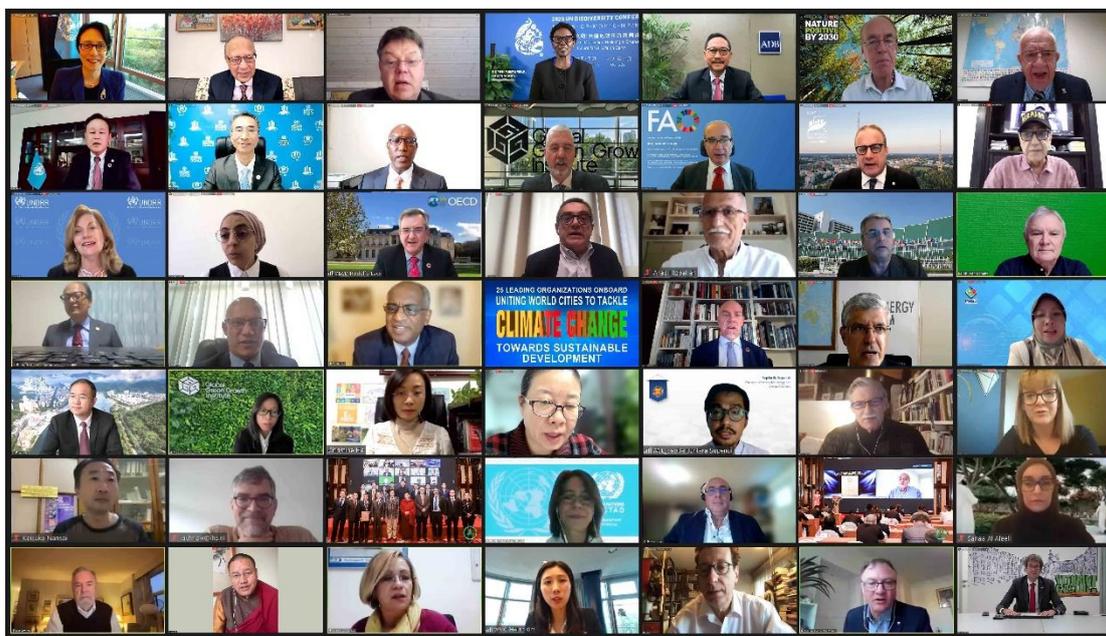




THE SIXTEENTH ANNUAL SESSION OF GLOBAL FORUM ON HUMAN SETTLEMENTS OUTCOME DOCUMENT

To watch the rewind of the forum, please click [HERE](#).



As we trudge through the pandemic, the world has embarked on an arduous and challenging journey of pursuing the common goal of carbon neutrality. 2021 is also the beginning of the Decade on Ecosystem Restoration, a rallying call for the protection and revival of ecosystems around the world. In this important global context, the 16th Annual Session of Global Forum on Human Settlements (GFHS 2021) was successfully held in a virtual format as an observance of World Cities Day from October 27 to 29, 2021, with the theme being **“Accelerate Green Transformation and Innovation towards Healthy, Resilient and Carbon-neutral Cities”**.

GFHS 2021 aims to unite world cities to tackle climate change towards sustainability. 25 leading organizations joined the forum as co-organizers and collaborators, including 10 major UN agencies, such as World Meteorological Organization, United Nations

Conference on Trade and Development, United Nations Development Programme, United Nations Office for Disaster Risk Reduction, United Nations Industrial Development Organization, and United Nations Centre for Regional Development, as well as the Asian Development Bank, the African Development Bank, Swedish Energy Agency, Global Green Growth Institute, World Wildlife Fund, International Union for Conservation of Nature, International Ocean Institute and other well-known international institutions.

Contributed by more than 100 outstanding speakers and commentators and covered by some 600 mainstream media outlets around the world, the three-day forum has reached out to approximately 100,000 professional audiences through live streaming and remote participation. Participants representing 68 countries on six continents conducted in-depth discussions on 10 key issues, put forward scientific solutions and policy recommendations, reached a consensus on a set of outcomes and recommended a batch of outstanding sustainable development practices and innovations.

Through the three-day deliberations, we, the participants of the 16th Annual Session of Global Forum on Human Settlements, acknowledge the issues and points recommended as follows, and send an urgent call to galvanize efforts in addressing the climate crisis, to accelerate actions towards inclusive, resilient, carbon-neutral and sustainable cities, and to build a shared future for all life on Earth.

1. We assert the centrality of sustainability in all our endeavours and initiatives for global development, progress and prosperity. Sustainable development is the fundamental, intergenerational responsibility of our societies' efforts which benefits all. Beyond the specific technocratic solutions of economics and governance, democratic development and respect for human rights feature prominently in the cause of achieving sustainable urban development.
2. As the main battlefield to claim carbon neutrality and sustainable development, future-oriented cities feature several trends, i.e., decoupling, de-carbonization, decentralization, digitalization, polarization and glocalization, where both opportunities and challenges exist. To get right on the path towards sustainability, we need to prioritize cities, fostering innovation, catalyzing a green transformation, and boosting sustainable development that ensures safety, efficiency, equity, inclusiveness and resilience.
3. We need to create a design model and construction code for truly green cities. The International Green Model Cities Initiative and Standards make a good starting point. This should include transitional and transformative technologies towards nature. This means incorporating water, ecosystems and soil into the texture of cities' infrastructure and urban metabolism. We also need to scale up finance and investment for the green city model. This includes construction and renovation as well as operations. In other words, green and blue incentives, as well as an

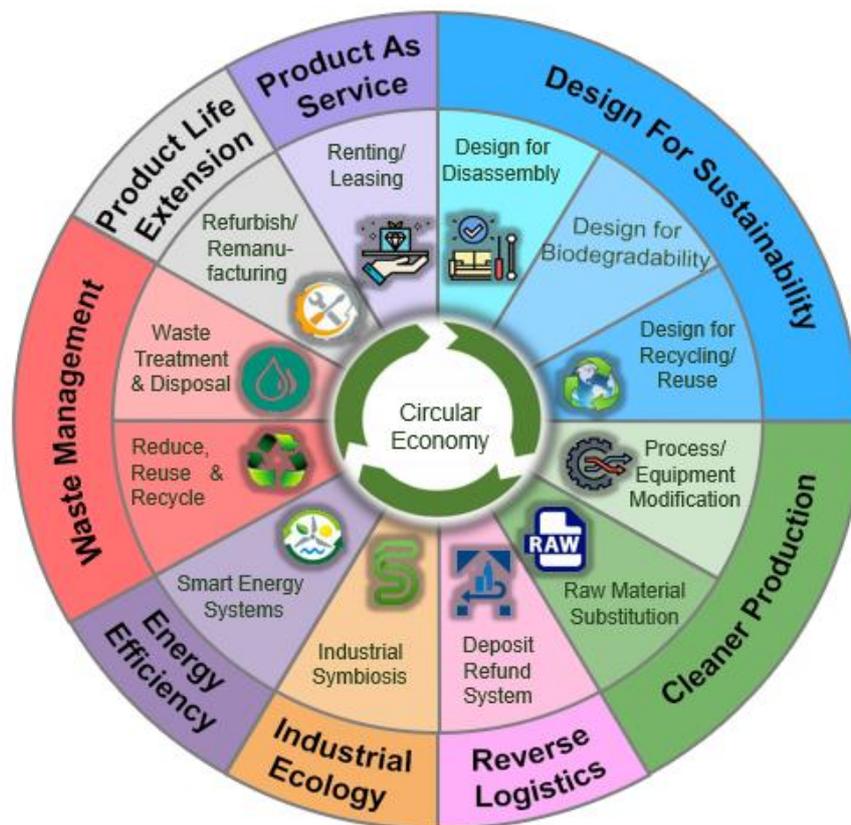
acceleration of the circular economy should be promoted.

4. Cities are the hotspots of global warming facing large implication and more frequent and intense extreme events. Integrated urban services and multi-hazard warnings are required to save lives and minimize losses. WMO Unified Data Policy Resolution should be followed for free and unrestricted exchange of Earth system data for advanced high-resolution forecasting and urban-scale modeling.
5. There is a strong imperative for cities to develop in a climate-smart way over the coming decades by urgently investing in future-proofing and resilient infrastructure. Climate change will continue to make achieving the sustainable development goals more difficult and challenging. Services, people, and systems such as transport, energy, water, and communications are particularly interlinked in urban areas, which results in a co-dependent interconnected system that needs to be made resilient at every link to prevent the failure of the whole chain.
6. We stress the urgency of scaling up and rolling out on a global scale the Triple Jump to Resilience. Specifically, we need to scale up support for cities to increase their capacity to implement so as to establish inclusive governance mechanisms that effectively coordinate resilience policy and action, to develop their own local project pipelines and their ability to access and manage finance, and to broker and manage genuine and durable partnerships.
7. Nearly one third of all food produced for human consumption is lost. Food and green waste comprise more than 50% of all municipal waste, which is commonly the single highest budget for most local administrations. We need to ensure access to a healthy environment and healthy diets from sustainable agri-food systems, and increase availability of green spaces through urban and peri-urban forestry, which will contribute to climate change mitigation and adaptation and sustainable resource management.
8. We call for an urgent clean energy transition. To achieve the goal, we need to drastically decarbonize energy demand and invest in renewables; to promote a modal change in the transport sector and optimize the urban distribution of goods; to speed up the rehabilitation of the housing stock with energy efficiency criteria; and to strengthen productive collaboration and earlier dialogue between the public and private sectors, academia and the civil society to secure local acceptance. We also need to scale up demonstration projects and testbeds on climate neutrality solutions on the local level to show that a system change is possible.
9. The race to net zero requires a systemic transformative change across entire urban systems and various sectors. Political willingness and capacity play a key role in

supporting this ambition. And Central to this ambition is to be willing to undertake the short-term pain for the long-term gain, otherwise we will see little chance of translating the net zero pledges into reality.

10. Cities and local governments are in a unique position to deliver on the net-zero emissions agenda and protect human lives. Choices made in cities today about long-lived urban infrastructure will determine the extent and impact of our ability to achieve emission reductions and our capacity to adapt to changing climate circumstances. Investing in low-carbon, climate-resilient urban infrastructure has low incremental costs and provides multiple health and well-being benefits.
11. Net zero strategies must reflect local culture, needs and site-specific potential. Net zero can only be achieved at a neighborhood scale by involving users in the production, management and governance of these resources in a shared and circular manner. This should be created from the planning and strategic stage. Enabling flexible solutions as well as ease of regulations and transparency of data allow for simplified local opportunities and initiatives.
12. To ensure a resilient and just transition, cities must include and amplify the voices of migrant and diaspora communities affected by climate, as they are too often underrepresented despite having the most important experiences to share. Cities also need to work closely with industries to empower women and youth to have equal opportunities to lead, participate in and benefit from the sustainable energy transition and circular economy.
13. Most developing country cities struggle to finance sustainable development and climate action projects while investors struggle to find bankable green projects. There is ample green and climate finance available from public and private sources, but a shortage of well-developed projects that meet the financial and ESG requirements of investors. The shortage of bankable projects stems in part from the institutional and capacity challenges faced by developing country cities. Public-private partnerships to develop bankable green climate-resilient investment projects should be prioritized.
14. Many developing countries face challenges to collect municipal waste and finance sanitary landfills. Instead, cities should focus on recycling and commercial processing of bio-mass waste to bio-gas and bio-CNG and plastic waste to refuse-derived fuel. With appropriate enabling policies in place, including tipping fees or equivalent concessional or climate finance (such as \$10-20/ton), zero waste projects can be financed commercially through private investment.

15. Policies and capacity development for waste segregation are strategic for catalyzing investments in recycling and waste valorization. New material value chains and jobs can arise from increased circularity in various material streams – plastics, electronics, construction materials, among others. Furthermore, urban-industrial nexus issues related to energy, transport, water and waste need to be integrated into urban and industrial planning and policy to leverage cross-sectoral opportunities for decarbonization and circularity in urban material flows.
16. Post-use measures such as recycling only make a limited contribution to decarbonization, and the most significant issue is to substantially reduce material use in consumption. Material use needs to be curtailed, but there are differences in the responsibility for curtailment between countries that have accumulated sufficient resources in the past and those that have not. It is also essential to consider the need for equitable access to resources among nations.



17. We need to develop well defined national E-waste strategies that incorporate the elimination of hazardous substances during the production of electronic and electrical equipment (EEE) and during dismantling and processing of E-waste, that recognize the informal E-waste sector and integrating into a formal waste management system, and that eliminate open dumping and open burning of E-waste and use of poor chemical processes to separate valuable materials in E-waste,

and design EEE with circularity in mind to prevent E-waste generation at the end-of-life and implement Extended Producer Responsibility systems to achieve recycling of E-waste.

18. The current linear system of managing resources is highly individualistic, unsustainable and needs lesser cooperative efforts among the stakeholders. However, the circular economy (CE) is collaborative, and it needs collaboration among various stakeholders. We need to promote reverse logistics to advance circular economy. In addition, technology and mobile applications can play a critical role in transforming the industrial economy due to the rapid increase in connectivity among the various stakeholders of resource management.
19. The loss of nature has become, not only an ecological issue, but also an economic and development issue, a social justice and human rights issue, with most vulnerable populations being affected the most. We need a clear global goal for nature to drive financial flows towards supporting nature-positive transitions in the economic sectors responsible for nature loss. By becoming Nature Positive by 2030, we commit to have more nature than we have today by the end of the decade. There is also an urgent need to scale up nature-based solutions for people, planet and prosperity.
20. We need to strengthen collaboration and to collectively design transformative actions to support and achieve a global transition towards cities that understand they are based on nature, that they rely on nature, and that they need to keep raising such an awareness to better prepare themselves for a very challenging future. Nature has the response capacity and the installed power for responding to uncertainty and for bringing increased resilience to our cities and our planet. Protecting, conserving and restoring nature shall be at the heart of societies' economic and development plans.
21. Ecological processes are essential in steering global climate cycles, which means that protecting them and restoring the health of these ecosystems is the mission of this century. Integrating nature in urban planning and development and the economic equation can be part of a plan for future-proofing cities and saving humanity from the worst impacts of climate change while providing multiple other benefits. For example, well-designed green and blue urban spaces improve air quality and ambient temperatures, provide recreational spaces, foster citizen well-being and encourage economic activities.
22. Urban development should be responsive to its own natural landscape, its intrinsic sense of place, and its community culture. A holistic inclusive urban planning and

design which is the art of shaping the interaction between people and places, environment and built-up form, nature and man-made fabric, can guide the processes which lead to healthy, age-friendly, resilient and successful villages, towns and cities.

23. We need to change urgently how we plan cities and evaluate our interventions based on “currencies” such as water and air quality, green spaces, equity, social safety, social interactions, and the meaning of space. And they need to be made part of a transition management and can be done through tactical urbanism which refers to a city, organizational, and/or citizen-led approach to neighborhood building using short-term, low-cost, and scalable interventions to catalyze long-term change.



24. Public spaces play a catalytic role for the generation of cohesion and identity of communities and therefore of social resilience. Public engagement is key to ensure that actions are adjusted to local needs and resources, which helps promote sustainability and resourcefulness in the medium and long term.
25. To move towards carbon neutrality, we need to think beyond energy cycles and carry out scientific sustainable planning. Specifically, we need to manage the urban change through a morphological perspective to enable local adaptation, to think distribution of services from their spatial impact, and to create opportunities for accessible and adaptive mobility.
26. "Carbon neutrality" will reshape the pattern of economic and social development, push real estate industry to change its growth logic, and influence the business strategies of real estate companies. The future development of real estate sector

should be led by the improvement and transformation in 7 areas including roadmap design at the top level, carbon asset management, carbon neutral construction drawing system, high-quality product development, green designer responsibility system, low-carbon production and living, and carbon negative list management, and in the meantime put consumers' well-being as the core. In so doing, the industry is expected to see a stable and long-term development.

27. We need to eliminate unnecessary new construction and reduce the demolition of existing structures. We also need changes in the application of carbon taxes, government regulations and changes in lending policies of financial institutions, restrictions on the use of land for construction, programs to convert surplus buildings to other priority uses, and incentives for renovation and recycling.
28. We call for greater effort in making buildings and infrastructure flexible, adaptable, circular and resilient. We need to maximize passive design and increase thermal resilience of building envelope which is key to thermal autonomy. The greater the thermal autonomy, the smaller the peak energy demands become, critical to improving regional resilience. We also need to design and create open buildings which incorporate not only flexibility to move with social tendencies, climate change and new regulations, but also form the basis for a circular construction economy.
29. We emphasize that building material is a big contributor to buildings' life cycle greenhouse gas emissions (for example, the carbon emissions from building materials production accounted for 28.3% of the total carbon emissions in China in 2018). We need to step up effort and investment in renovating the existing building stock and increasing the reuse of existing constructions in order to cut down on the embodied energy and emissions that accompany new buildings, given that the cement and steel manufacturing (i.e. the most widely used materials for building construction) accounts for almost two thirds of material emissions. We need to move to a life cycle approach in both new construction and renovation projects.
30. We must set a momentum towards dealing with the inevitable sea level rise through legally based solutions. The user pay principle should be mandatory as where those who enjoy free access to ocean resources and services simultaneously contributing to its degradation begin to pay for that privilege. In addition, there is a critical need for new financial instruments to evolve by the international financial institutions and multilateral policies of reasons, which is the cornerstone of genuine multilateral cooperation in anticipation of sea level tipping point.

31. Coastal cities which rely on the Blue Economy in their urban/coastal interdependence of economic, environmental, and social interaction and in such engagements as in maritime trade, transport, inland logistical connectivity, fisheries, and access to the ocean's natural resources and services etc. will suffer unimaginable loss of habitat leading to unaccountable number of refugees. Such population displacement is a recipe for conflict and a threat to global security. Climate change mitigation is not sufficient and there is an urgent need for adaptation, climate protection and risk minimization for which investment in coastal management with view to sea level rise must be adequately budgeted. A country-by-country Risk Vulnerability Index relating sea level rise existed or in the making is expected, which may be considered as requisite instrument in allocating priorities for action and financing.
32. The ocean is key in our quest for a sustainable future. But the understanding of the Blue Economy still is incipient. For example, the value of ocean assets, such as marine resources and marine ecosystems services have been estimated to be at least \$24 trillion. This shows the massive contribution of the ocean to sustain life and economic activities. Africa and SIDS while do not yet represent significant share are found among the countries where trade in oceans-based goods and services are growing faster. There are emerging opportunities to seize.
33. Given the critical role of ports in the global trading system and their potential exposure to climate related damage, disruptions and delays, enhancing their climate resilience is a matter of strategic socio-economic importance for the global economy and society as a whole. Effective adaptation will need to be underpinned by strong legal and regulatory frameworks, along with strategies, policies and plans to reduce vulnerability. Capacity building and better access to green and blue finance will also be critical.
34. Intellectual property (IP) and Marine Genetic Resources (MGR) and biodiversity Beyond National Jurisdiction (BBNJ) are closely related and have increasing interactions through the use of new technologies for the utilization and characterization of MGRs. More practical information, training and capacity building is therefore needed to better understand the multiple and growing interfaces between IP and MGRs.
35. Small-scale fisheries are key connectors of life below and above water, and life in cities and rural areas. Sustainable small-scale fisheries can be part of the green transformation of cities. The livelihoods of around 100 million people worldwide depend on small-scale fisheries, almost all of whom live in lower income countries. Pathways towards ocean sustainability and other SDGs need to be just and

inclusive, with due considerations for small-scale fisheries. Strong support is required, from governments and the general public, to promote climate-friendly food systems, which small-scale fisheries offer.

36. We need to strategically rethink the way we deal with water and redesign urban water system to maximize resilience and adaptation to floods and droughts. We also need to ensure effective delivery of hydrological monitoring for enhanced adaptation planning, to raise budget for flood planning and response; and to sustainably manage infrastructure for flood control and prevention. Land-use planning, as well as zoning and development schemes, should be implemented in such a way as to maximize the benefit for the entire floodplain and watershed.
37. Integrated Water Resources Management requires "convergent governance", and deals with the need to optimize the competing uses of water, which is essentially a scarce resource; the need for coordination among agencies with different competencies to fill gaps and avoid overlaps; the need to assess water resources as the foundation of sound water resources management; and the need for a wise combination of structural approaches that can mitigate the risk but cannot eliminate it and non-structural measures that help manage the residual risks.
38. Numerical modelling and hydrometry complemented with citizen science constitute a set of tools that allow progress in understanding the problem of floods in a changing system and moving towards operational development. Territorial linkage from the beginning of development is relevant to understanding and integrating all the views and approaches to the problem. An integrated multi-disciplinary approach is essential in the whole process.
39. Cities will be key actors in Africa's green transformation. The drive towards carbon neutrality is intertwined with growth, industrialization and transformation. Being in closer proximity, firms and industries can more economically harness renewable energy sources, water treatment and other green initiatives with high start-up costs that can be pooled within a community.
40. Green financing plays a key role in promoting a clean energy transition in Africa. For example, the share of renewables in the African Development Bank's energy generation financing rose from a mere 10% in the first decade to over 80% in the second decade. In addition, the Bank is spearheading the \$ 20 billion Desert-to-power program to create the world's largest solar zone to provide electricity to 250 million people in the Sahel.
41. What we emphasize is not only on the external aspects of human settlements, but also on the internal aspect of the human being. As indicated in The Analects of

Confucius, “every day I examine myself on three counts”. Our cities should inspire us to be calm, kind and caring. We need not only cities with carbon neutrality but with heart neutrality, heart full of love not hate, oneness not divisions, prosperity not poverty, interdependency not individualism. Because it is proven that working individually makes statement, but working together makes a lot of difference.

Recommended Sustainability Cases

1. CITICAP project in Lahti, Finland

The Finnish city of Lahti has already committed to carbon neutrality by 2025 and it has developed the world’s first public carbon-trading scheme and digital application for its residents, which is known as CitiCAP project (Citizens’ cap-and-trade co-created). The main goals of the project are to reduce traffic congestion and emissions from transport, collect and make available digital data on mobility, and develop new transport services for citizens, enable and promote sustainable urban mobility in Lahti. The digital application enabled real-time tracking and visualization of one’s mobility carbon footprint.

CitiCAP was an EU-funded project and its duration was from January of 2018 to March of 2021. The emissions trading took place using a mobile application that automatically identified the mode of transportation of its user and visualized emissions from mobility. The app calculated a personal emission budget for the user based on their life situation. For those who went below the budget, virtual credits were accumulated, which were able to be exchanged for various products and discounts on the application’s marketplace, for example tickets to local swimming hall. More than one in three users (36%) declared that they have reduced their mobility emissions as a result of the application.

CitiCAP developed a model for designing the bicycle route network, by building a 2.5 km smart bicycle highway that highlights by example the importance of safe cycling infrastructure. Various smart solutions are being tested on the bicycle lane to improve the cycling experience. The CitiCAP bicycle path is part of Lahti’s cycling network plan 2030, which consists of about 60 kilometers of main cycling routes. (More: <https://www.lahti.fi/en/housing-and-environment/transportation-and-streets/citicap/>)

2. City Leap Initiative in Bristol, United Kingdom

Bristol was the first UK city to declare a climate emergency and have committed to being a carbon neutral city by 2030. Developed with its City Partners, the Council developed the One City Climate Strategy, underpinned by the UN Sustainable Development Goals to ensure a sustainable and just transition.

Prior to this and since 2005, Bristol City Council has delivered a wide programme of energy efficiency and investment initiatives, investing tens of millions of pounds in renewable energy generation and energy efficiency and meeting our 2020 corporate carbon reduction target three years early.

The council launched the City Leap initiative in 2018. The aim of City Leap is to take advantage of the transition to a decentralised energy system to build an interconnected, low carbon, smart energy system that delivers social, environmental and economic benefits for the people of Bristol, building on the innovative leadership the council has shown in energy and sustainability over almost three decades.

The City Leap Energy Partnership initiative is an ambitious new approach to partnership between the public and private sector. It will accelerate the city rapidly towards the 2030 goal and attract £1 billion of new investment into Bristol's energy projects. Procurement to select a partner that has the scale, resources and capacity to deliver and support the creation of a zero-carbon, smart energy city by 2030 is in the final stages. The partnership will also deliver significant social and economic benefits such as jobs, clean air and warmer healthier homes.

(More: <https://www.energyservicebristol.co.uk/cityleap/>)

3. The Edge, Amsterdam, The Netherlands

The Edge, a 40,000m² building which Deloitte shares with other tenants, was designed by PLP Architecture and developed by Edge Technologies. It sets a new global benchmark for the office environment by prioritising the comfort, health and productivity of its end-users. The project became the world's most sustainable office building, having been awarded a BREEAM new construction certification of 'Outstanding' and a score of 98.36 per cent.

At The Edge, the workers live in digital synergy with their building. Sensors in all spaces provide data to the building's smart environmental management systems and all office equipment is connected through the IoT. The workers communicate their specific requirements directly to the building through their smartphones, and the building learns to provide the most sustainable, safe, pleasant and productive workplace setting.

The roof and south-facing façade incorporate the largest array of photovoltaic panels of any European office building. The installation of off-site solar panels has allowed the building to produce more energy than it consumes. The workspace is organised around a grand 15-storey atrium providing most of the floorplates with north light. The expansive space, bright and active, contributes to an inspirational business environment that is operationally, aesthetically and environmentally outstanding. The atrium is the lung of the building, ventilating the office space, while the load-bearing structure and

smaller glazed openings of the sun-lit facades provide thermal mass and shade. In addition to its role in the environmental strategy, the glowing atrium becomes a window into Amsterdam's Zuidas.

(More: <http://www.plparchitecture.com/the-edge.html>)



Office Space at the Atrium, The Edge

4. Functional and sustainable homes in the Metropolitan Area of Barcelona, Spain

Throughout the Metropolitan Area of Barcelona, 1,327 protected homes are under construction in different phases to respond to the need for multifunctional spaces that can allow for teleworking and coexisting. The new development of 85 flats in the old Pisa Cinema in Cornellà de Llobregat is managed by IMPSOL (The Metropolitan Institute of Land Development and Property Management from AMB) and designed by architects Peris+Toral. The flats are a clear example of modern functional and sustainable homes designed both for the traditional family model and for new ways of living, all while being accessible to people of limited means.

The houses are made up of five, six, or seven communicating rooms built around a courtyard, and situate the kitchen in the centre of the home. This allows for a better distribution of spaces, replacing corridors and making domestic work more visible, and helping to avoid gender roles. In addition to offering flexibility based on an ambiguity of use, the building is largely constructed out of wood.

Sustainability is one of the main axes of this housing development. The objective is to

minimize CO₂ emissions, waste generated during construction, and subsequent energy demand. This has allowed for the obtainment of an A Energy Rating thanks to the environmental strategies implemented, such as the incorporation of recycled and recyclable materials such as the wooden structure, the reduction of energy demand thanks to the insulation and cross-ventilation, the use of high energy efficiency facilities through the aerothermal system for heating and hot water production and the production of electricity through photovoltaic panels for community services.

5. Smart Environment Program in Dubai, United Arab Emirates

In line with its vision to develop a happy and sustainable city, Dubai Municipality has been leading the way in sustaining and monitoring of air quality. This was reinforced with the introduction of the Mobile Air Environment Monitoring Station (MAEMS), the first of its kind air quality mobile station in the Middle East, designed to monitor over 100 air pollutants.

The vehicle serves as a mobile environmental operation room and was designed to monitor ambient air pollutants emitted from operational processes across a range of different sectors including the industrial, transportation, energy sectors and a range of service facilities. Since the start of its operation, the MAEMS has been utilized in the successful conduct of several studies, environmental surveys and environmental awareness campaigns within Dubai Emirate, contributing largely in the achievement of a number of strategic, technical, legal and social outcomes and adding great value to the existing air quality monitoring network stations of air, odor, noise and EMF.

The Mobile Air Environment Monitoring Station is equipped with over 20 advanced monitoring technologies. On-site calibration is undertaken for each of the monitoring devices on board the mobile station as per the ISO/IEC 17025 accreditation requirements. The station has built-in communication and self-monitoring security devices and advanced computer programs to process and analyze the data that are displayed on the smart screen located inside the station. The mobile station conforms with Euro 5 engine specifications, and is equipped with solar panels and run on biofuel for renewable energy sources. The MAEMS campaigns specifically inform the public on the relevance of measuring and monitoring air pollutants to assess local human health effects and to evaluate progress towards the improvement of air quality.

(More: http://www.dubaiairenvironment.dm.gov.ae/mobile_air_monitoring)

6. Green technology for upcycling, MINIWIZ, Taiwan

mini-TRASHPRESSO is the world's first zero-waste mobile upcycling system, showcasing MINIWIZ's proprietary technology, used in creating its circular ESG building modules. Miniwiz has fully implemented 93 beds medical pods system call

MAC Ward with convertible ICUs, negative pressure isolation wards, and regular surgery recovery rooms all made from trash locally collected and locally manufactured while it passes international medical grade certification in fire proof, isolation rating, and anti-bacterial surfacing.

mini-TRASHPRESSO was designed to tackle waste by creating a mobile, semi-automated, and self-powered, industrial grade upcycling platform. Powered by robotics, machine learning & AI, the machine's unique end-to-end functionalities include trash collection, sorting, and real-time transformation of waste into valuable materials and components used in buildings, exterior/interior decorative, and lifestyle accessories. The upcycled experimental products have already been utilized in over 300,000sqm of commercial retail, hotels and offices across major international cities.

It leapfrogs existing technology and empowers the circular economy by (a) democratizing the collection, sorting and transformation of waste; (b) decentralizing plastic waste management and transformation without secondary pollution; (c) minimizing air/water footprint to almost ZERO impact with just 7kwh power consumption; (d) servicing up to 10,000 inhabitant community; 500kg of plastic waste/day; (e) utilizing AI material recognition, smart digital mechanical forging process, robotic automation; and (f) generating tangible value through turning single-use plastic trash into valuable applications (building materials, utensils, etc.) 3 minutes/cycle. (More: <https://trashpresso.com/>)

7. Tamarinden – Sweden's Smartest District

Tamarinden is located in Sörby ängen, an expansive area in southern Örebro and will consist of 600 housing units. The ambitions are to create a district where the buildings will reduce, produce, and share energy in a way that has never been done before.

The buildings will be able to share electricity and heat in a local energy network. Each building will be given the opportunity to connect to the local energy network and be built with solar cells, batteries and a control unit that can be connected to a district level. Data from the buildings and information such as lack of power as well as weather and electricity price forecasts form the basis for an optimized energy use. Through new business models and services, the buildings also will support the energy system with flexibility, energy efficiency and peak shaving.

If one building has an overproduction while another has a lack, the energy can be distributed to the building that needs it at the current time. The buildings in Tamarinden will thus help to cover each other's energy needs before they buy and take energy from the main grid. A unique solution that paves the way for new energy-smart districts in Sweden. Through the area, Tamarindv ängen, which serves as an urban street and living

room, is paved. Here the car is allowed to stand aside in favor of human stay and movement, which becomes possible when car parking is solved at the outer edges of the area. Tamarinden has one foot in the city with access to public transport and a well-developed pedestrian and bicycle network for easy access to the city center and nearby workplaces. The other foot is located in the scenic surroundings.

(More: <https://en.elfack.com/2020/06/tamarinden-swedens-smartest-district/>)

8. Community Resilience Hubs in Baltimore, United States

The Community Resiliency Hub Program is an innovative and impactful community-centered initiative that increases community capacity to prepare for, withstand, and respond to natural hazard impacts and emergency situations. The goal of this program is to better connect frontline community organizations with focused support and resources so that, in the event of a natural disaster or emergency, there is improved provision of emergency response and recovery services to under-resourced neighborhoods and their most vulnerable residents. There are currently twelve Resiliency Hub partner organizations in the program.

Community Resiliency Hubs receive grant-funded support from the City in many forms including high-quality emergency preparedness supplies, energy efficiency upgrades to their building, back-up power capabilities (rooftop solar + battery storage if feasible), emergency preparedness and response training, connections to grant funding opportunities, and focused support and communications from the Office of Sustainability (BoS), Office of Emergency Management (OEM), and Department of Health (BCHD).

A priority goal of the Program is to outfit Community Resiliency Hub partner organizations with solar power and battery back-up capabilities. This helps increase access to renewable energy and back-up power in low to moderate income communities, reduces the utility cost burden for community organizations, and provides community training and workforce development opportunities. Four Community Resiliency Hubs already have solar and battery back-up capabilities. Grant-funding is a critical piece to enabling the expansion of this work. This is an ongoing collaborative effort that involves many project partners.

(More: <https://www.baltimoresustainability.org/baltimore-resiliency-hub-program/>)

9. Chulalongkorn University Centenary Park – a green infrastructure in Bangkok, Thailand

Chulalongkorn University Centenary Park sets a model for re-implementation in the urban and peri-urban areas of Bangkok and other sinking cities how the park can sustainably become an integral part of climate adaptation. By harnessing the power of

gravity, the park is able to sustainably collect, treat and hold water to reduce urban flood risks. Sitting on a 3-degree gradual incline, the park equipped with several ecological components - consisting of the green roof, wetlands, detention lawns, and retention pond leaves not a single drop of rain wasted. The runoff is pulled down through the park's topography to generate a complete water circulation system. The park is able to hold up to a million gallons of water and can also use the collected rain to irrigate itself for up to a month during dry spells.



Chulalongkorn University Centenary Park

The park offers a complete water circulation and management system that addresses both irregular weather patterns and the city's dysfunctional public sewage. As water flows down through the park's inclined detention lawn, it is filtered and cleansed of water pollutants along the way. It is also able to recycle greywater from surrounding buildings and redistribute it for reuse. Visitors, too, can become an active part of the park's water treatment system by hopping onto stationary water bikes along the park's retention pond and use their exercise to keep the water aerated.

The 5200m² green roof is the catch basin for water. It is planted with native grasses and weeds for low maintenance: the plants can withstand Thailand's extremely hot and wet seasons, and need minimal irrigation. With a variety of 258 plants and 5,000 forest trees, the park delivers nature back to the city and provides a new home and microclimate for pollinators and insects. All organic waste produced by plants and trees in this park are collected to process into organic fertilizer and return to its ground and other green areas around the campus.

(More: <https://landprocessdesign.wixsite.com/landprocess/cucentenarypark>)

10. East Kolkata Wetlands – The world’s largest organic sewage management system

East Kolkata Wetlands is a vast network of man-made wetlands bordered by green embankments and channels. Kolkata produces around 750 million liters of wastewater as well as sewage every day. Through bio-remediation, the waterways clean the city’s wastewater in less than 20 days. The purified nutrient-rich water is then channeled into ponds where algae and fish thrive.

Urban waste water supplied by the municipal corporation is routed through a series of small inlets, each managed by a fishery cooperative. The cooperatives control the inflow of the waste water, they let it settle so that only the clear top layers of water flow into the shallow wetland. A parabolic fish gate separates the wetland water from the waste water. The parabolic structure is there to prevent fish swimming into the oxygen-less urban waste water, where they would die. In the meantime, nature does its work. In the inlets, organic waste settles down and is partly decomposed in the warm shallow water. In a series of biological steps, the organic waste in the wetland is converted into fish feed. There are several ecological processes at work: soil bacteria, macro-algae, plant bacteria and plants themselves convert nitrate, and absorb phosphate and heavy metals. The sediments in the waste water settle down. As the water becomes less turbid, sunlight accelerates some of these processes.

In short, these wetlands are Kolkata’s free sewage remediation works, a fertile aquatic garden and, most importantly, a natural flood defense for the low-lying city.

(More: <http://ekwma.in/ek/>)

11. Bucuti & Tara Beach Resort in Aruba, Dutch Caribbean

Bucuti & Tara Beach Resort is located along Eagle Beach, Aruba, named one of the “Dream Beaches of the World,” and simultaneously, at just 0.8m above sea level, it is also one of the most vulnerable due to the devastating effects of rising sea levels from climate change. Owner/CEO Ewald Biemans began implementing sustainability initiatives into every aspect of the resort more than 30 years ago and by August 2018, it became the first and remains the Caribbean’s only carbon-neutral hotel.

Eco-certifications create its sustainability framework since each have a specialty and the combination that works best for Bucuti & Tara includes Green Globe Platinum, ISO 14001 and 9001, Travelife Gold, LEED Gold and Carbon Neutral. Employees receive continuous training and work in a setting that is as safety conscious for them as it is the guests they serve. A sampling of the all-encompassing efforts that are allowing Bucuti

& Tara to excel beyond net zero include: sourcing renewable energy both wind and solar, solar heated water, sanitizing and repurposing grey water, 68% waste diversion including a dynamic Healthy Portions program, smart sensor air-conditioning, Variable Refrigerant Flow (VRF) technology, Energy-star and comparable-rated equipment, ozone-based laundry, methane reduction, smart transportation, 90% paperless, zero single-use plastic or Styrofoam, and green cleaning.

The resort is committed to hiring locally, actively leads community outreach efforts and shares best practices. The United Nations has deemed Bucuti & Tara's sustainability program "highly replicable and scalable" for hotels worldwide to emulate. Next up, the resort is journeying to become carbon negative. (More: <https://www.bucuti.com/resort/eco-friendly>)

12. Sani Resort, Greece

Sani Resort, the first carbon neutral resort in Greece in 2020, is set in a 1,000-acre ecological reserve, with 7km of sandy beaches, over 20km of forest trails and 270-acres of wetlands, home to 225 bird species. Its "Sani Green" sustainability programme is underpinned by a range of initiatives supported by measurable targets, working towards the UN Sustainable Development Goals.

Sani Resort is powered by 100% certified renewable electricity, while it has reduced single-use plastic use by over 80%, aiming to be zero plastic and zero waste by 2024. The company is greatly increasing its renewable local energy capacity, while cutting down on carbon emissions, with an ambition to be net zero by 2030. Over 60% of its produce comes from within 100 miles and as part of Sani Green, various biodiversity projects are funded, such as the local Sani Wetlands Project, tree-planting, forest protection and preservation, as well as marine research and conservation initiatives.

Over 40 organizations are supported – such as schools, hospitals and refugee shelters - and scholarships are provided to encourage local farmers to farm more sustainably. Thousands of visitors, guests and schools take part in the Sani eco-excursions, ranging from birdwatching beekeeping trips, olive harvesting and day farm trips, and get immersed in the Sani Explorer eco-activities running for children. Sani Resort has received Blue Flag awards for its beaches, Green Key ecolabel, Travelife Gold Certification status and ISO14001 TUV Austria certification, among others.

(More: https://www.sani-resort.com/en_GB/sustainability)



Sani Resort, Greece

13. The Global Green City of Jiande, China

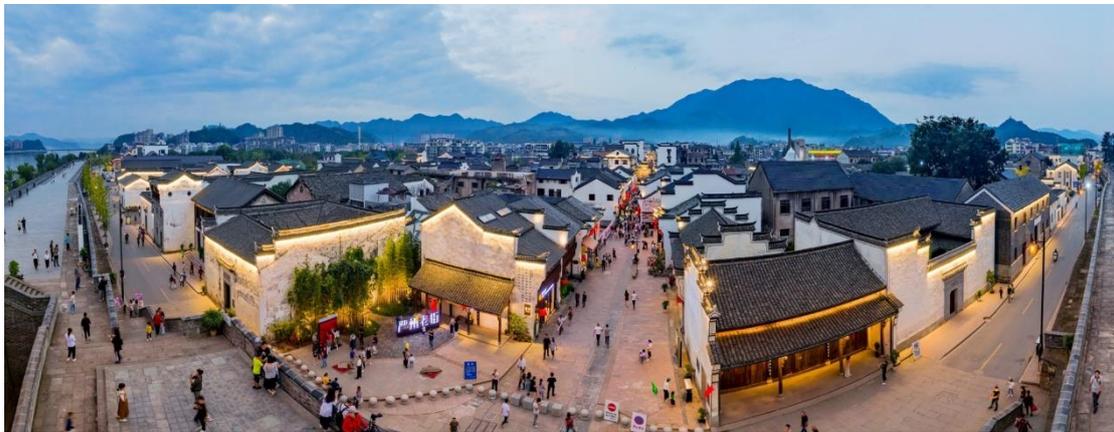
Jiande City, located in Zhejiang Province, China, has a history of 1800 years. With a total area of 2,321 square kilometers and a registered population of more than 510,000, Jiande is the first "China Climate Livable City" and a national ecological demonstration zone, as well as an example of scenic ecological city in China.

In recent years, the city has been vigorously restructuring its industries, building an ecological civilization, and developing itself into a global green city. Surrounded by mountains and rivers, the city enjoys a compact and scientific layout, focuses on architectural design and city scape, provides complete infrastructure and convenient transportation, and promotes livable communities and urban-rural integration. The city sees a rapid growth in green economy such as tourism, drinking water, agriculture, and general aviation. People enjoy a happier life. The city is becoming a model on rapid, sustainable urban development in China.

76% of the city is covered by forest, the average PM2.5 concentration is below 25 micrograms/m³, and the surface water environment quality ranks among the top in the country. The city also attaches great importance on biodiversity conservation, with green space accounting for 40.83% of the built-up area. The city's 200+ kilometers of greenway and the riverside park is particularly popular among the public.

Jiande City has implemented a cross-region and cross-industry integrated spatial planning, with a population density of 11,353 people per square kilometer in the built-up area. Since 2000, the annual growth rate of the built-up area footprint is less than 1.5%, the ratio between land consumption and population growth is 0.56, and per capita urban construction land is 81.8 m². The city leads the country in land-use efficiency and intensity.

Jiande City has been stepping effort in protecting cultural and natural heritage through effective policies and financial mechanisms, and promoting a sustainable use. The city hosts 4 heritage sites that are included in China Key Heritage list. Floor area of public cultural facilities per 10,000 population stands at 5,745 m². The city receives nearly 15 million tourists every year.



Meicheng Historic Town in Jiande City

14. French Dream Town, Hangzhou, China

French Dream Town in Hangzhou is a sustainable, innovative and carbon-neutral flagship urban development between France and China, featuring ecological values and people centric design based on local culture, ground breaking deep tech innovation practices, futuristic AI experiences fusing two fascinating culture, sustainable high-tech living with a collaborative mix of retail and technology.

The town will serve as a "design transition" platform suitable for a new generation of sustainable cities and regions: ecological, zero carbon, digital, value creation driven and people-oriented design. As a deep tech hub and a lab of the future digital economy, the core principle is to create the lifestyle and urban experience of the next 20 to 30 years in AI enhanced consumption and production.

The project creates place-making through innovative architecture harmonizing Chinese culture and people-oriented green design. Combining ancient street life of Southern China and contemporary spaces creates a unique place: a graceful and peaceful urban landscape by the water. A mesh of small green spaces is blended with the smooth

horizontal rhythm of abstracted Southern Song Dynasty roofs. Windows with elegant and restrained lattice work are both minimal modern and reminiscent of traditional Chinese Southern Song Dynasty craftsmanship. French Dream Town Northern Part is positive energy through 5000 m² of solar PV canopies. It produces 220% of its energy consumption, making the whole 2-ha French Dream Town site a zero-energy development. The 5000 m²deeptech hub in the project will host more than 40 French Companies and Chinese companies working separately but also on a wide variety of cooperation projects.