, nevertheless affect the oceans.

### Living Seawalls Sydney, Australia

The transition zone between land and sea in urban or industrialised

areas is often abrupt, made up by plain quaysides unsuited for marine habitats. Seawalls can be completely flat and devoid of crevices, thereby minimising the potential for colonising organisms. Due to general acidification, pollution and destruction of natural habitats in our oceans, these urban seawalls make up a potential adjacent area for an effort to support and foster new coastal marine habitats. Having a rich biodiversity of filterfeeding organisms that can absorb and filter out pollutants means that supporting marine habitats is not only a matter of strengthening biodiversity but also a part of the solution towards a cleaner sea.



LIFE ON LAND

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

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.

# Renaturation of the River Aire Geneva, Switzerland

As part of an industrialisation of farming, a comprehensive channelisation of rivers was performed all across Europe. In order to effectively drain the fields, rivers were straightened and vegetation and stones, which slowed the water flow, were removed. Among many other unintended consequences, the channelisation quickly resulted in a massive decline in biodiversity in the rivers. Therefore, a process of river revitalisation has been conducted since the 1980s, with an aim of returning the rivers to their original shape and state.



### PEACE, JUSTICE AND STRONG INSTITUTIONS

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

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.

#### National Memorial for Peace and Justice Montgomery, Alabama, USA

Man-made disaster, organised war crimes and systematic terror actions create deep wounds and trauma in societies for decades or even centuries. In the United States, the history of slavery still causes societal damage, conflicts and hurt. The past centuries saw prolonged periods of racial terror, lynching and segregation, especially in the southern states. This fuelled a mass immigration to the north and created a fearful environment where racial subordi-nation and segregation was enforced for decades, still haunting society today.



## PARTNERSHIPS FOR THE GOALS Strengthen the means of implementation and revitalise the global partnership for sustainable development

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.

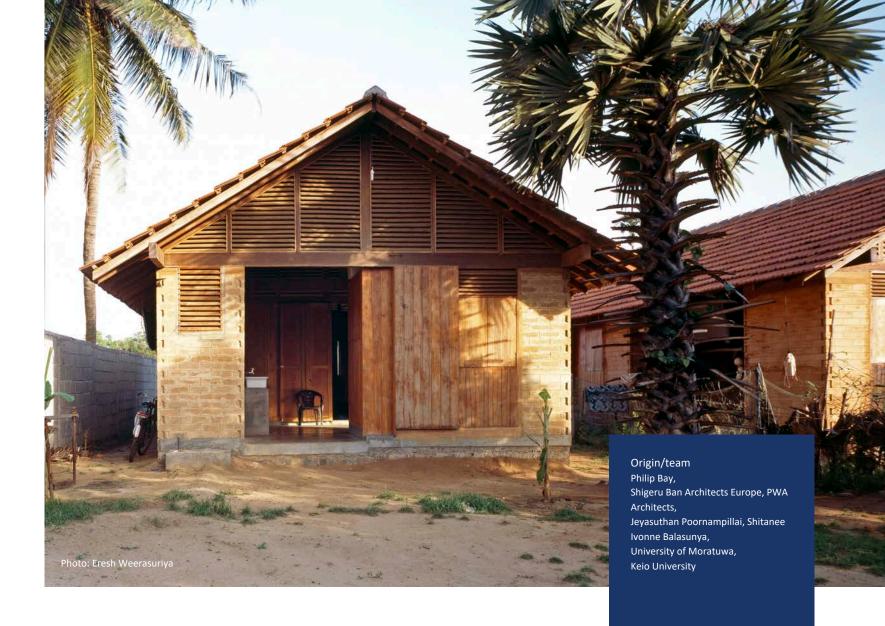
Urgent action is needed to mobilise, redirect and unlock the transformative power of trillions of dollars of private resources to deliver on sustainable development objectives. Long-term investments, including foreign direct investment, are needed in critical sectors, especially in developing countries.



Every home, building and settlement is built by many hands, and 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.

#### Kirinda House Kirinda, Hambantota, Sri Lanka

Natural disasters, such as tsunamis, earthquakes and floods, pose great challenges to communities. When disaster hits, entire villages and neighbourhoods can be wiped away, leaving people without accommodation or livelihood for years to come. If they are lucky, the affected people are offered temporary shelter, but this can mean getting by without sanitation, privacy, community and an everyday life for an indefinite amount of time.





### SUSTAINABLE FUTURES **LEAVE NO ONE BEHIND**

The World Congress aims to make architecture a central tool in achieving the UN 17 Sustainable Development Goals.

This summer July 2-6th in Copenhagen

Uia2023cph.org

#### Hope to see you there!

