



# SUSTAINABLE DEVELOPMENT GOAL 11

## CITY INSIGHT REPORT

A Future Of Sustainable Cities  
And Communities



## FOREWORD

# HIS EXCELLENCY SUHAIL MOHAMED AL MAZROUEI

**UAE Minister of Energy & Infrastructure,  
Chairman of the Global Council on SDG11**



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As the world's population continues to urbanize at a rapid pace, it is increasingly important that we consider the long-term sustainability of our cities and communities. The United Nations' Sustainable Development Goal 11, Sustainable Cities and Communities, recognizes this need and aims to make cities and human settlements inclusive, safe, resilient, and sustainable.

In this report, we explore the future of cities from the perspective of Sustainable Development Goal 11. We examine the challenges and opportunities that cities face as they strive to become more sustainable and livable for all their residents. We also consider the role of technology, policy, and innovation in driving progress towards this goal.

Over the past few decades, we have witnessed the emergence of smart cities, which use technology and data to improve the lives of their citizens and reduce their environmental impact. While these initiatives have brought many benefits, they have also raised important questions about privacy, equity, and control. In this report, we delve into these issues and consider how smart cities can be designed and governed in a way that promotes sustainability, inclusivity, and transparency.

As we look to the future, it is clear that the sustainability of our cities and communities will depend on the collective efforts of governments, businesses, civil society, and individuals. In line with the announcement of 2023 to be known as the 'Year of Sustainability' by the President of the UAE, His Highness Sheikh Mohamed bin Zayed Al Nahyan, this report serves as a call to action for all stakeholders to work together to create more sustainable and livable cities for present and future generations. We hope that it will serve as a valuable resource for policymakers, urban planners, and all those who are committed to build a more sustainable future for our communities.





## FOREWORD

# MAIMUNAH MOHD SHARIF

UN-Habitat Executive Director



With only seven years left to meet the Sustainable Development Goals (SDGs) in a rapidly urbanizing world, it is vital to act and engage all levels of government – local, regional and national – to achieve progress.

At UN-Habitat, the United Nations programme for human settlements mandated to promote sustainable urban development and planning, we act as convenors and facilitators of these multi-level engagements. As our mission is to achieve a better quality of life for all in an urbanizing world, our key efforts focus on Goal 11, “sustainable cities and communities,” which acts as a docking station to trigger action on the rest of the SDGs. In 2022 and 2023, we prioritize three strategic areas: adequate housing, cities and climate change, and local efforts to achieve the SDGs or the SDG localization.

Given that more than 65% of the SDG targets relate to the work of local governments, local action is a catalyst to accelerate the implementation of the SDGs globally. So far, 87 local and regional governments from 27 countries have produced at least one Voluntary Local Review (VLR), which monitors the implementation of the goals and helps identify areas where action can be accelerated. I am proud of the progress in the Arab region

to advance the SDGs. In 2022, the city of Amman in Jordan embarked on monitoring the SDG implementation on the local level through its first Voluntary Local Review. Agahdir in Morocco, Irbid, Jordan, Ramallah, Palestine, and Ennour, Tunisia, are following the course and starting to work on their reviews.

UN-Habitat works with communities and city managers every day. Cities and communities have the power to help translate policy into practice. With the right tools, local leaders can take action on critical needs such as housing and climate change.

However, localization of the SDGs is not a one-way street. We need all levels of government and all stakeholders to become partners and work alongside each other to rescue the SDGs and deliver on our promises.

Let's confront urban challenges and forge lasting transformative solutions by finding those solutions together.



## FOREWORD

# HIS EXCELLENCY YOUNUS AL NASSER

**Assistant Director General of Dubai Digital Authority, CEO of Dubai Data Establishment, and Vice-Chair of the Global Council on SDG11**



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There has never been a greater urgent need for the world to work toward Sustainable Development Goal 11 (SDG11), Sustainable Cities and Communities. Cities are confronted with an unparalleled array of environmental, social, and economic issues as the world's population continues to urbanize. It is crucial that we collaborate to build inclusive, resilient, and sustainable cities for all people to fulfill SDG11.

Technology and data are some of the main forces behind this shift. Technology has the ability to link systems and people, opening up fresh possibilities for cooperation and creativity. On the other hand, data can provide us with a more thorough insight of the difficulties we encounter and the advancement we are making towards attaining SDG11. We can build smart cities that are better able to adapt to the changing requirements of their inhabitants and the environment with the correct technology and data in place.

It is important to emphasize the role that data and technology will play in attaining SDG11. Cities can increase their energy efficiency, lower their carbon emissions, and create more sustainable transportation systems by utilizing technology. Data can assist us comprehend the effects of these initiatives and pinpoint areas where we can improve. It may also enable us to organize resources, order investments, and create

sustainable solutions with more knowledge.

However, we must adopt a thorough strategy that includes all city stakeholders if we are to fully utilize the promise of technology and data. This comprises governmental entities, commercial enterprises, non-profit groups, and private persons. Our cities and communities can only be resilient and sustainable for future generations if we work together.

In this report, we examine how the world is moving toward SDG11 and how data and technology are helping to improve the sustainability of our towns and cities. We also disseminate case studies and best practices from all across the world, showing the cutting-edge responses being created to handle the difficulties we confront. We also demonstrate that the diversity of global cities, is the key to their prosperity. Each city represents a unique context and as a result their approach towards sustainable cities and communities may differ. Yet the end goal is to make future cities and human settlements inclusive, safe, resilient and sustainable. We hope that the efforts of everyone who is dedicated to build a brighter future for our cities and communities will be motivated and informed by the findings of this report.



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Dear reader,

As you embark on reading this report on the future of SDG11: Sustainable Cities and Communities, we hope that you will find it a valuable and informative resource. The COVID-19 pandemic has underscored the importance of sustainable urban development, as cities and communities around the world have had to adapt and respond to the challenges posed by the virus. However, we are here to build back better. Build back a world with cities that are far more resilient and inclusive.

Learnt from the pandemic, is the need for resilience in our cities and communities. The ability to withstand and bounce back from shocks and challenges is crucial for long-term sustainability, and this report will delve into the various strategies and technologies that can help us build more resilient cities.

At the same time, we must also be mindful of the environmental impacts of urbanization and strive to minimize our carbon footprint. The use of technology can play a vital role in this effort, from renewable energy and electric transportation to smart city solutions that can help us manage our resources more efficiently. We have also been made aware of the accelerated movement of the Voluntary Local Reviews (VLRs) and how they have truly showcased the diverse approaches in successfully progressing towards the SDGs. The context of each city is the key variable that will decide their priorities and the strategy to ensure that development is sustainable, equitable, and effective.

As you read through this report, we hope that you will come away with a deeper understanding of the challenges and opportunities facing sustainable urban development in the coming years. Whether you are a policymaker, urban planner, or simply someone who is interested in the future of our cities and communities, we believe that this report will provide you with valuable insights and ideas for how to advance sustainable development in your own community.

Thank you for taking the time to read this report, and we hope that you will find it both enjoyable and beneficial.

Sincerely,  
Mohamed Elimam

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# SDG11 IN THE UAE

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**The chapter "Future Foresight for SDG11" is sample showcase of the United Arab Emirates' (UAE) initiatives to construct sustainable communities and cities. The chapter will highlight the country's progress toward the aims of Sustainable Development Goal 11 (SDG11) and related activities.**

The UAE has been in the forefront of regional sustainable urban development, with an emphasis on creating smart and resilient cities. The country has achieved tremendous progress in renewable energy, sustainable transportation, and sustainable housing by investing extensively in these sectors.

The report will analyze the UAE's progress toward achieving SDG11-specific indicators, such as access to secure and affordable housing, basic services, and sustainable transportation, in this chapter. The chapter will also highlight some of the country's most visible programs, such as smart city initiatives, attempts to encourage sustainable transportation, and an emphasis on affordable housing.

This chapter comes with hopes of triggering meaningful global conversations on sustainable urban development by offering valuable insights and recommendations to policymakers, local governments, and civil society organizations working to create a more sustainable future for all.

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# UAE'S PROGRESS TOWARDS THE SDG11

## Sustainable Urban Future Across the Emirates



To achieve Sustainable Development Goal 11: Sustainable Cities and Communities, the United Arab Emirates (UAE) is making remarkable progress. With the aid of government initiatives, business sector initiatives, and local citizen activities, the country is quickly becoming a modern and sustainable nation. In this article, the UAE's efforts to build more sustainable cities and communities are reviewed regarding their success. It will go through recent events, significant actions, and current accomplishments. The probable difficulties that lie ahead will also be examined, and the most effective solutions will be discussed. The article will conclude by giving a summary of the UAE's progress toward a greener and more sustainable future for cities and communities.

At the forefront of this effort is The Ministry of Energy and Infrastructure "MoEI" who have made contributions to the UAE's urban development

through federal and local infrastructure projects like government buildings and houses, as well as by building a reliable road system that connects all seven emirates to make it easier for UAE citizens and residents to commute. To establish a high quality of life for all people, MOEI works toward a great sustainable environment and an integrated infrastructure in accordance with the National Agenda.

While the article will conclude with a quantitative display of the UAE's progress against the indicators specific to the UN SDG11, it will also navigate an array of initiatives that are aligned to this journey. Beginning with the development of a single planning database that supports decision-making and increases transparency, the Dubai Urban Plan 2040 will promote public transit, walking, cycling, and flexible mobility. The proposal will not only re-house people in the old regions to strengthen their relationships



with those places, but it will also cater for their future housing requirements in integrated communities that have green spaces, commercial hubs, and recreational amenities. The plan builds on previous Emirate levels efforts to raise the amount of green space in cities to 13% by 2021, and plans to lower building carbon footprints by 30% by 2030 and boost public transportation use to 30% by 2030.

Meanwhile, the MOEI is dedicated to putting into place an integrated system for monitoring air quality in maintenance and ongoing construction projects to provide a safe working environment and safeguard the safety of people impacted both within and outside the workplace. Sulfur Dioxide (SO<sub>2</sub>), Carbon Monoxide (CO), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Total Suspended Particulate Matter (TSPM), Respirable Suspended Particulate Matter (PM<sub>2.5</sub>), and Volatile Organic Components were identified as the factors affecting the quality of outdoor air and permissible limits (VOCs). On the country level, the set target is to reduce its carbon emissions by 21% by 2030, and climate neutrality by 2050, as per the UAE Net Zero Strategy.

The UAE established a "PPP National Legal Framework Policy" to create a public-private partnership policy to finance and implement infrastructure projects to increase the competitiveness of the UAE, satisfy current and future infrastructure and housing needs, and energize the economy and private sector. The framework is intended to address a global direction in shifting financing models for sustainable urban from grants to profitable investments.

Overall, similar to other countries around the world, and despite the wonderful progress, the UAE still faces several challenges towards achieving the goal of sustainable cities and communities. SDG11 presents a unique challenge, especially for countries with a federal structure. As the achievement of SDG11 is a shared responsibility, it necessitates a multi-stakeholder approach and commitment to overcoming the challenges cities face. The Ministry of Energy and Infrastructure oversees leading the efforts and has formed a national team that includes all partners from the planning departments, municipalities, and transportation at the state level in addition to the involvement of the private sector, the academic sector, and related bodies. By using the capacities of the government, and businesses throughout the UAE and the world, this plan is focused on putting the proper governance, strategy, and infrastructure in place.

## Progress Review

(Source: UAE Voluntary National Review 2022)

**Target 11.1:** By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

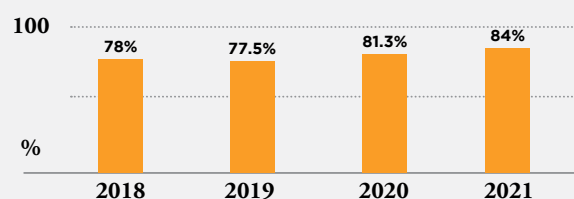
**Indicator 11.1.1** Proportion of urban population living in slums, informal settlements or inadequate housing



SOURCE: MOEI

**Target 11.2:** By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations women, children, persons with disabilities and older persons

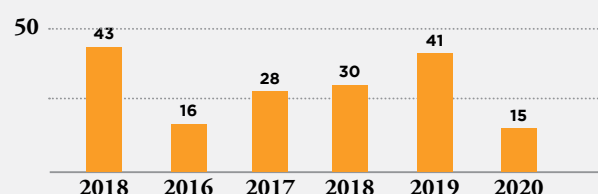
Satisfaction with public transport



SOURCE: MOEI & SDG INDEX

**Target 11.5:** By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water related disasters, with a focus on protecting the poor and people in vulnerable situations

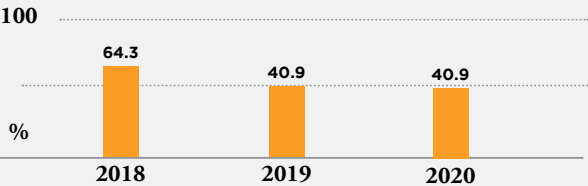
**Indicator 11.5.1** Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population



SOURCE: MOHAP

**Target 11.6:** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

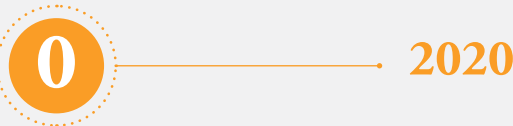
Annual mean concentration of particulate matter of less than 2.5 microns in diameter (PM2.5) (g/m3)



SOURCE: MOCCAE

**Target 11.a:** Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

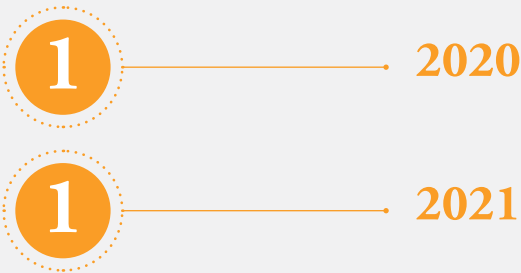
**Indicator 11.a.1** Countries that have national urban policies or regional development plans that respond to population dynamics; ensure balanced territorial development



SOURCE: MOEI

**Target 11.b:** By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2030-2015, holistic disaster risk management at all levels

**Indicator 11.b.1** Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2030-2015



SOURCE: NCEMA





# SPOTLIGHT

11 SUSTAINABLE CITIES  
AND COMMUNITIES



MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE,  
SAFE, RESILIENT AND SUSTAINABLE



LEAVING NO ONE BEHIND  
WILL REQUIRE AN **INTENSIFIED FOCUS** ON  
**1 BILLION SLUM DWELLERS**



AS CITIES GROW, MUNICIPAL SOLID WASTE  
PROBLEMS **MOUNT**



IN SUB-SAHARAN AFRICA,  
LESS THAN 1/3 OF CITY DWELLERS HAVE CONVENIENT  
ACCESS TO **PUBLIC TRANSPORTATION**



**99%**

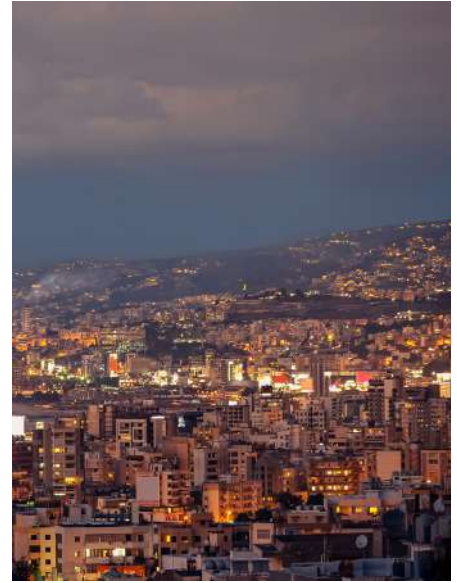
OF THE  
WORLD'S URBAN  
POPULATION BREATHE  
**POLLUTED AIR**

ACCORDING TO NEW WORLD  
HEALTH ORGANIZATION  
AIR QUALITY GUIDELINES  
OF  $PM_{2.5} < 5 \mu g/m^3$

THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2022: [UNSTATS.UN.ORG/SDGS/REPORT/2022/](https://unstats.un.org/sdgs/report/2022/)

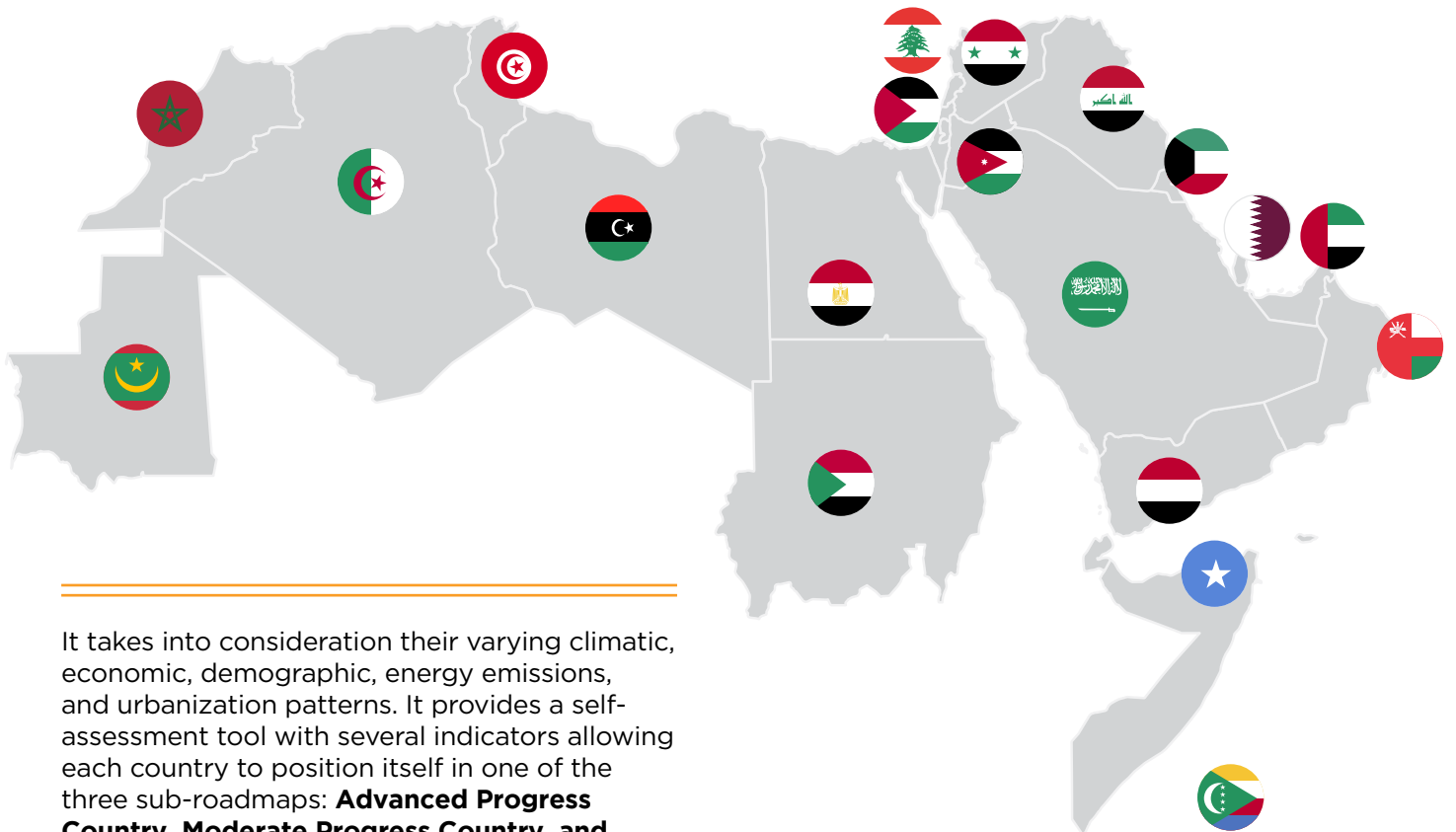
## REGIONAL ROADMAP FOR LOW-CARBON AND RESILIENT BUILDINGS AND CONSTRUCTION SECTOR

Roadmap informs decarbonization efforts of the built environment across Arab countries



The Ministry of Energy and Infrastructure "MoEI" has developed a regional roadmap for low-carbon and resilient buildings and construction sector. It can be used by Arab countries as a blueprint to initiate, support, and complement their ambitions to decarbonize the built environment through 2050.

The roadmap was created to serve all 22 Arab countries, Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, UAE, and Yemen.



It takes into consideration their varying climatic, economic, demographic, energy emissions, and urbanization patterns. It provides a self-assessment tool with several indicators allowing each country to position itself in one of the three sub-roadmaps: **Advanced Progress Country, Moderate Progress Country, and Early Development.**

## REGIONAL ROADMAP

STEP

1

### ASSESSMENT OF COUNTRIES



STEP

2

### CLUSTERS

ADVANCED

MODERATE

EARLY

STEP

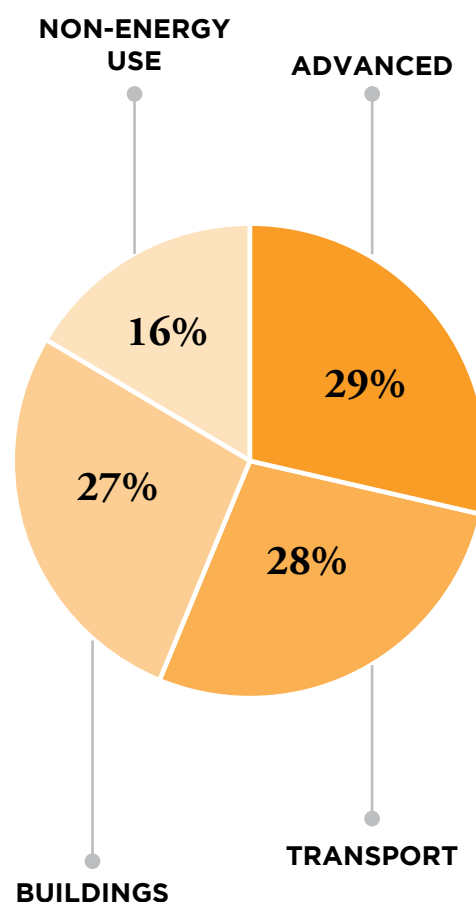
3

### FOCUS COUNTRIES SELECTION



The sub-roadmaps identify the required working steps to accomplish the relevant actions, including the policy cycle process needed to achieve continuous improvement in the performance of the policies to support the transition to low-emission, efficient, and resilient buildings. These steps include preparatory steps, strategy and conception, instruments, implementation, monitoring, and evaluation and reiteration.

The buildings sector is a significant energy consumer and GHG emissions contributor. The growing population, economic growth, and rising urbanization trends are driving the sector's demand for energy. According to the 2021 Global Status Report for Buildings and Construction, the sector accounts for 36% of final energy demand globally, representing 39% of energy- and process-related emissions. Therefore, it is perceived as a priority sector for decarbonization to achieve the objectives of the Paris Agreement and the Sustainable Development Goals (SDGs).



Sectoral breakdown of the TEFC in the Arab World (UN ESCWA, 2018)



The roadmap assesses the eight activities featured in the methodology of the Global ABC Roadmap for Buildings and Construction 2020-2050. These are:

- **Activity 1:** Urban planning, covering the land use, zoning, and other planning processes associated with how buildings, transport, and energy systems interact.
- **Activity 2:** New buildings, covering all aspects of new buildings, including the design process, design strategies, and codes.
- **Activity 3:** Existing buildings, covering all aspects of the improvements of existing buildings.
- **Activity 4:** Building operations, covering all aspects of building operations and management.
- **Activity 5:** Appliances and systems, covering lighting, appliance, and equipment systems that are used in new and existing buildings.
- **Activity 6:** Materials, covering the building envelope, structural, and product materials.
- **Activity 7:** Resilience, covering all aspects of building resilience that enable increased adaptive capacity to the impacts of climate change, most importantly extreme weather events.
- **Activity 8:** Clean Energy, covering the energy transition away from carbon-intensive fuels to clean energy sources, including renewables.

The roadmap provides a status quo of each of the eight activities illustrated by relevant examples and covering:

- Key actions identified for each activity.

- Stakeholders that are relevant to the activity and their relative importance.
- Policy and technology actions

The policy approaches adopted through the roadmap include:

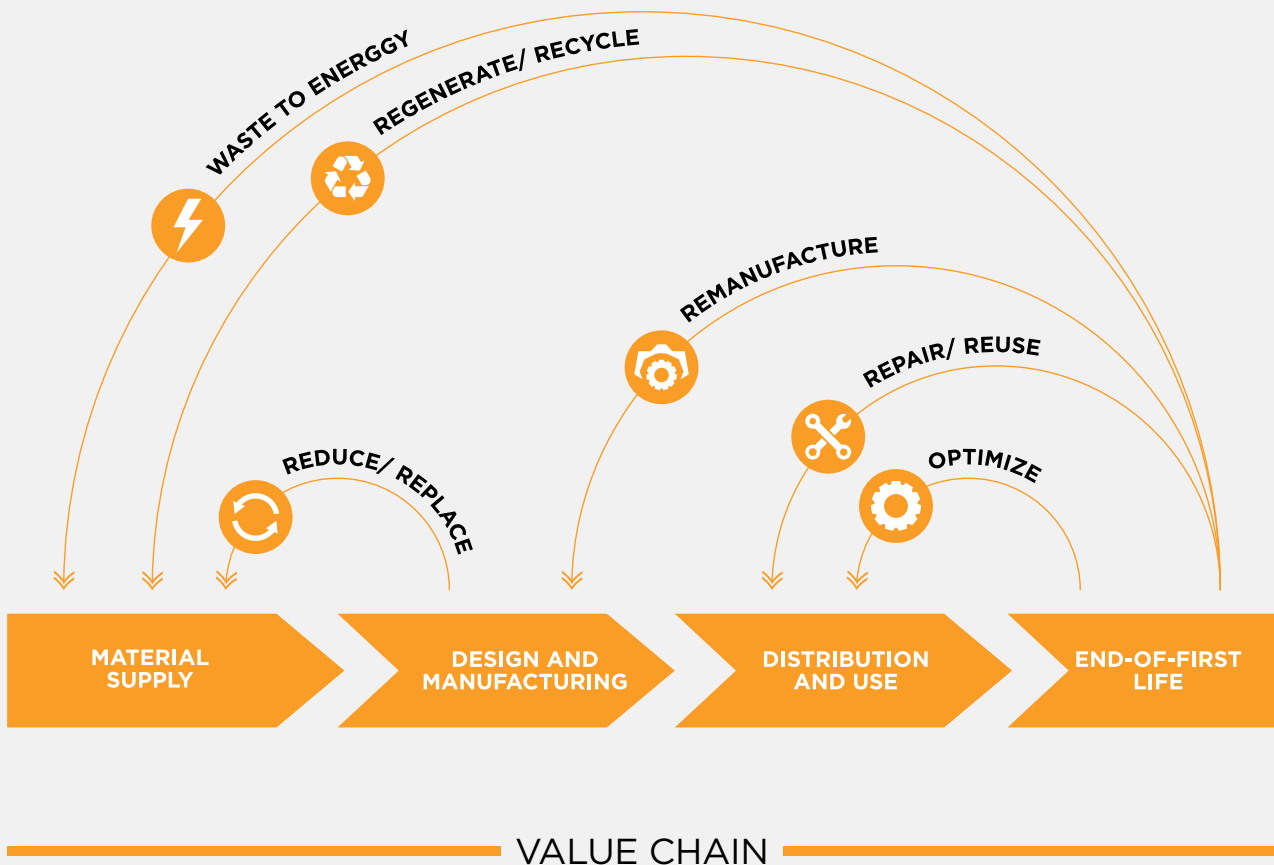
- Revising the procurement policy
- Promoting green procurement activities – sustainable materials, low embodied carbon materials, and recycled materials
- Encouraging bulk procurement
- Building capacity in procurement models
- Modifying regulations
- Setting appliances' minimum performance regulations
- Reforming the planning and building regulation to integrate considerations of embodied carbon
- Developing green procurement regulations
- Setting regulations to improve buildings resilience to climate change
- Revising renewable energy regulations

The need to decarbonize the buildings sector and develop a roadmap to support the Arab countries in achieving Paris Agreement goals was one of the outcomes of the 3rd Arab Ministerial Forum on Housing and Urban Development, held in the UAE in 2019. The initiative received unanimous consent from the Arab countries and the UAE took the lead in developing the roadmap.



## Circular Economy Practices

“Circular Economy is one of approaches to sustainable development that has gained traction among economists, policymakers and business people, and has also caught UNIDO’s attention, over the past few years. Below is a high-level framework developed by UNIDO on how to tackle circular economy across the value chain.”



## SPEARHEADING THE WAY TOWARDS THE “GREENEST” REGIONAL MOBILITY ECOSYSTEM

### Pathway to increasing EV Maturity Across Regions



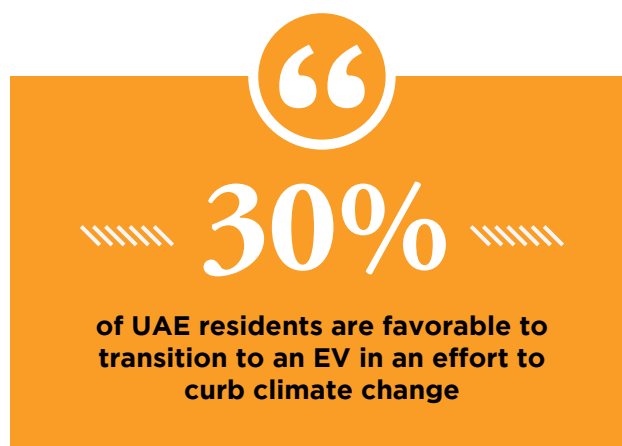
Interest in Electric Mobility - whether within governments, companies, or across societies - has been steadily increasing over the last four years, due to the escalating threat of climate change, as well as promises of net-zero targets. Simultaneously, companies are facing growing societal and legislative pressure to combat climate change by adjusting their products, processes, and purpose.

These factors have propelled E-mobility topics to the top of automotive executives' strategic agendas across the world, although each market would still need to be tackled differently, with its own set of requirements.

To successfully implement the transition from Fossil Liquid Energy to Electric Energy and push forward a once-in-a-century disruption from molecules to electrons, these different requirements must be properly acknowledged and understood.

The UAE Ministry of Energy and Infrastructure anticipates four main factors of maturity that will determine how successfully EVs will be adopted: (1) Market, (2) Customer, (3) Infrastructure, and (4) Government:

1. **Market maturity:** Marketing Strategies of existing industry players will heavily influence the customers' perception of EVs. The number of EV models that will be offered, as well as how they will be introduced to the market could either hype up demand for EVs or falter down general enthusiasm.
2. **Customer maturity:** Besides objective factors, like the general availability of charging points



or the prices of EVs, the customers' subjective opinions about the topic will play an important role in their decision-making process: General perception of EVs and preference vs ICEs.

3. **Infrastructure maturity:** This boils down to the general availability and effectiveness of charging options, whether in public or private spaces. Customers will be more psychologically inclined to switch to EVs if provided with a dense public infrastructure.
4. **Government maturity:** Over the last century, ICE vehicles have had an entire ecosystem built around them, which has evolved and been optimized with the support of abundant subsidies and investments. Similarly, local regulatory and legislative bodies will play a key role in shaping the EV market.
5. These four pillars will jointly present an overview of EV maturity across regions and will provide us with a clear outlook on the future.



According to recent studies, the EV market in the UAE is expected to grow at an impressive 30% CAGR from 2022 to 2028, cementing the UAE's position as a regional leader in the field. With 95% of its EVs being passenger vehicles - mainly because of an increase in EV rental services, as well as limited availability of electric commercial vehicles for logistics or transport - the UAE government has been paving the way for EV adoption across its territory. Starting with the government itself, the UAE has converted 20% of its government agency cars to EVs and is planning to reach its goal of 42,000 EVs on its streets by 2030.

As for non-governmental cars, the latest studies report that around 30% of UAE residents are favorable to transition to an EV in an effort to curb climate change, as they also consider them more cost-effective than traditional vehicles in the long run.

Another government-led project was launched in 2015 - Dubai's EV Green Charger Initiative - has resulted in the UAE having one of the largest charging stations to vehicles ratios in the world. The government has amped up its efforts since then and kept on increasing its network: as of this writing, the country has as many as ~700 charging stations.

Additionally, in a bid to encourage its citizens to switch to EVs and make public transport emission-free by 2050, the government is working on implementing an array of incentives

## “ THE EV MARKET IN THE UAE IS EXPECTED TO GROW AT AN IMPRESSIVE 30% CAGR FROM 2022 TO 2028

for EVs, from free parking to toll exemptions, as well as reduced registration fees.

In keeping with its goal to transition to a circular economy, the UAE has opened the region's first EV & Battery Logistics Hub in Dubai's Jebel Ali Free Zone. The hub ensures a reliable and local supply chain for sustainable mobility solutions. Overall, to level the playing field between ICEs and EVs during the current transitional period, high-income countries - such as the UAE - will need to rely on subsidies. With similar levels of convenience between both options, customers are likely to pick EVs in order to reduce their environmental footprint. It will be up to the governments to provide public, reliable, and fast-charging infrastructure to ensure their citizens pick the green option.

The UAE has set the roadmap for ambitious goals, targeting to be a global leader in the EV market. Through establishing proper collaboration channels between the public and the private sectors, it is ensuring all aforementioned maturity pillars will be favorably and successfully established for the upcoming ICE-EV transition period.

Source: MoEI



## TWO CASE STUDIES TO DRIVE INNOVATION IN BUILT ENVIRONMENT

1

First case study sets tools that can track and document a project's carbon footprint, impact on air quality, water consumption, energy use, and waste

2

Second case study serves a dual purpose of diverting plastic waste away from landfills and improving the roads condition

**The Ministry of Energy and Infrastructure "MoEI"** has developed **two case studies** that offer innovative ways to **improve the sustainability and reduce the ecological footprint** of the built environment in the **UAE**.



### First case study

The first study involves a set of tools to help project teams track, document, and monitor data related to sustainability during a project's lifecycle and inform decision-making.

The tools assess the project's carbon footprint and its impact on ambient air quality throughout its lifecycle to ensure at least 5% reduction of its GHG emissions compared to business as usual. A project team can document the indoor and outdoor water consumption of a building and determine the percentage reduction over the baseline. The energy performance tool can be used to check and display the energy model inputs as well as calculate the number of credit points achieved based on the energy modelling results. The tools are expected to reduce energy use by 45% for road projects and 16% for buildings projects.

Using the tools, a project team can also track and document the amount of waste generated, and the percentage of which that is recycled monthly over the full duration of the construction phase.

The sustainability tools will be used across all MoEI's projects, from roads and buildings to housing projects.



The Sustainable Procurement Policy, developed by MoEI, is a key enabler of the success of the sustainability tools. It identifies the social, economic, and environmental impacts of procurement processes through all stages of a project lifecycle, including design, resource extraction and sourcing, manufacturing and production, transportation, service delivery, operation and maintenance, reuse, and recycling

The Policy also considers suppliers' capacity to operate sustainably throughout the supply chain. In addition to bringing social, economic, and environmental benefits, sustainable supply chain management can stimulate the market and encourage innovation for sustainable products and services, as well as support the local supply community by engaging with small and medium enterprises to compete for MoEI contracts. The Policy applies to ongoing consumables, building materials, and electronic equipment.

## Second Case Study

MoEI is developing an asphalt mix using recycled plastics for pavements. Within the scope of the study, the Ministry is setting the specifications of the new mix, academia will

develop and test it, and roads authorities will put the new mix into use as a paving material.

Using the new mix in pavements will serve a dual purpose of diverting plastic waste away from landfills and improving the roads condition.

The study is in line with the UAE Circular Economy Policy that supports the implementation of integrated waste management and extends the lifecycle of plastics as well as re-establish the economic value of plastic waste as feedstock for new materials.

The extreme traffic volume and extreme climate conditions in the UAE cause roads to deteriorate faster. MoEI will utilize the recycled plastic mix to improve the asphalt binder for more resilient roads as a cost-efficient replacement of the rather costly polymers. The new mix will increase the pavement stiffness, and provide longer assets' life as a result of the improved fatigue resistance, which reduces the maintenance costs and increases durability. Furthermore, reducing cracks on roads will reduce traffic congestion, as well as improve the journey experience and commuters' wellbeing.

Source: MoEI





# DUBAI URBAN PLAN 2040

## The Best City for Living

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Dubai 2040 Smart Urban Master Plan is an integrated 20-year roadmap to achieve an ambitious future-focused agenda based on leadership's vision to make "Dubai the best city for living".

The Plan was prepared by Dubai Municipality along with a long list of collaborating government agencies and stakeholders and represents the

government's primary tool to coordinate the spatial initiatives in its renewed planning system aiming at improving Dubai's environment, ease of business, housing choice, park provision and infrastructure efficiency. The Emirate has been actively working during the last decades on bettering the quality of life of its citizens through the outlining of long-term strategies and targeted policies in various domains.



### HIS EXCELLENCY MATTAR AL TAYER

**His Excellency Mattar Al Tayer is the Commissioner General for Infrastructure, Urban Planning and Well-Being Pillar and the Director General, Chairman of the Board of Executive Directors of the Roads and Transport Authority (RTA). He holds a Bachelor's degree in Civil Engineering from the University of Wisconsin, USA, 1983 and was awarded an Honorary Fellowship by the British Institution of Civil Engineers (UK) in 2010.**

His Excellency Mattar Al Tayer, has been the Director General, Chairman of the Board of Executive Directors of the Roads and Transport Authority (RTA) since its inception in 2005. Prior to taking up RTA's leadership role, he worked as Deputy Director General of Dubai Municipality. Since taking over the management of RTA, he managed to plan and deliver projects worth more than AED140 billion topped by the Dubai Metro, Dubai Tram, and the Dubai Water Canal in addition to several crossings over Dubai Creek such as the Infinity Bridge, Business Bay Crossing, and Al Garhoud Bridge. The list also includes infrastructure improvement projects for roads and public transport networks, and 15 projects that serve Expo 2020 worth more than AED15 billion including Dubai Metro's Route 2020.

In his capacity as Commissioner General for Infrastructure, Urban Planning and Well-Being Pillar, Al Tayer oversaw the development of the Dubai 2040 Urban Master Plan, and the Dubai Citizens Housing Policy. He oversees the implementation of projects under Hatta Master Development Plan, Dubai Landscape and rural development, in addition to the wellbeing initiatives and projects in the emirate.



These efforts have started to bare fruits propelling Dubai to the forefront of the international arena and increasing its global ranking as well based on key performance indicators. As such, Dubai ranked 79 out of 173 (Global #1: Vienna) on the Economist Global Livability Index, while it ranked regionally the best for quality of living on the Global Livability Index (Mercer, 2019 and the Economist Intelligence Unit, 2019). Similarly, and in terms of air quality, Dubai achieved its declared clean air days target for the year 2018 (Dubai Air Quality Strategy) reducing 43.9 million tons of CO2 emissions (Dubai Sustainability report 2018). The city has also been recently included in the list of the world's best-performing digital governments that received a 'Very High' rating ranking fifth globally and first in the Arab World in the United Nations' E-Government Survey LOS Index category (2022).

Building on such achievements, Dubai 2040 seeks to direct development in a coordinated manner and to position Dubai as the world's best city for living. This will place the Emirate on a path of sustainable, future-proofed growth as it prepares to double its resident population in the face of game-changing environmental, technological, and economic opportunities.

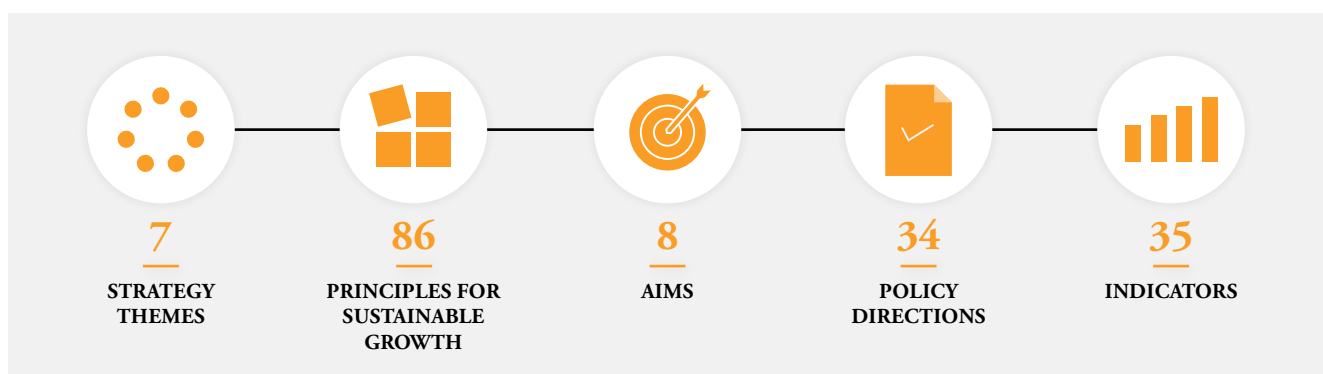
The Plan promotes prosperity, sustainability, and cohesiveness through a people-centric approach. It adopts holistic spatial strategies to enhance livability by creating a visionary framework to guide planning and detailing the core objectives intended to promote environmental, social and economic wellbeing.

In this regard, the plan has identified **Five Key Challenges** facing the Emirate's future sustainable development; these include urban sprawl, infrastructure efficiency, environmental resilience, land use supply and coordinated governance.



Accordingly, the Plan highlights the following **key spatial opportunities** to address such challenges:

- Leverage Dubai's diverse population and economy to create a unique, people-focused sense of place
- Expand natural conservation areas, create urban-rural natural connectors, and increase urban green space to enhance environmental sustainability
- Capitalize on existing development to create a connected hierarchy of centers, bringing residents closer to where they work, shop, and recreate
- Promote infill development and maximize public transit investments, to maximize the efficiency of existing and planned infrastructure
- Expand affordable housing options and regenerate ageing residential communities



## Spatial Policies and Objectives

Equally, the Plan outlines the following specific spatial policies and objectives to achieve leadership's vision and to guide the Emirate's future growth in eight strategic areas all pertaining to sustainable development goals:

SPATIAL POLICIES		OBJECTIVES
1	Urban Structure, land use and built form	<ul style="list-style-type: none"> <li>• Define urban, peri-urban, rural, marine and coastal areas</li> <li>• Protect and enhance rural, desert, and mountain wilderness areas</li> <li>• Establish high-quality design guidelines</li> </ul>
2	Housing	<ul style="list-style-type: none"> <li>• Provide a large palette of housing choices</li> <li>• Promote affordable, safe and high-quality housing to match existing varied demand</li> </ul>
3	Employment	<ul style="list-style-type: none"> <li>• Improve access to local and on-street retail</li> <li>• Promote high-tech, innovation and STEAM clusters/corridors</li> <li>• Support industrial, production and processing sectors</li> </ul>
4	Community facilities	<ul style="list-style-type: none"> <li>• Co-locate community facilities within a hierarchy of centers</li> <li>• Provide better access to health, safety, security and emergency services</li> </ul>
5	Heritage, arts and culture	<ul style="list-style-type: none"> <li>• Develop arts and cultural spaces, venues and districts</li> <li>• Preserve and leverage Dubai's historic and modern built heritage</li> </ul>
6	Environment and open space	<ul style="list-style-type: none"> <li>• Develop integrated Right of Way (RoWs) and corridor management systems</li> <li>• Enhance solid waste management systems</li> <li>• Promote a sustainable water management system</li> <li>• Integrate telecommunication corridors</li> <li>• Improve Dubai's natural gas system</li> <li>• Provide a cost-effective and sustainable district cooling strategy</li> <li>• Establish sustainable, energy-efficient management systems</li> </ul>
7	Utilities	<ul style="list-style-type: none"> <li>• Improve environmental quality: air, water, noise and urban heat islands</li> <li>• Enhance storm water/ floodplain management</li> <li>• Provide a high-quality parks and recreation system</li> <li>• Increase food security with urban agriculture and food production</li> <li>• Preserve and enhance waterfronts, inland lakes and waterways</li> <li>• Protect natural conservation areas and develop ecological corridors</li> <li>• Prioritize centers-focused transit-oriented development</li> <li>• Promote sustainably-oriented travel behavior</li> <li>• Promote future-proof mobility systems</li> <li>• Promote safe, active mobility-friendly streets</li> <li>• Facilitate efficient and sustainable freight management</li> <li>• Integrated land use and access to transport</li> </ul>
8	Governance	<ul style="list-style-type: none"> <li>• Establish an integrated geospatial data platform</li> <li>• Provide value capture and fees for urban investments and rezoned/ reallocated land</li> </ul>

## Implementation and Outcomes

When it comes to implementation, the plan prioritizes actions across three tiers allowing the execution to be responsive to changes in the government's agenda and impacts due to short-term shocks without sacrificing the overarching vision, these include:

1. Fundamental priorities: Actions expected to be implemented in the first five years of the Plan
2. Watch-and-go priorities: Actions based on demographic, economic and political triggers

3. Aspirational priorities: Actions related to far-reaching commitments by the government in areas of global cooperation

Finally, the Plan outlines 35 key performance indicators (KPIs) categorized around the eight strategic areas highlighted above to help monitor its implementation.

These indicators enable the quantitative evaluation of the Plan's performance, providing stakeholders with a toolset to understand how the Plan is spatially implemented and if any additional interventions are needed.



**The city has also been recently included in the list of the world's best-performing digital governments** that received a 'Very High' rating ranking fifth globally and first in the Arab World in the United Nations' E-Government Survey LOS Index category (2022)





WORLD GREEN ECONOMY  
ORGANIZATION

# UAE AT THE FOREFRONT OF GREEN ECONOMY ACTION

## The Global Alliance on Green Economy

With the world facing severe adverse effects of climate change, it has become crucial to accelerate the efforts in transitioning to a cleaner and greener economy. The vision and directives of the wise leadership of His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the UAE, and His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, have

made the UAE one of the pioneering countries in launching ambitious initiatives and strategies that will help reduce carbon emissions and adapt to climate change.

Considering the prevalent climate concerns, the UAE Government and the World Green Economy Organisation (WGEO) launched the Global Alliance on Green Economy, a coalition of



### H.E. SAEED MOHAMMED AHMAD AL TAYER

**H.E. Saeed Mohammed Ahmad Al Tayer has an overall experience of more than 35 years in the field of telecommunications, energy, water, infrastructure, oil, gas and industry.**

Under his leadership since 1992, DEWA group has achieved unprecedented success and is recognized today to be one of the most distinguished utilities world-wide. His Excellency founded several successful companies, notably Emirates Central Cooling Systems Corporation (EMPOWER), Etihad Energy Services Company (Etihad ESCO), Mai Dubai, Digital DEWA among others and some of these are already market leaders. Most recently HE Al Tayer steered DEWA group in its historic IPO, which attracted overwhelming global demand and was oversubscribed 37 times.

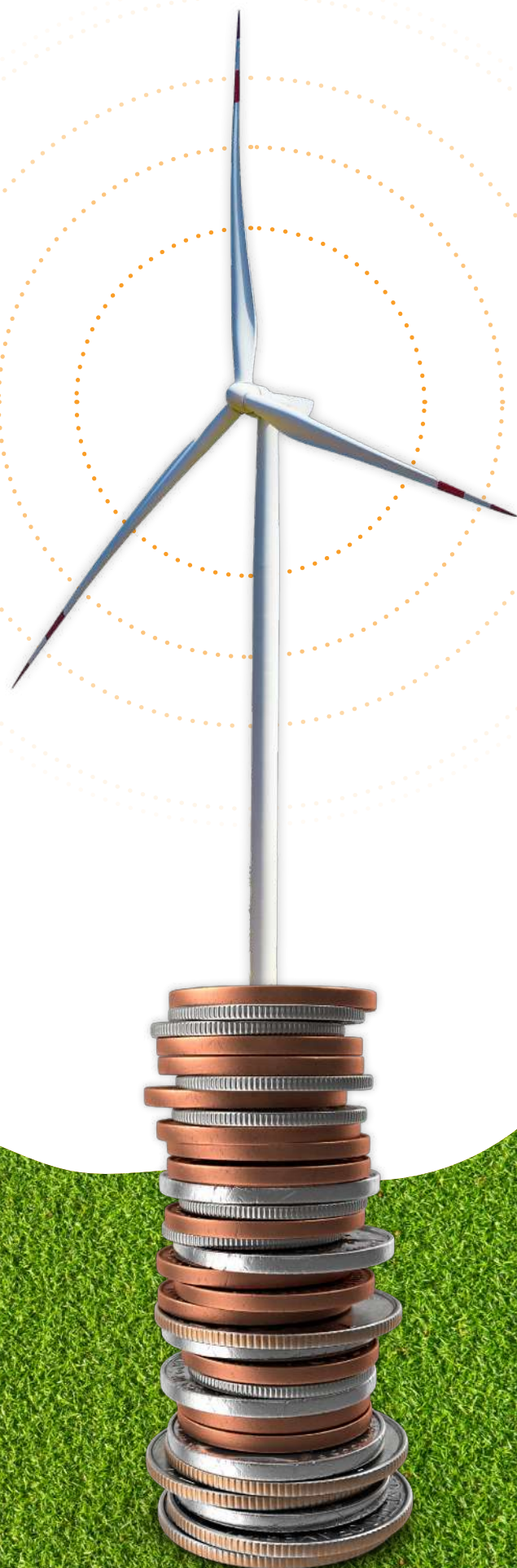
His Excellency Saeed Mohammed Al Tayer is a Member of the Dubai Council, Member of the Dubai Executive Council and Strategic Affairs Council, Dubai Supreme Fiscal Committee, Chairman of Infrastructure and Environment Committee of the Dubai Executive Council from 2009 up to 2018, Chairman of Emirates National Oil Company (ENOC), Chairman of Dubal Holding, Chairman of Dragon Oil Company, Chairman of Oilfields Supply Center Limited, Vice Chairman of Emirates Global Aluminium (EGA), Vice Chairman of Dubai Supreme Council of Energy, among other representations.



# “ THE ALLIANCE AIMS AT ENHANCING THE CAPACITY OF DEVELOPING COUNTRIES TO TRANSITION TOWARDS A GREEN ECONOMY

various nations that prioritise climate action and sustainable development. Launched during the World Green Economy Summit 2022, the alliance aims at enhancing the capacity of developing countries to transition towards a green economy. To further spearhead the transition towards a green economy, the UAE Cabinet, chaired by His Highness Sheikh Mohammed bin Rashid Al Maktoum, approved the UAE to join the Global Alliance on Green Economy.

The adoption of green economy principles





## ..... THIS ..... ALLIANCE

**is not the final product,  
but rather the first  
significant step towards  
interacting with nations  
and determining their  
needs, priorities, and  
challenges in achieving  
a green economy**

and practices within sustainable development, resilience to climate change, and poverty eradication have been a top priority in the UAE. To achieve economic sustainability while preserving the environment for current and future generations, the nation has set out a quest to be a global hub and successful example of a new green economy. The UAE is dedicated to accelerating efforts in transitioning to a green economy and intends to constantly fund initiatives such as the Global Alliance on Green Economy that brings together industry leaders, experts, and decision-makers from across the globe to build a solid groundwork for green economy and sustainable development.

By committing to attaining the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement goals, the UAE Government and the WGEO launched the Global Alliance on Green Economy intending to build a stronger collaboration among various countries to work towards a shared vision of preserving the planet. This Alliance is not the final product, but rather the first significant step towards interacting with nations and determining their needs, priorities, and challenges in achieving a green economy.

WGEO recognizes climate change as an urgent

global threat with effects that go beyond the environmental agenda to include economic, social, and environmental issues. Thus, the Global Alliance on Green Economy was launched during a high-level ministerial meeting with about 25 ministers and officials from various countries and senior experts and officials from development organizations.

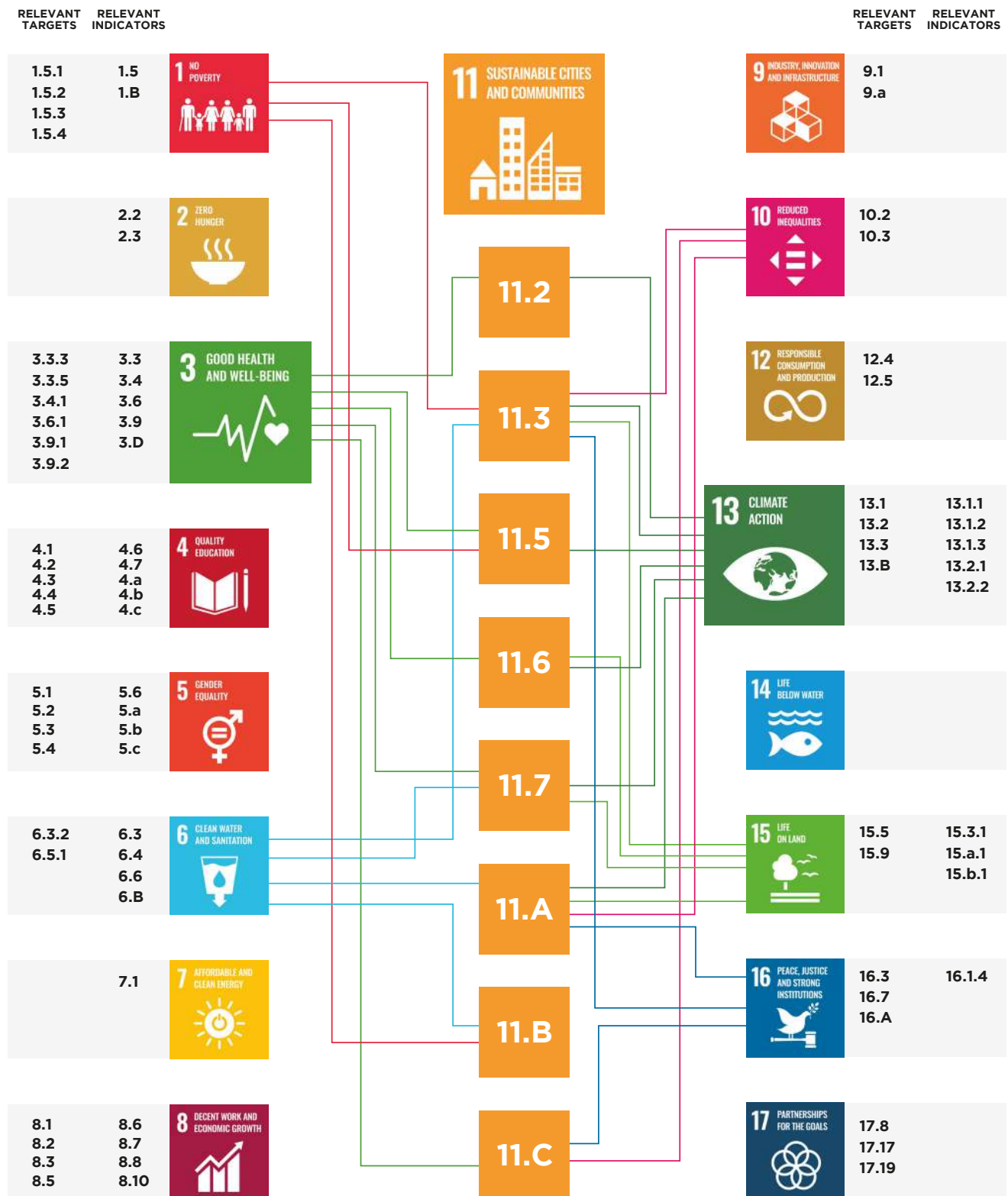
Countries joining the Alliance will gain access to funding for green economy projects, participation at the regional level in policy and technical issues, opportunities for youth learning and innovation to drive transformational change, and capacity-building to advance low carbon and resilient development to meet the Sustainable Development Goals and the Paris Agreement targets. All UN member States, and UNFCCC Parties are eligible to join the Global Alliance on Green Economy and can request information relating to the alliance from the WGEO Secretariat.

The UAE has been one of the largest suppliers of energy and a leader in energy transition by reducing the impact of hydrocarbons, deployment of sustainable and clean technologies, and investing in ventures that effectively utilize renewable energies, and establishing strategic partnerships, conferences, launching development projects and initiatives. To accelerate the green economic agenda, WGEO has planned to launch several flagship projects because of this multistakeholder exercise and inclusive consultation with nations. The Alliance's activities will address urgent challenges including food security and carbon markets and will contribute to the progress toward this common objective by facilitating the availability and accessibility of relevant solutions.

To prepare the next generation of leaders in climate action, the world needs a positive change in the current situation. Global green economy transition relies on cooperation, partnerships, and quick action. As the world recovers from the pandemic-caused downturn, efforts to create a greener and more sustainable economy have acquired new momentum. Strengthening international collaboration is essential to boost the transition to a green economy, which calls for a single platform with shared objectives that can reinforce this cooperation. The world has set out on a journey to ensure a safe and healthy environment that can achieve economic sustainability while preserving the environment for current and future generations.

Source: WGEO

## Did you know that SDG11 Indicators are linked to all the other SDGs?







# ENERGY TRANSITION AND R&D REVOLUTION

## UAE Leading A New Wave In Energy Transition

Energy availability and accessibility sit at the heart of human development. Energy readiness and accessibility lead to the availability of education, a reliable health sector, an advanced economy, and enhanced well-being. With the apparent correlation between energy and development, it is essential to find a balance between energy security, equity, and sustainability and ensure that development does not exacerbate the adverse impact of carbon emissions generated by human activities.

The Ministry of Energy and Infrastructure "MoEI" recognized the importance of the Research and Development (R&D) sector as a significant enabler for low-carbon development. The focus on R&D in the energy sector allows for continuous economic growth while facilitating leapfrogging following the best global energy transition trajectories to eliminate the risk of carbon lock-in.



### NASEIBAH ABDULLA ALMARZOOQI

**Naseibah Almarzooqi is the Director of Studies Research and Development and Chief Innovation Officer in the Ministry of Energy and Infrastructure.** She received a Bachelor's degree in Civil Engineering from UAE University and a Master's degree in Engineering System Management from the American University of Sharjah.

With over 20 years of experience in the infrastructure sector, Naseibah's professional focuses are on achieving the UAE vision & National Agenda from a sustainability standpoint. She is leading the development of scientific studies, and research culture is a primary national target. Some of her successfully delivered projects include developing sustainability guidelines for roads and building projects throughout the UAE. Ongoing projects are developing sustainable guidelines for the operation and maintenance stages and for housing sector, as well as developing a sustainable strategy for the inland transport sector.

Naseibah is also leading the efforts in establishing the roadmap for Zero Carbon for All (ZCA) in the construction sector and sits as a member of the Global Infrastructure Hub and a member of the SDG11 Global Council.



# “1% INCREASE IN R&D EXPENDITURES WILL INCREASE ECONOMIC GROWTH AT A RATE OF 0.77%”

In 2021, MoEI launched the first national virtual R&D Hub. This hub is grounded by national needs, challenges, and international commitments, with a target to create a fundamental shift in the R&D sector towards applied research. The MoEI's vision aims to create an R&D ecosystem nurturing the local economy, serving the low-carbon energy sector, attracting start-up companies, and creating new green jobs.

The virtual R&D Hub ecosystem would connect the top R&D centers worldwide with the local academia and the local private sector. The hub infrastructure would work on:

- Identification of key industrial players and other enabling stakeholders with a focus on SMEs and their current capacities and engagement in industrial research and development projects at the regional / national and international level
- Identification of priority thematic topics for the energy sector with substantial needs for R&D and technology transfer to the industrial scale until 2030

The thematic topics the R&D hub would focus on include:

- The latest technologies advance energy efficiency and low-carbon energy technology, including renewables and nuclear energy.

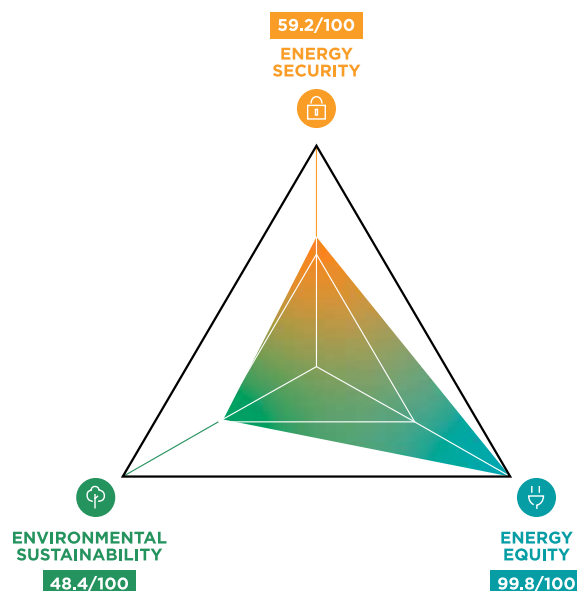
- The latest technologies advance highly efficient energy production from fossil fuels, including end-of-pipe technologies, such as carbon capturing and storage utilization technologies (CCSU).

The R&D hub's focus would be on upscaling different energy technologies to diversify the energy supply resource, such as:

- Hydrogen production from biomass - bioenergy with carbon capture and storage (BECCS)
- Hydrogen transport by upscaling the hydrogen blending in the natural gas network
- Biofuels production by biomass gasification and catalytic methanation
- Renewable energy mechanical storage through compressed air energy storage.

On the other hand, the R&D hub would work in parallel on other technologies that enhance demand-side management by boosting energy efficiency in the different energy-consuming sectors, including:

- Transport and its sub-sectors: Roads, Aviation, Freight, Shipping, and Rail. The hub would



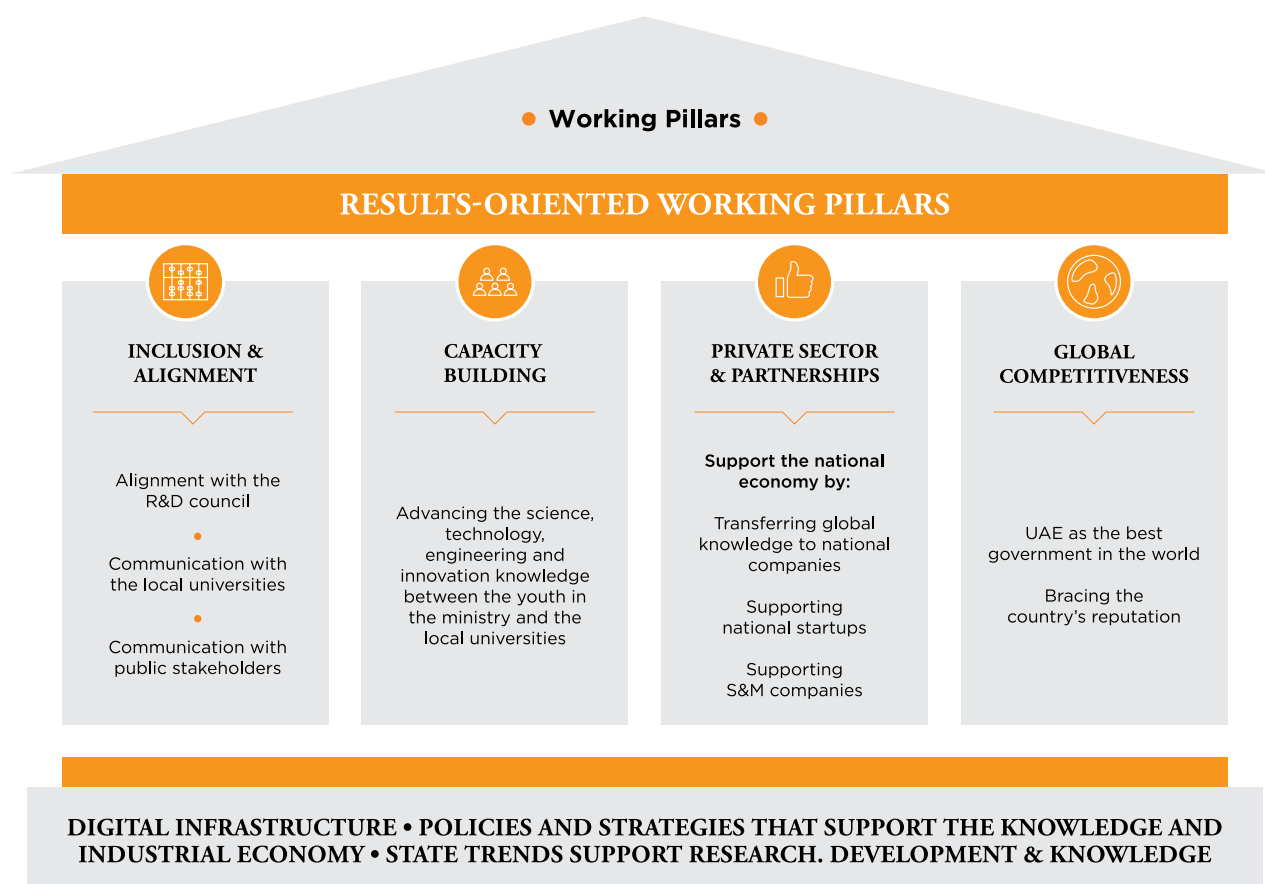
## » UNITED ARAB EMIRATES «

Trilemma Rank

#33

Trilemma Score

69.5



serve the technologies to improve energy efficiency and diversify the energy sources for vehicles of different types, vessels, and aircraft.

- The building sector: the hub would focus on the technologies enhancing the building envelopes, reducing material loss, and improving the heating and cooling generation through heat pumps and different technologies.
- The industrial sector: the hub would focus on the heavy industries that generate high emissions. Upscaling the recycling techniques of the plastics, such as the chemical depolymerization for PET, and improving the energy efficiency of the steel industry through smelting reduction based on hydrogen plasma.

MoEI encouraging and spreading the applied research culture would not only support the country's economic growth - where the Global Innovation Index Report in 2020 reported that the relationship between R&D expenditures and economic growth in the long term shows that a 1% increase in R&D expenditures will increase economic growth at a rate of 0.77% - but would also lead to fostering innovation in the public and private sectors. MoEI would utilize its motto of "Innovation Everywhere" to support

the national energy transition by unlocking and mainstreaming the national capacities toward decarbonizing the different sectors.

MoEI R&D and innovation efforts would also work on building a resilient energy sector. MoEI is leading the collective action on the national level with the participation of the stakeholders to build the adaptive capacity of the energy sector toward the significant climate change risks. MoEI is developing action plans through innovative scenarios to eliminate the following risks:

- The risk of reduced output power due to efficiency losses caused by the potential temperature increase exceeding the standard design criteria for the power infrastructure.
- The risk of reduced output power is caused by the potential higher need to cool the temperature of seawater.
- The risk of elevating the cost of maintenance and repair is caused by the increased deterioration of the power infrastructure facilities built with design standards, not considering the rising temperatures and extreme weather or climatic events.

Source: MoEI

# SPOTLIGHT

ACCORDING TO THE ECONOMIST INTELLIGENCE UNIT'S  
REPORT – ENERGY OUTLOOK 2023:

**Global energy consumption will grow by only**

**1.3%**

in 2023 amid a slowing economy

**Despite decarbonisation targets**

**COAL**  
CONSUMPTION



will grow marginally to compensate for gaps in gas supplies

**MORE EXTREME WEATHER EVENTS**



will force many countries to fall back on fossil fuels, delaying the energy transition

**Renewable energy consumption will surge by about**

**11%**

with Asia leading the way, but investment will weaken



**THE ENERGY CRISIS**

will prompt some governments to backtrack on efforts **to phase out the use of nuclear power**





UNITED ARAB EMIRATES  
MINISTRY OF ENERGY & INFRASTRUCTURE



INTERVIEW

# HIS EXCELLENCY SUHAIL MOHAMED AL MAZROUEI

UAE Minister of Energy & Infrastructure,  
Chairman of the Global Council on SDG11





## Introduction

The COVID-19 pandemic has been an unprecedented wake-up call, laying bare deep inequalities and exposing precisely the failures that are addressed in the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change.

Leveraging this moment of crisis, when usual policies and social norms have been disrupted, bold steps can steer the world back on track towards the Sustainable Development Goals. This is the time for a change, for a profound systemic shift to a more sustainable economy that works for both people and the planet.

It is estimated that 90% of all COVID-19 cases occurred in urban areas (cities). This alone is a

sufficient catalyst for us to understand that we must reimagine our future cities.

In 2022, many cities are starting to reassemble themselves, cautiously returning to their older identities. But is that what we want to go to? Maybe yes.

In this interview, a pioneer change maker in the areas of Sustainable Cities and Communities provides insights on innovative and successful models of building sustainable Cities and Communities, future state analysis for cities that are resilient to parabolic future events (such as pandemics), and a showcase of new streams of urban solutions.



## Q1

### **Looking at the world's COVID-19 experience, what does the future of smart and sustainable cities look like?**

We learned a lot from COVID-19 experience, we learned that we cannot live without each other, that our health is more important than anything else, and that to achieve and sustain the fabric of our socioeconomic systems, we need to diversify our energy mix. Sustaining our energy needs from renewable sources is becoming a leading aspiration for everyone.

Moreover, it has become evident that we thoroughly investigate how we build our cities, how we optimize the logistics within a city, and how we make sure we are kept connected to our necessities within cities in general, especially during emergencies and pandemics.

The logistical work during the COVID-19 pandemic taught us to be smarter and more futuristic in our choices in urban planning and to have a plan for our cities to ensure that sustainability is continuous. Sustainable Cities and Communities are not a myth, it is something we can do and I think we have demonstrated here in the UAE great capabilities to navigate uncertain times, thanks to the direction of our wise leadership to invest early on in robust infrastructure and technologies.

## Q2

### **For a fuel generating and exporting country such as the UAE, the economic resilience of cities is closely tied with fossil fuel (generation and consumption). How can we deconstruct this linkage, and move towards a future with more sustainable cities and communities?**

The UAE and, its wise leadership, believes

progressive development of renewable source. Despite being an oil and gas producer, the UAE was the first in the region to diversify its energy sources back in 2005 and 2006. Our first step was to diversify and intensify our gas network by establishing the Dolphin Gulf Project, which was a visionary step to ensure energy security. 20 years later, many countries are still facing difficulties that were resolved by that very project.

Let us not be mistaken, the UAE hold enough gas reserves to stay 100% reliant on gas for the foreseeable future. However, our leadership, especially our President Sheikh Mohammed bin Zayed, holds the vision for the UAE to continue being a responsible country and leave a steady positive footprint in the world. The UAE will continue to invest in new forms of energy and pioneer a legacy of supporting other countries in the same.

The UAE established Masdar 17 years ago, and today, Masdar is a world-class leader in promoting renewable energy projects. Meanwhile, the country established a peaceful nuclear energy program, the first in the middle east, and the fastest in the world to general clean form of baseload. Your alternative energy sources must be able to provide clean baseload 24 hours a day, 7 days a week, and the peaceful energy program is a prime example of that. Today, the UAE's peaceful nuclear energy program has already brought 4 stations to life and can generate up to 4000 Megawatts of clean electricity, to complement the UAE's investment in renewable energy.

All of that being said, we have a duty and responsibility towards ensuring that we also maintain our supply of fossil fuels to the world, as it transitions towards greener and more sustainable energy, to ensure that the world's demand is met to sustain economic growth. This balance is very delicate and important. If we hinder economic growth, we risk the loss of jobs, and in return deprioritize the transition to cleaner energy. The UAE has a proven track record of maintaining that delicate balance, and that becomes evident as producing the cleanest barrel in the world in terms of carbon intensity.

## Q3

**Climate Change and environmental concern increasingly dominate future scenarios. Therefore, the transition to net zero greenhouse gas emissions must occur as soon as feasibly possible. Cities can do their part by embracing a wide range of options. What do these options look like?**

As previously mentioned, we to maintain a delicate balance in the journey towards a cleaner energy mix. The world needs to increase investment in renewable energies, and stronger commitments by countries towards Net Zero. The main objective is not to eliminate fossil fuels, but rather to reduce, or even better, eliminate CO2 emissions. There is a possible scenario of capturing 100% of CO2 emissions generated by fossil fuels, and reutilizing these captured emissions in powering industrial sites, or power stations, as examples. Such scenarios allow us to work in parallel and maintain the earlier mentioned balance.

I believe future technologies and science will play a huge role in the utilization of CO2 emissions, and I foresee that there will be greater investment in research and development in these areas. The fundamental concept is to develop use cases that are supported by a strong commercial model, and I am optimistic about the same.

Meanwhile, it is essential for nations and cities worldwide to further cement their commitments towards reaching Net Zero. Since ratifying the Paris Agreement, the UAE has demonstrated leadership roles in rolling out projects that will support reaching the targets of the agreement, and the UAE Net Zero 2050 strategy is one example of many. Add to that, the UAE is currently operating several large-scale solar power plants and is currently exploring advanced battery technologies to complement the efforts of the solar power plants.

The last part I would like to highlight is the role we as humans have to play in consuming responsibly. That can be realized by adopting sustainable consumer behaviors and by carefully choosing the products and designs that support our targets. The UAE Ministry

of Energy and Infrastructure issued a highly innovative code of building that places SDG11: Sustainable Cities and Communities at the core and introduced emerging technologies that will be intended to support the end user in making more sustainable choices.

## Q4

**The concept of focusing on capturing CO2 emissions instead of focusing on usage of fossil fuel seems to be very promising. How do you recommend we go about that?**

The UAE implemented this concept in one of the country's steel production facilities. To summarize, the CO2 emitted by the steel production facilities was captured and pipelined to one of the neighboring energy production sites. The emissions were then injected into an oil-producing reservoir and utilized in the energy necessary to produce oil.

The pilot done at the steel production facility allowed us to capture 800,000 tones of CO2 annually. The commercial viability of the pilot allowed us now to implement the same concept at ADNOC, where the target is going to be 5 million tons annually.

Another area that has allowed the UAE to accelerate CO2 capturing is the mangrove plantation. As a plant, mangroves absorbed far more CO2 than normal plants. The UAE has now launched an initiative to plant 100 million mangrove plants in the UAE. These are only a few of many examples that showcase the leadership's commitment towards CO2 reduction in the UAE and across the globe.

## Q5

**The COVID-19 pandemic and several following turbulent events have put unmatched stress on our economic systems. Why should business leaders**

**make commitments to sustainability targets while they are struggling to keep their businesses alive?**

It is important to understand that sustainability, by definition and design, holds a positive business case. The UAE Ministry of Energy and Infrastructure has, through many initiatives, demonstrated that large savings can be made by early investment in sustainability. As an example, and in line with the UAE Energy Strategy 2050, reducing our reliance on fossil fuels from 100% to 50%, will save us an estimated 100 billion dirhams over 32 years.

The UAE has achieved the lowest cost of solar energy at 1.35 cents per kilowatt hour.

In comparison, the cost of generating and distributing gas adds up to approximately 28 to 30 fils per kilowatt hour. In essence, and at a large scale, investing in sustainability becomes a far more attractive business model. That's why once the UAE launched the new strategy of solar rooftops, most businesses started using the space they have on roofs to install renewable energy.

Sustainability is not only a necessity, but also makes commercial sense, and I believe hydrogen is going to be the next major opportunity for sustainability advancements. Several projects have already emerged in turning waste into grey hydrogen. These are very promising, especially for the transportation and industrial sectors.

Source: MoEI





## ACCORDING TO THE SUSTAINABLE DEVELOPMENT REPORT 2022:

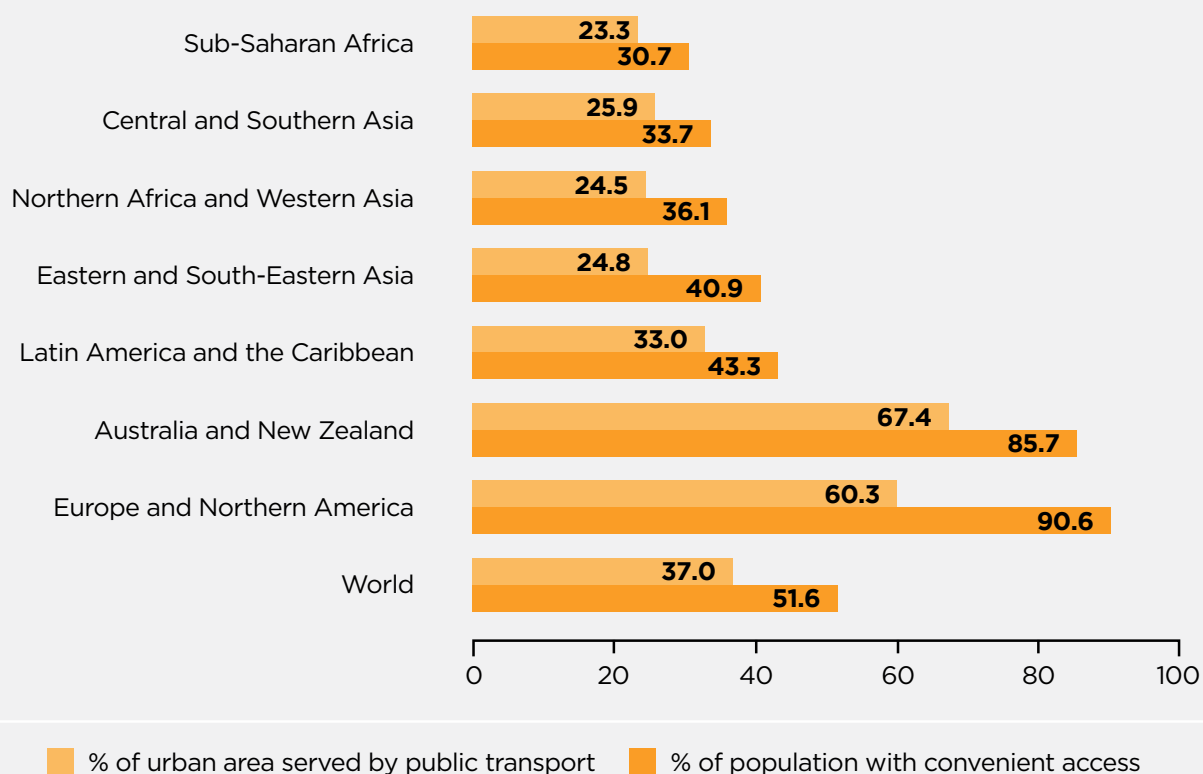
### Only about half the world's city dwellers have convenient access to public transportation

Between 2015 and 2030, annual passenger traffic globally is projected to increase by 50 per cent, and the number of cars on the road is likely to double. Public transportation systems that are well-designed and effective can promote mobility and enable people to access education, health care, employment and markets, while also reducing traffic congestion and pollution. They improve the efficiency, inclusivity and safety of urban areas, while also helping to battle poverty and climate change.

According to 2020 data from 1,510 cities around the world, only about 37 per cent of urban

areas are served by public transport. Due to variations in population density within cities, this translates to 52 per cent of the urban population with convenient access to public transport (meaning that they reside within 500 metres walking distance of low-capacity transport systems – such as bus stops or trams – or within 1,000 metres of high-capacity systems, such as trains and ferries). City governments still have a massive task ahead of them in seeking to enhance the availability and use of accessible, inclusive, safe, reliable and efficient public transport systems.

**Coverage of public transport and share of population with convenient access in urban areas, 2020 (percentage)**



02

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RETHINKING THE  
PILLARS OF  
SUSTAINABLE CITIES  
AND COMMUNITIES

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**"Rethinking the Pillars of Sustainable Cities" is a chapter that looks at the key challenges surrounding Sustainable Development Goal 11 (SDG11) in the post-COVID world. The chapter assembles editorials from subject matter experts and key stakeholders of the Global Council on SDG11 to provide a complete overview of the emphasis areas required to rethink the pillars of sustainable cities and communities.**

The COVID-19 pandemic has highlighted the critical need for resilient and sustainable cities and communities. As the globe begins to recover from the epidemic, it is critical that we examine the current condition of sustainable urban development and seek innovative approaches to the problems we confront. This chapter's articles cover a variety of subjects, including urban planning, circular economy, sustainable technology solutions, and community resilience.

This chapter provides an opportunity for the Global Council on SDG11 and its stakeholders to contribute their thoughts on the critical challenges that must be addressed in order to achieve sustainable cities and communities. The goal is to provide insights on a wide array of opportunities, as well as to foster educated discussions and debates about the future of sustainable urban development.

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# SDG11 HIGH LEVEL IMPLEMENTATION FRAMEWORK

## A Systematic Approach for Developing Sustainable Cities and Communities

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The Sustainable Development Goals (SDGs) were launched in September 2015 by the United Nations (UN) General Assembly, as a global call for action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity. In particular, Sustainable Development Goal 11 (SDG11) focuses on making cities and human settlements inclusive, safe, resilient, and sustainable. The goal seeks to ensure access for all to adequate, safe, and affordable housing and basic services, and to upgrade slums. It also aims to provide access to safe, affordable, accessible, and sustainable transport systems for all, and to promote

sustainable urbanization. Additionally, the goal seeks to increase the ability of cities and human settlements to withstand and respond to disasters, as well as to reduce the adverse effects of climate change.

SDG11 Global Council (SDG-11GC) was established as part of a testimony to UAE's strategic role in the global effort towards achieving the SDGs by 2030. SDG-11GC capitalizes on science, technology, and innovation (STI) during its course of work and leverages emerging technologies if and where applicable (e.g. AI, data, blockchain, IoT, etc.).

### The vision and mission of the Council are as follows :

#### VISION

“Build back better for inclusive and resilient sustainable cities and communities globally”.

#### MISSION

“Design and scale pragmatic SDG11 solutions that showcase that the pandemic offers the opportunity to rethink and reimagine future urban areas as hubs of resilient, sustainable and inclusive growth”.

SDG-11GC espouses the following guidelines:

- Keep a wide range of stakeholders engaged
- Capitalize on existing initiatives
- Establish strong partnerships
- Acknowledge & respect differences
- Ensure that no one is left behind
- Approach challenges pragmatically

SDG-11GC was aware of the following challenges as it commenced its work:

- With respect to SDG11, cities vary in terms of development stages and performance traits.
- Certain global, regional, national, and local initiatives are already in place.
- Cities might lack the necessary knowledge and expertise to enhance their performance with respect to SDG11.
- Cities might have limited access to public funding.
- Each city has its own unique institutional, administrative, and governmental establishments.

#### SDG-11GC High Level Implementation Framework

A pragmatic, high-level SDG11 Implementation Framework has been developed by the SDG11 Global Council , which will assist cities to:

- Systematically assess their current progress with respect to SDG11 targets,

- Identify the gaps by implementing a data-driven, evidence-based strategy by setting targets and key performance indicators (KPIs),
- Develop a high-level pragmatic roadmap to close the gaps through clear action items,
- Exchange experience and best practices among themselves.

As shown in Figure 1, the framework consists of a cycle of four steps:

1. Baseline
2. Innovate
3. Implement
4. Assess



**Figure 1:** SDG11 High Level Implementation Framework Steps

## Step 1: Baseline

This step involves a current state analysis of the city to determine its baseline for the targets of SDG11. This can be achieved by the following three components.

### a. SDG11 city-level targets and KPIs

SDG11 targets are designed at a national level. The framework suggests cities cascade down the national targets to the local city level, so that the development of city-level monitoring and progress tracking can be achieved.

On the other hand, the framework translates SDG11 targets into KPIs to assess development progress towards envisioned outcomes in addition to giving an overview of present significant SDG11 KPIs developed by credible global organizations such as United Nations Human Settlements Program (UN-Habitat), International Telecommunication Union (ITU), International Standards Organization (ISO), and United for Smart Sustainable Cities (U 4SSC).

### b. Ongoing city-level repository of initiatives/ action items

This component is comprised of actual initiatives and action items established and being employed by a city towards realizing SDG11 targets. Potentially, these initiatives can be formulated to achieve SDG11 targets, reflecting specific national or city-level priorities and needs.

### c. Enablers

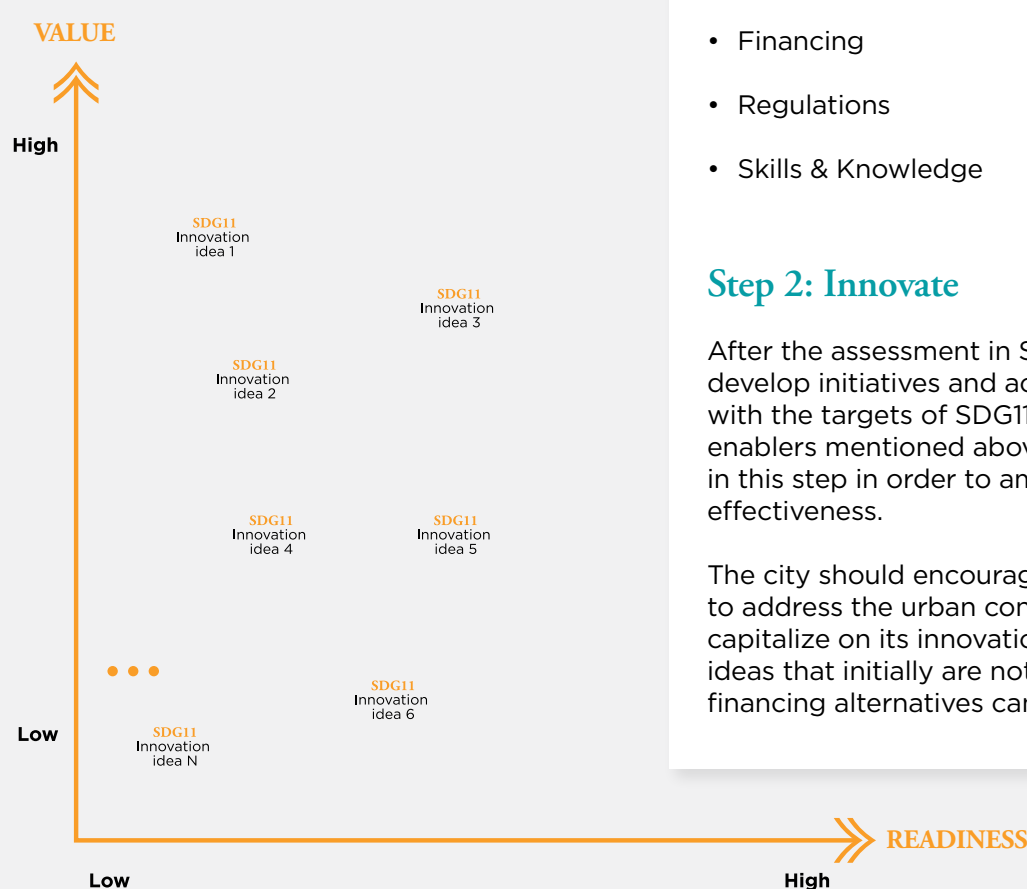
This component refers to enablers that assist in achieving the targets of SDG11. The framework includes and briefly describes the following enablers:

- Leadership & Governance
- Strategy & Policy
- Ecosystems & Engagement
- STI (Science, Technology & Innovation) Utilization
- Data
- Financing
- Regulations
- Skills & Knowledge

## Step 2: Innovate

After the assessment in Step 1, the city can develop initiatives and action items in alignment with the targets of SDG11. Furthermore, the enablers mentioned above shall be utilized in this step in order to amplify the innovation effectiveness.

The city should encourage its stakeholders to address the urban concerns as well as to capitalize on its innovation ecosystem. For ideas that initially are not financially feasible, financing alternatives can be considered



**Figure 2:** Illustrative Prioritization of Innovation Ideas



viable options. It is recommended that cities determine their long list of innovation ideas through benchmarking, best practices inclusion, and experimentation.

The shortlist of innovative ideas for SDG11 implementation can be determined from an impartial and thorough prioritization method. Thus, the framework includes a simple innovation prioritization approach that consists of two main criteria as listed below:

**Value:** Identification of the projected impact of the innovation idea

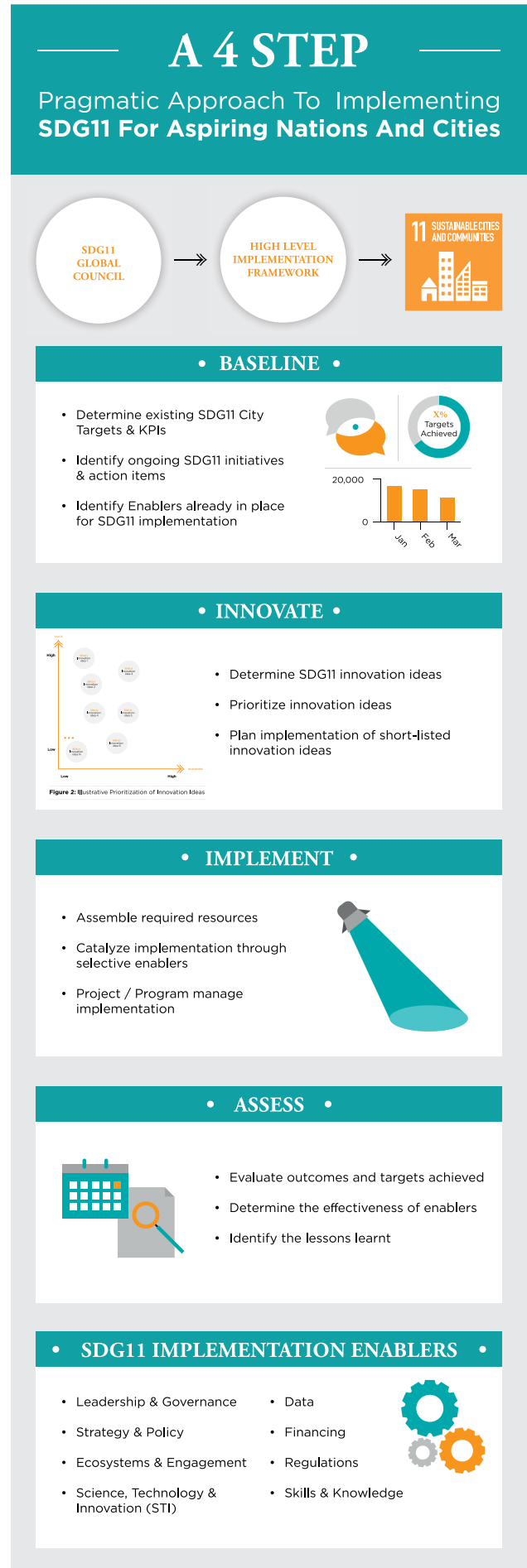
**Readiness:** The city's capability to successfully implement the innovation idea

Once the criteria and their constituent attributes have been identified, the city will be able to develop a simple scoring system. Based on available data and analysis, the scores can be determined either qualitatively or quantitatively. Furthermore, having well-defined criteria and attributes facilitates a more accurate ranking of innovation ideas.

As shown in Figure 2, cities can prioritize ideas according to predefined criteria in order to form a concrete list of initiatives/action items in alignment with the targets of SDG11. However, certain restrictions, such as human and financial resources constraints, may affect the actual timing of implementation. Depending on the restrictions and mitigation timeframes, initiatives/action items may be phased out, and it may be necessary for cities to mitigate implementation risks before implementing initiatives or action items in certain instances. It is recommended for the city to develop a coherent and all-encompassing policy framework for SDG11 implementation. The developed policy framework would give the city an opportunity to understand and establish the actual theory of change, and accordingly identify a set of policy options and aligned initiatives / action items that would serve the greater goal.

### Step 3: Implement

Cities can implement the SDG11 initiatives and action items crafted in the previous step by assembling the necessary resources. Effective program and project management are essential for successful implementation, and the enablers introduced in Step 1 can be utilized to accelerate the process.



Below are some non-exhaustive examples of how the approach can be applied:

- Monitoring progress can be made easier through the use of KPIs.
- Political leadership and appropriate governance are essential to ensure timely and robust execution.
- It is possible to use policies as a tool to foster certain behaviors and outcomes in a city.
- Engaging stakeholders in the early stages would ensure timely buy-in and increase the possibility of consensus-based success.
- Successful implementation of innovation requires a collaborative ecosystem that includes the public and private sectors, as well as civil society (NGOs).
- Early identification of skill and knowledge gaps can facilitate targeted training and R&D programs.
- With appropriate planning, alternative financing mechanisms can be utilized to close funding gaps.

## Step 4: Assess

This step entails evaluating the outcomes of the implemented SDG11 initiatives and action items, where the assessment results should objectively align with the targeted outcomes. The present urban observatories can play an important part in carrying out the objective assessments.

A similar assessment can be made of the effectiveness of various enablers. A number of lessons can be identified from the initiatives or strategic action items to evaluate their benefits and drawbacks. In some instances, it may be possible to cross-use the positive aspects of successful initiatives. For example, a successful policy in one initiative may lead to the use of a similar policy approach in another. Conversely, the identification of ineffective enablers could result in their removal.

### Important Note:

In order to continue the high-level implementation framework cycle, cities are expected to return to Step 1 and define their new baselines or current status following the assessment conducted in Step 4. Considering

the fact that SDG11 targets will remain valid until 2030, it will be important to apply the high-level implementation framework on a recurring basis.

SDG-11GC high level implementation framework is intentionally designed to accommodate differences, priorities, and specific aspects of cities. Broad stakeholder engagement would be crucial in each of the four steps in the framework. During its practical application, cities can enrich enablers, prioritization criteria and sub-criteria, and KPIs if and where needed.

The proposed framework can also be applied at the community level as opposed to cities only. Furthermore, the framework can be revised and modified in due course based on gaps and pitfalls encountered during its implementation.

## CONCLUDING REMARKS

**SDG-11GC high level implementation framework is intentionally designed to accommodate differences, priorities, and specific aspects of cities. Broad stakeholder engagement would be crucial in each of the four steps in the framework. During its practical application, cities can enrich enablers, prioritization criteria and sub-criteria, and KPIs if and where needed.**

**The proposed framework can also be applied at the community level as opposed to cities only. Furthermore, the framework can be revised and modified in due course based on gaps and pitfalls encountered during its implementation.**

# SP•TLIGHT

## Features of a 20-Minute Neighbourhood





## SUSTAINABLE CITIES: THE ROLE OF TECHNOLOGY IN DRIVING CHANGE

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- Tracking and reducing carbon emissions
- Shifting to lower-carbon transportation
- Improving air quality
- Future-proofing cities using urban forestry



Cities have a vital part to play in the future of our planet. They hold more than half of the world's population - a number that is only ever increasing, with estimates that by 2050, they will hold almost 70% of the global population. They are also central to the economy and growth, producing 80% of the world's gross domestic product (GDP). However, according to recent estimates, cities are also major polluters and drivers of greenhouse gas emissions (GHGs), contributing to over 70% of the world's CO2 emissions and being particularly vulnerable to the impacts of climate change, such as heat waves, sea level rises, and extreme weather events.

By making more sustainable decisions, cities can reduce their emissions and their

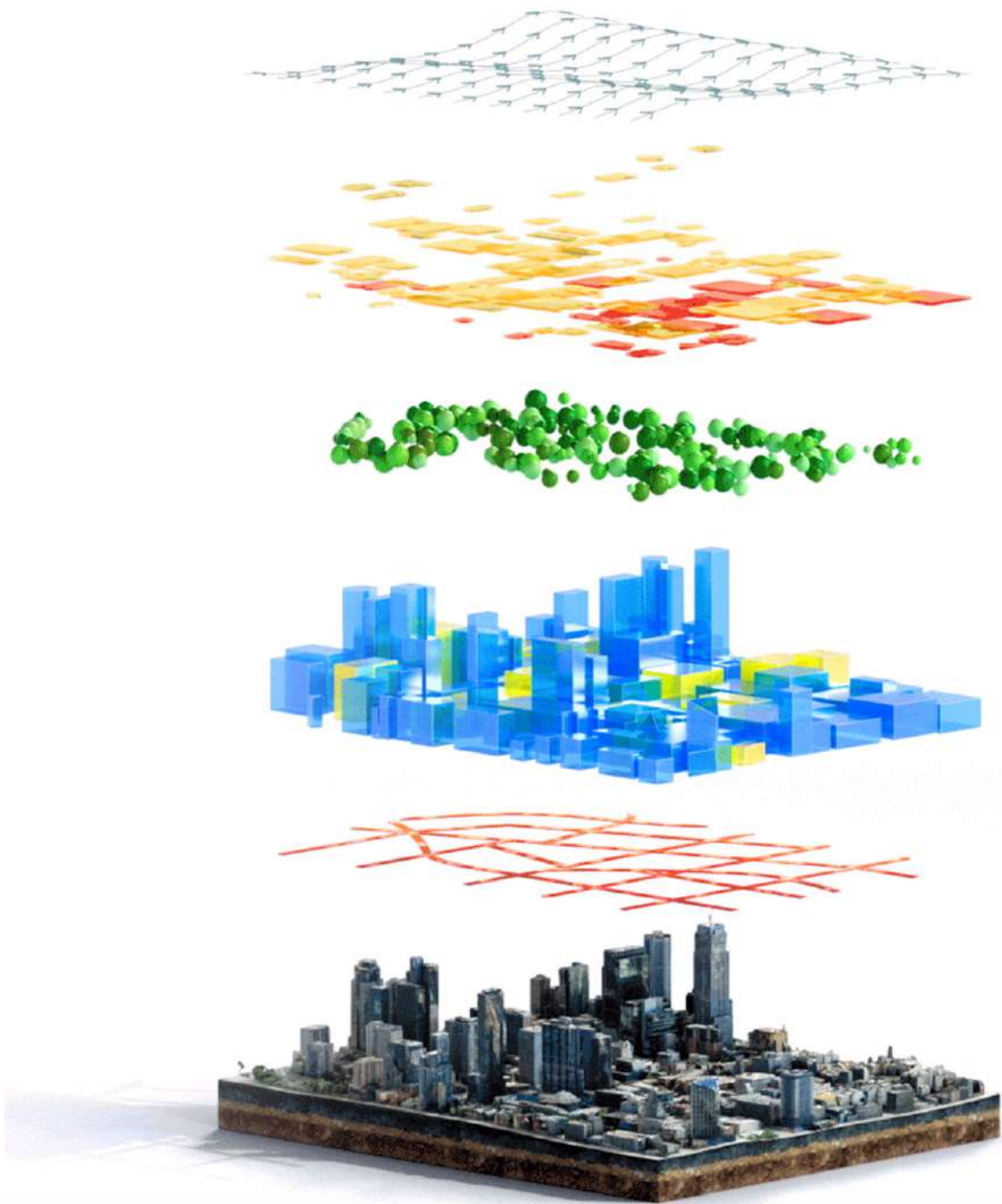
vulnerability to the impacts of climate change. Local governments are uniquely placed to capture this opportunity and deliver on wider net-zero emissions targets. Through smart and innovative data-driven policies to reduce emissions, cities can also be a source of inspiration for others to take similar actions and drive progress at the national and global levels.

At Google, we're committed to doing our part in creating a more sustainable, resilient, and prosperous world. We use technology in various ways to solve the world's most critical, complex challenges, some of which are directed towards supporting cities and local governments in their quest to become more sustainable. One way we are supporting cities to become more sustainable is by helping them transition to



24/7 carbon-free energy (aiming to meet every kilowatt-hour of electricity consumption with carbon-free sources, every hour of every day, every day of the year). In 2022, Google partnered with C40 - a global network of mayors taking climate action - to launch a new 24/7 Carbon-Free Energy for Cities program designed to empower cities to run purely on clean energy. By sharing decarbonization best practices and funding, local leaders in Paris, London and Copenhagen are developing and implementing innovative approaches to decarbonize their energy use. The program is expected to lead to scalable models for other cities around the world to replicate.

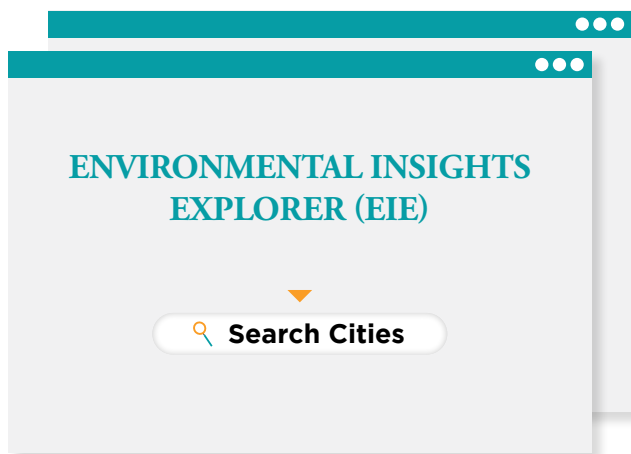
Google has also created the Environmental Insights Explorer (EIE), a freely accessible platform that empowers cities with actionable data and insights to help reduce the world's emissions. In 2020, we committed to using the EIE to help more than 500 cities and local governments worldwide reduce one gigaton of carbon emissions annually by 2030 and beyond. Built-in partnership with leading climate organizations, including C40 Cities and The Global Covenant of Mayors, EIE has been successfully used by city leaders around the world to, amongst other things, track and reduce emissions, as well as reduce air pollution.





## Tracking and reducing carbon emissions

Cities that track carbon emissions data can identify sources of emissions, measure progress in reducing emissions after implementing policies and programs, increase transparency and accountability to help build public trust and support for climate action, benchmark performance and identify best practices.



In Australia, local councils have been on a mission to identify and quantify the activities that contribute the most to GHGs, such as cars and public transport. To support their GHG reduction efforts, Google teamed up with Snapshot Climate, a tool developed by Beyond Zero Emissions and Ironbark Sustainability that provides greenhouse gas emission profiles at the municipal, Federal Electorate, and state level, to integrate EIE's transportation data and make it easily accessible within Snapshot. All the 537 local governments in Australia have access to the Snapshot tool. Local governments across Australia are coming up with innovative, data-driven initiatives for reducing carbon emissions: from investing in cycling paths and electric vehicles in Adelaide, to installing LED-powered street lamps in Melbourne. Better data helps cities make better decisions, become more efficient, and make more sound, sustainable investments.

Google Cloud also launched new tools - Climate Insights for Nature Resources, and Climate Insights for Infrastructure - that use Earth observation data leveraged from Google Earth Engine to better assess climate risks and guide the development of policies, city planning strategies and sustainable adaptation plans. Cities and states have already been making use of the tool. The Hawaii Department of Transportation (HDOT) oversees 2,500 miles of highway, with 20% of them vulnerable to erosion and sea-level rise. Using Climate

Insights for Infrastructure, HDOT can evaluate the risks and prioritize investment decisions based on several climatic parameters, asset status, and community impact.

Similarly, Google Cloud partnered with the Saudi Data and AI Authority (SDAIA), the Ministry of Environment, Water and Agriculture (MEWA), and Climate Engine, to launch the Google Earth Engine Program, designed to help policymakers in Saudi Arabia use AI to address pressing environmental, water and agricultural challenges resulting from climate change. The program focuses on five key areas to create a more sustainable environment across Saudi Arabia: environmental preservation, pollution monitoring, sustainable agriculture, climate and nature protection, water, and food security.

## Shifting to lower-carbon transportation

Non-motorized transport, such as walking, cycling and using electric scooters, is either zero or low-carbon modes of transportation that encourage a reduction in greenhouse gas emissions. Their usage also can improve the overall livability of a city by reducing traffic noise, air pollution, and providing more space for active recreation and green spaces.

Since 2019, Dublin City Council has been using EIE to analyze bicycle usage across the city and implement sustainable transportation policies that improve cycling infrastructure. As part of its City Development Plan, Dublin aims



CLIMATE INSIGHTS FOR NATURE  
RESOURCES

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CLIMATE INSIGHTS FOR  
INFRASTRUCTURE



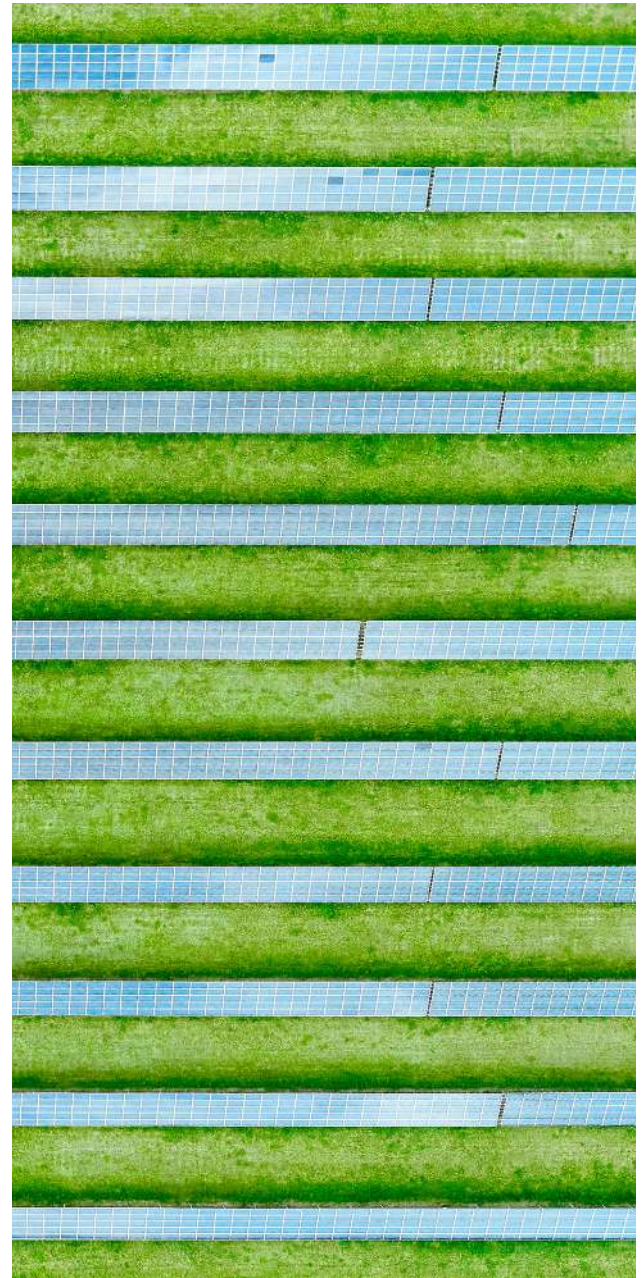
to increase bike trips across the city by up to 20% by 2025. By tracking their progress in EIE year-over-year, Dublin can monitor the effects of policy decisions and observe how things change over time.

Core Google products are also used to support the drive towards lower-carbon transportation. Google Maps, for example, allows users to better understand their personal impact and reduce their carbon footprint. By providing users with information on walking, cycling and public transportation, it helps users more easily make sustainable transport choices and indirectly eases city traffic pressures. Additionally, through the eco-friendly routing feature, car drivers and city commuters can choose a route that's optimized for lower fuel consumption, which helps them both reduce carbon emissions. Since its launch in the U.S. and Canada, this feature has already helped to remove an estimated half a million metric tons of carbon emissions.

## Improving air quality

Air pollution is a major hazard to the global society and approximately 90% of worldwide residents live in locations - predominantly urban areas - where air quality exceeds the World Health Organization's (WHO) safe standard. The ripple effect that poor air quality has on individuals, healthcare systems, ecological health, and economies in both developing and developed countries is well documented. Taking steps to reduce air pollution in a city can make its population less prone to respiratory and cardiovascular problems, lower healthcare costs, improve quality of life and become more resilient to climate change.

In Copenhagen, local leaders recognise the importance of improving air quality. According to Denmark's National Center for Environment and Energy, approximately 550 Copenhageners die prematurely each year due to air pollution, and an even greater number suffer from associated illnesses; accumulating an annual social cost to the city of approximately 600 million euros. Using Google's EIE air quality data, the city of Copenhagen was able to determine that major access roads had nearly three times more ultrafine particles and nitrogen dioxide (NO<sub>2</sub>) and five times higher black carbon levels than quieter residential areas. In 2018, Copenhagen kicked off Project Air View, a program which uses



EIE data to prioritize climate actions that have an immediate impact on human health. For example, limiting the access of highly polluting vehicles through the tightening of the environmental zone regulation for Copenhagen.

Cities are central to climate action. Cities are both responsible for a large portion of global greenhouse gas emissions, as well as also being highly vulnerable to the impacts of climate change. Using technology and data to track and reduce emissions, improve air quality and make sound investments in low-carbon transportation infrastructure, can become major drivers of sustainable development around the world.

Source: Google

# SUSTAINABLE URBAN RESILIENCE FOR THE NEXT GENERATION

## Effective Multi-Level Governance



Cities are at the frontline of climate change. Though cities are a big driver of planet warming emissions, they are also engines of climate action and at the forefront of delivering solutions. That's why we need effective multi-level governance to transform cities to be healthy, sustainable, just, inclusive, low-emission and resilient urban systems for a better urban future for all.

To achieve this vision, the COP27 Presidency

has launched the Sustainable Urban Resilience for the Next Generation (SURGe) Initiative – to enhance and accelerate local and urban climate action through multilevel governance, engagement, and delivery through five integrated tracks, contributing to achieving the Paris Climate Goals and Sustainable Development Goals. The SURGe Initiative is developed in collaboration with UN-Habitat and facilitated by ICLEI and has been endorsed by 130+ global partners.

“

it has been recognized that

65%

**of the Sustainable Development Goals targets** cannot be achieved without the engagement of regional and local government.

## Why are cities key actors in the climate crisis?

Cities are at the frontline of climate change. By 2050, towns and cities are expected to grow by 2.5 billion people, raising the urban share to 68% of the global population. Growing urbanization and population growth, coupled with economic development and rising

prosperity are expected to contribute to rising emissions in cities. As a result, cities play a key role both in reducing energy emissions and adapting to climate change. This is because cities account for around 70% of global greenhouse gas emissions and are a big driver of planet-warming emissions. Additionally, 70% of cities worldwide are already dealing with the effects of climate change, including typhoons, flooding, and, increasingly, heat waves. These impacts are hitting the 1 billion people living in informal settlements the hardest.



Cities are also engines of climate action and at the core of delivering climate solutions. Cities are in urgent need of climate-resilient, climate-mitigating, and climate-adapting infrastructure, which requires financing. However, urban climate finance is not enough; currently only 21% of climate finance goes towards adaptation and resilience and only around 10% of climate investments reach the local level. At the same time, it has been recognized that 65% of the Sustainable Development Goals targets cannot be achieved without the engagement of regional and local governments. Therefore, we need effective multi-level governance to transform cities to be healthy, sustainable, just, inclusive, low-emission and resilient.

There is a growing awareness that the climate battle will be lost or won in cities. Currently over three-quarters of the NDCs analyzed have a strong or moderate urban content (132 out of 157); this is a marked increase from 69% in 2016 to 84% in 2021. While technology and innovation are required to achieve the global climate targets, GHG emissions in cities could be reduced by almost 90% by 2050 with measures that are technically feasible and available, with the potential to support the creation of approximately 87 million jobs in 2030.

## How will SURGe support sustainable and resilient cities?

Not enough climate finance is reaching the local level, local governments often lack technical and human resources to address climate issues, technological innovations do not reach all cities and vulnerable urban groups are disproportionately and adversely affected by climate change. In addition, there is insufficient recognition of these challenges and the role of local climate action at the national and international level such as the UNFCCC COP. This is where the SURGe Initiative comes in – enhancing and accelerating local and urban climate action and addressing these challenges. After its launch at the Ministerial Meeting on Urbanization and Climate Change on 17 November 2022 as part of Solutions Day at COP27, the Initiative has developed several entry points for action, among them:

- Strengthening the implementation of the climate agenda in and with cities, including

working with national governments on strengthening the urban content in their NDC, building up a network of national government officials who are dedicated to supporting local climate action

- Unlock climate finance, including working with national governments to set up local finance mechanisms, working with development banks to facilitate access to finance for local levels and develop a pipeline of bankable projects across urban buildings and construction, energy, waste and consumption, transport, and water issues
- Build up capacity, including providing technical assistance to local governments and build up technical and human resources in cities. In addition, SURGe partners also provide a wealth of technical resources for project implementation at the local level and through SURGe can cooperate, share and exchange knowledge and best practices.

In summary, SURGe will raise the importance of local climate action, working with national governments to support building up human and technical resources in cities, unlocking finance to strengthen local climate action as well as implement global project partnerships to advance delivery around critical entry points for cities and urban settlements. The SURGe Initiative supports cities of all sizes to transform themselves to be healthy, sustainable, just, inclusive, low-emission and resilient. Progress should be reported at future Ministerial Meeting on Urbanization and Climate Change, to be held in conjunction with future COPs.

Source: UN Habitat





The background of the top section is a photograph of an industrial facility, likely a power plant, with several tall smokestacks emitting thick white plumes of smoke into a clear sky. The foreground shows a green field.

# CIRCULAR ECONOMY IS A KEY PILLAR FOR SUSTAINABLE CITIES AND SUSTAINABLE DEVELOPMENT

Circular Cities Are Essential In The Fight Against Climate Change And Protecting Planetary And People's Health

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The trend towards urbanization is ever-increasing, and with global pressures to address climate change and improve overall planetary health, we must strive towards sustainable living. Urban areas are particularly susceptible to climate change and natural disasters; therefore, urban resilience must be embedded into existing and future built environments<sup>1</sup>.

Global climate change is showing no signs of slowing down, despite global efforts, and as a result one of the key pillars to consider for sustainable cities is Circular Economy. The United Arab Emirates (UAE) has experienced rapid urbanization over the past few decades. Resulting in a significant rise in the demand

for resources, and to look at how resources are consumed and managed. As a result, to complement the UAE Net Zero 2050 commitment, the UAE Circular Economy Policy 2021 was developed. The policy outlines the UAE's transition pathway to Circular Economy with focus areas on Sustainable Manufacturing and Green Infrastructure. The UAE will drive resource efficiency, remanufacturing and reuse, smart and sustainable urban plans, and the utilization, renovation and upgrade of buildings and infrastructure.

Nevertheless, many global cities currently stick to linear economy models. Circular cities, organically have lower carbon emissions than



## FADI AL SHIHABI

**Fadi is a partner with KPMG leading the ESG services in the Middle East.** Fadi has more than 23 years of experience with deep knowledge in sustainability, ESG, circular economy and decarbonization. Fadi has contributed in developing global and regional sustainability related frameworks and regulations. Fadi has been supporting governments, public sector and private sector entities in their sustainability transformation journeys

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ONLY  
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3%  
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of the earth's land is taken up by cities, and yet these areas account for **60-80% of global energy consumption** and contribute to around **75% of global carbon emissions**

linear economies. Through the production of raw materials, carbon emissions are generated, and circular economies reduce raw material demand by increasing the reuse of resources, and therefore eliminating the associated carbon emissions of producing raw materials<sup>2</sup>.

Focusing on carbon emissions and energy consumption of cities is imperative to achieve global and local climate change goals and agreements. Only 3% of the Earth's land is taken up by cities, and yet these areas account for 60-80% of global energy consumption and contribute to around 75% of global carbon emissions<sup>3</sup>. By incorporating circular economy principles into how energy systems are designed for buildings and infrastructure, lower energy demand, consumption, and associated GHG emissions will be observed. To achieve this, highly efficient energy systems, renewable technologies, and passive design measures should be embedded into the design, construction, and operations of cities and communities.

Another chief element of circular cities is

understanding how and why certain materials are consumed and utilized. By incorporating circular economy into the way buildings and infrastructure are designed and operated, GHG emissions will subsequently reduce. A particular focus on reducing the demand for virgin steel, aluminum, cement, and plastics in building materials will result in a significant decrease in global CO<sub>2</sub> emissions<sup>4</sup>. The lifespan of assets needs to be reassessed in line with a circular economy, with the reuse of the building/ infrastructure and the recycled materials and content used to make building materials, needs to be at the forefront of the design<sup>5</sup>.

Furthermore, there is a significant opportunity to divert construction and demolition waste from landfill, which not only prevents environmental impact, but also lessens the demand for raw materials<sup>6</sup>. The direct benefits are that fewer natural resources are required to extract, produce, and transport raw materials, fewer raw materials are taken from the planet, and lower demand for the raw materials themselves.

Embedding circular economy principles into the design of buildings and the building materials will also drive the decarbonization across the value chain and will indirectly result in reducing Scope 3 emissions. Circular economy focused designs decrease the dependence of raw materials, essentially building collaborations into closed loops throughout the value chain and ensure that the value and life span of the materials remain at their highest, which ultimately reduces Scope 3 emissions across the value chain<sup>7</sup>.

A circular economy will substantially contribute towards the sustainable development of cities and tackling climate change. This will be achieved through keeping usable materials in circulation across the value chain with longer life spans and ultimately will design out waste (including carbon emissions).

#### Sources:

1. UAE Circular Economy Policy 2021
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3. UNEP
4. Ellen MacArthur Foundation - Built Environment Overview
5. Ellen MacArthur Foundation - Completing the Picture
6. 2021 Circularity Gap Report
7. weforum

# RENEWABLES AND TECHNOLOGY: A FORMULA FUNDAMENTAL FOR SUSTAINABLE CITIES

## Resilient and Sustainable Enablers Of Social-Economic Progress

Addressing urbanization and ensuring cities become sustainable for present and future generations are, unquestionably, among the most urgent priorities facing national leaderships today. With populations increasing and inter-city emissions rising, decision-makers are tasked with improving livability and reducing environmental impacts of ever-growing cities around the world. Renewable energy sources, digitization, consumer preferences and behavior and a range of emerging technologies must all converge to overcome exacerbating issues, thereby ensuring that the urban conurbations become socially attractive, economically viable, and environmentally sustainable.

Crucially, this reality is becoming recognized by nations worldwide, but amongst all, the United Arab Emirates (UAE) has emerged as one of a few sustainability leaders and a role model for others to emulate. Whether for a lack of job opportunities in rural areas or prospects for a better lifestyle, the unprecedented speed and scale of urbanization has, however inadvertently, placed tremendous pressure on

existing resources within cities, often resulting in detrimental environmental impacts.

Cities such as Abu Dhabi and Dubai are prime examples of people being drawn to urban areas rather than rural surroundings. And considering consistent urban growth and climate change implications, the UAE government understood that existing infrastructure would not accommodate future societal demands, nor would it meet evolving climate change abatement requirements.

As such, the UAE has sought to revamp energy network infrastructure within its cities, curbing fossil fuel reliance by integrating renewable technologies into local energy supply solutions. Backed by strong political will, technological advancement, and emerging energy suppliers' input, doing so has become part of the transformative action now showcasing full potential of the new 'smart city'. Leading energy sector developers, investors, and operators have made invaluable contributions to related endeavors, spearheading projects that are now



### PADDY PADMANATHAN

**Paddy Padmanathan is a seasoned engineering and energy expert with over 40 years of experience.** He is a key member of ACWA Power's executive leadership team, having spearheaded its expansion from a startup in 2004 to where it is today; a leading developer, owner and operator of power generation, water desalination and green hydrogen production plants globally. Headquartered in Saudi Arabia, the company now has a portfolio of 68 assets with an investment value of USD SAR 256.5 billion (USD 68.4 billion), with capacity to generate 44.4 GW of power and manage 6.2 million m3 of desalinated water per day.





## THE UAE HAS SOUGHT TO REVAMP ENERGY NETWORK INFRASTRUCTURE WITHIN ITS CITIES, CURBING FOSSIL FUEL RELIANCE BY INTEGRATING RENEWABLE TECHNOLOGIES INTO LOCAL ENERGY SUPPLY SOLUTIONS

supporting the energy transition as per the UAE Net Zero by 2050 Strategic Initiative.

For instance, clean energy solutions being developed in the UAE under the stewardship of ACWA Power, a leading Saudi developer, investor and operator of power generation, water desalination plants and green hydrogen production facilities worldwide, are prime examples of what is being done today to help build the sustainable cities of tomorrow. ACWA Power's mission is to deliver power and water reliably and responsibly at low cost making renewable energy sources increasingly affordable and accessible. Today, it is leading the energy transition through transformative solutions in solar, wind, water and green hydrogen and is involved in the development of giga scale projects across key markets.

Noor Energy 1, the fourth phase of the Mohammed Bin Rashid Al Maktoum Solar Park, is one such project. State-of-the-art concentrated solar power (CSP) technologies are collecting energy from the sun, delivering electricity at a levelized tariff of US \$7.30 cents per kilowatt-hour. This cost level competes with fossil fuel-generated electricity for reliable, dispatchable solar energy that reduces emissions, accelerates the energy transition, and contributes towards sustainability objectives at the local and national level.

Another project is Dewa V PV – the 900MW photovoltaic (PV) fifth phase of the Mohammed bin Rashid Al Maktoum Solar Park. Besides the winning tariff of USD 1.6953 cents/kWh establishing a new global benchmark for solar energy, this project alone is powering up to 270,000 homes and offsetting carbon emissions in Dubai by as much as 1.18 million tons annually, with the latest bifacial PV solar panels and an advanced solar tracking system bolstering power generation efficiency.

Yet another pace setting, fine example is the 909,000 cubic meters a day RO Taweelah desal plant under development in Abu Dhabi, where Phase 1 is already completed and on completion of Phase 2 will be the first desalination plant in

the world to be “fueled” with significant share of renewable energy (in excess of 40%). This plant also holds the record of being the first desalination facility to be eligible for a green bond certification.

Increasing renewable energy content in the supply mix also fulfils the need for cities to reduce exasperating climate change but also to drive the cost of energy to the consumers thus increasing affordability and widening energy access. In the UAE alone, increased industrial activity and increasing population have also influenced the drive towards renewables. And with conventional energy sources like oil and gas facing price pressures due to global geopolitical instability and high emissions implications, renewables – solar included – are serving as the sustainable solution.

Operational costs for this renewable source alone have declined significantly in the past decade, and the cost-effectiveness of solar PV and subsequent widespread integration is meeting climate goals and fossil fuel diversification needs. Moreover, ACWA Power's record low tariffs, advanced technologies, innovation “fuelling” PPP model and focus on local content development are a clear illustration of how cities can build their energy and water security, provide clean, affordable, and reliable energy to millions, thereby consolidating their positions as resilient and sustainable enablers of social and economic progress.

As cities worldwide become more urbanized, governments must accelerate the adoption of renewable energy supply solutions and harness the power of related technologies to increase utilization efficiency and keep reducing cost to consumers all without compromising on reliability and full unfettered access to adequate supplies to combat social, economic, and environmental tailwinds. In so doing, they will accelerate progress towards making cities and communities vibrant, inclusively efficient, resilient, and sustainable.

Source: ACWA Power

The background of the top half of the page is a photograph of a group of people in a meeting. They are sitting around a dark wooden table, looking at and pointing to various documents and charts. The documents contain bar graphs, pie charts, and maps. The people are wearing business attire. The overall tone is professional and collaborative.

# 11 WAYS CITIES CAN ADOPT AN ESG APPROACH TO ADDRESS SDG11

Localization of the SDG11 to the city level is key to achieving targets

According to the latest Sustainable Development Goals Report (2022), while some progress has been made towards SDG11 - making cities inclusive, safe, resilient, and sustainable - there are still challenges yet to be overcome, which are partly due to rapidly and poorly planned urbanization. These include poor air quality, limited access to transportation options and limited municipal solid waste management.

A comprehensive environmental, social, governance (ESG) framework, offers cities a structured approach to assess and address their socio-environmental challenges through a well-governed ecosystem. By adopting such an approach, cities can also ensure they are progressing towards many of the UN SDGs and specifically on SDG11, which focuses on making cities inclusive, safe, resilient and sustainable.



## HAZEM GALAL

**Hazem Galal is PwC's Cities and Local Government Network Global Leader.** He has expertise in strategy formulation and implementation for cities and local government entities and is a member of the WEF's Global Future Council on Cities of Tomorrow.

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## What an ESG-based approach means to a city?

An ESG-based approach to a city encompasses ESG-related actions to be taken by local governments across five core and typical city government roles which are: regulations, strategic planning, funding, service provision and monitoring.

### Importance of city governmental roles

- **Regulations:** In a survey conducted by PwC in the Middle East, 86% of large companies said increased ESG regulation would strengthen and accelerate the implementation of their ESG strategies.
- **Strategic planning:** Typically, city governments are tasked with the formulation of city-wide strategic plans and masterplans, aligned with national objectives and directives.
- **Funding:** Cities have a key role to ensure the efficient allocation of financial resources to promote sustainable economic growth and address key urban challenges.
- **Service provision:** Local, regional and city governments are fundamentally service providers for sectors significantly responsible for emissions, according to the International Council for Local Environmental Initiatives (ICLEI).
- **Monitoring:** Given their proximity to local service delivery, city governments usually play a big monitoring role such as regulatory compliance and the progress of strategic plans.

### Actions required by cities and local government

#### ► Environmental

The key focus of a city when considering the environmental pillar of an ESG framework should be centered around achieving net-zero targets, through aspects such as clean energy production, water and waste management, and air pollution:

1. Regulations: Accelerate the formulation and adoption of regulations that reduce emissions

across different sectors such as mobility, energy, water and waste

New York City has shown strong leadership in enacting regulations to reduce building-related emissions, as part of the Climate Mobilization Act, which aims to reduce emissions by 40% by 2030. The new regulations, titled Local Law 97, are focused on large buildings and their energy efficiency. In addition, Zurich recently amended the canton's constitution to include an article calling on authorities to create frameworks for resource treatment and closing the material loop, aiming to reduce waste as well as energy use.

2. Strategic planning: Integrate net-zero and other core environmental objectives into strategic city planning such as city masterplans

Singapore has developed and is implementing its Green Plan, which is a national movement to advance sustainable development in Singapore. The Green Plan seeks to position the nation to accelerate the achievement of its long-term net-zero emissions target through a focus on five key pillars: City in Nature, Energy Reset, Sustainable Living, Green Economy and Resilient Future.

3. Service provision: Ensure adequate and timely provisioning of services that help the city achieve net-zero targets

The Dubai Electricity and Water Authority (DEWA) launched the EV Green Charger initiative, which consists of providing charging solutions across the Emirate and procuring electric vehicles for the authority's fleet. This initiative has contributed to the achievement of reduction targets of 16% fewer emissions by 2019, as set by the Dubai Carbon Abatement Strategy, while also helping to rapidly accelerate electric vehicle adoption in the Emirate.

#### ► Social

The key focus of a city when considering the social pillar of an ESG framework should be centered around addressing social cohesion and inclusion:

4. Regulations: Develop policies and regulations to promote local social cohesion and the inclusivity of vulnerable groups

On a local level, the City of Sydney's inclusive and accessible public domain policy set guidelines for designing and upgrading public spaces and infrastructure to ensure equal access



for people with disability.

5. Strategic planning: Address local social issues by incorporating them into local strategic plans with a clear implementation plan and tangible actions

Berlin's Diversity Strategy sets out measures to ensure equal opportunities and equal participation for all despite their age, gender, ethnicity, and disability. These measures focus on two areas of action - namely promoting diversity in recruitment processes and inclusive public communication.

6. Service provision: Ensure adequate and inclusive provision of municipal services to all members of society

Six local governmental units in Albania were the target of the "Improving Municipal Social Protection Service Delivery" programme by the UNDP, which focused on accelerating the quantity and quality of integrated social care delivery on a local level. The programme focused on improving social services to marginalised populations of Albania and persons with disabilities, in addition to children, women, migrants and refugees.

### ► Governance

The key focus of a city while considering the governance pillar of an ESG framework should be centered around:

7. Ecosystem governance: facilitating partnerships between different stakeholders such as civil society groups, non-governmental organizations, international multilateral organizations as well as the private sector and other governmental entities.
8. Transparency and accountability: ensuring transparency and accountability in the actions taken through timely and open communication of city decisions, budgets, and progress updates.
9. Funding: ensuring the efficient allocation of financing and funding to projects and initiatives that promote socio-economic development and environmental protection

10. Supply chain management: adopting supply chain management policies (e.g. procurement policies) that consider the social and environmental impact of suppliers.

11. Monitoring and oversight: providing effective oversight and monitoring of the performance of the city across different environmental and social parameters.

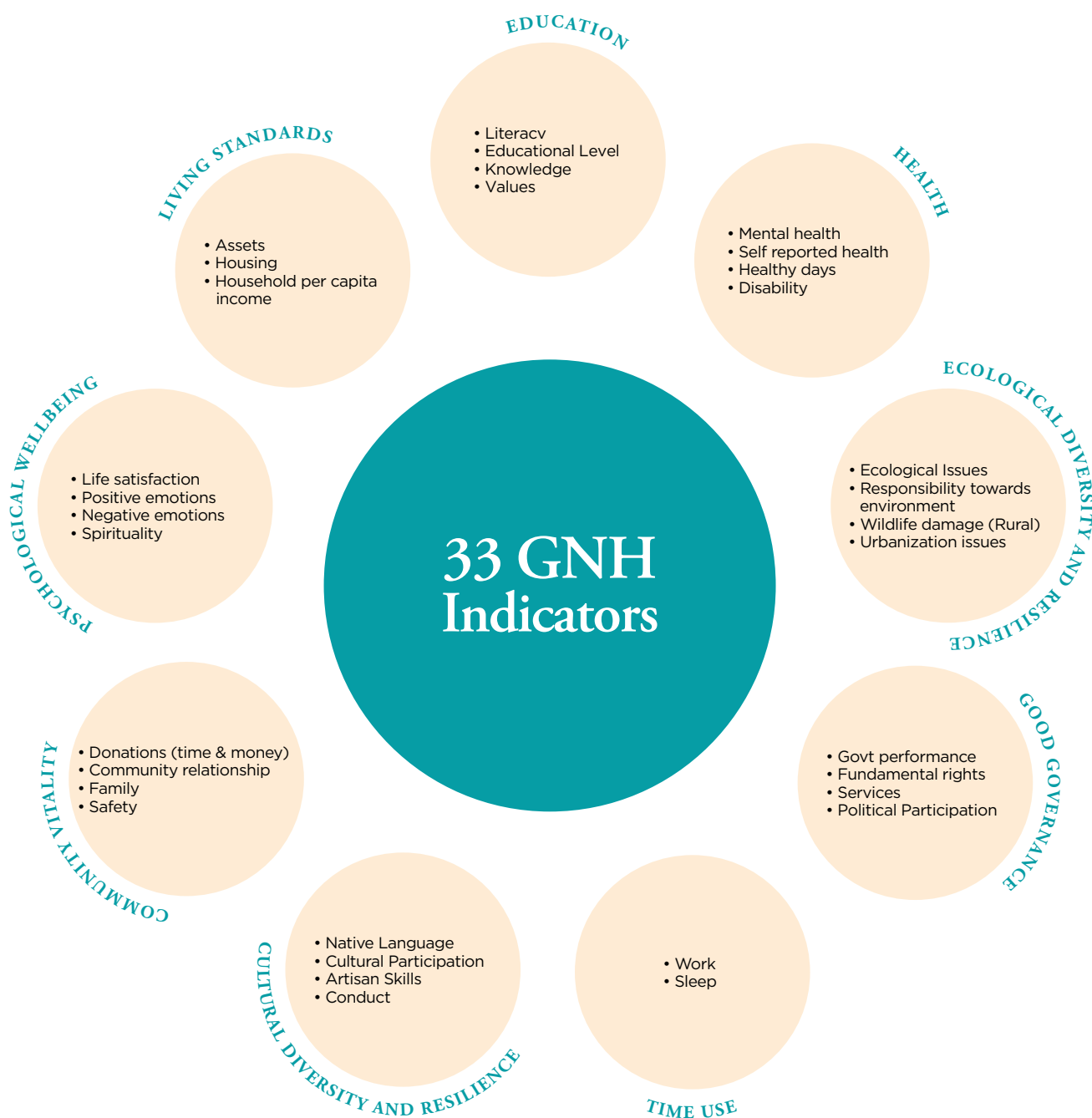
Source: PwC



## Gross National Happiness



The phrase 'Gross National Happiness' was first coined by the 4th King of Bhutan, King Jigme Singye Wangchuck, in 1972 when he declared, "Gross National Happiness is more important than Gross Domestic Product." The concept implies that sustainable development should take a holistic approach towards notions of progress and give equal importance to non-economic aspects of wellbeing.







# SUSTAINABLE VALUE CREATION

## People, Planet and Prosperity, need Financing

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In the wake of the 2022 global climate summit, COP27 in Egypt, it is apparent that climate action and impact are not keeping up with the political agenda. With few exceptions, the Net Zero transition is no more in sight today than it ever was, and global emissions continue to rise. One reason we have seen little to no progress has to do with a failure to demonstrate Sustainable Development is commensurate with prosperity. This is important because the failure to explain how sustainability and prosperity are two sides of a coin is undermining the UN 2030 Agenda and the Paris Accord.

How can cities translate Sustainable Development into Sustainable Value Creation, driving Innovation and attracting investments? The very idea of Sustainability, going back to the 80ies and the Brundtland Report, Our

Common Future, has been predicated on the 3 Ps: People, Planet and Prosperity. Unless cities can reconcile the 3 Ps, they are per definition not sustainable. More importantly, they are unlikely to see the matching of local needs to the appropriate solutions, and funding. According to UNCTAD, the annual SDG investment gap is estimated to be in the order of \$4 Trillion. This gap is increasing. But so is the amount of capital in search of investable sustainability projects. More can be achieved through revisiting the idea of public-private partnerships, to generate this much-coveted pipeline of investment opportunities. The SDG Global Council 11 has therefore, with the support of the UAE, begun developing a platform to match demand and supply of solutions to help both cities and solution providers shape and prepare their solutions for access by financiers.



### KARI AINA EIK

**Kari Aina has dedicated her life to bridging the worlds of international organizations, global markets and cities and has worked to establish several UN and international programs for sustainable cities amongst them United Smart Cities and United for Smart and Sustainable Cities.**

She is the Secretary General of the Organisation for International Economic Relations and the Director of the United Cities Organization, and the United Cities Funds jointly set up together with the SDG Impact Fund to uplift 10.000 cities worldwide to achieve the SDGs.

She is on several boards of global organisations amongst them the Global Council for SDG11 Sustainable Cities and Communities, UAE and Vice Chair of the ITU, International Telecommunication Union, Focus Group of Environmental Efficiency for Artificial Intelligence and Emerging Technologies.



What are the hurdles this new platform, or Financial Accelerator, needs to tackle? To answer this question, and translate the answer into implications for practice, we have been testing this out in various geographical and socio-economic contexts from Norway to Lebanon.

In Norway, data and statistics have been collected widely at the local level using the Key Performance Indicators for Smart and Sustainable cities developed by the United Nations. The challenge identified and possible solutions and investments have been tested using advanced simulation and model scenarios, what has the biggest impact on people, the planet, and prosperity, ensuring involvement and balance risk and rewards in a shorter time span, as we know time is not on our side to solve the changing climate.

Another case in point is the effort to upgrade the energy systems in Lebanese municipalities, which offer important vistas for the future of sustainability, and prosperity. Anyone familiar with today's Lebanon will have heard about the dire state of its economy, compounded by the 2020 Beirut Port Explosion and the COVID-19 Pandemic, literally plunging millions into darkness as a result of pervasive power outages. In just over 12 months we were able to demonstrate how fixing the energy problem can nurture future prosperity, and constitute a sound investment, resulting in private investors assuming the financial responsibility for a

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## THE SDG GLOBAL COUNCIL 11

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technology transition in two municipalities. An additional 5 municipalities are already in line to undergo the same process, with many more eligible to enroll. How is this possible, and what have we learnt that has application beyond Lebanon?

The Lebanese energy story can be summed up as a process of building Trust and investing in Good Governance. More specifically, we worked along 4 pillars to build the trust needed to see the liberation of private funds: Potential, Readiness, Opportunity, and Impact, respectively. The pillars represent a comprehensive, yet practical way of aligning goals, funding, actions and, most importantly, impact. While Potential is all about an evidence based approach to identifying where to invest using independently verified data such as the U4SSC Key Performance Indicators, Readiness is all about how willing and able a city is to realize the Potential. The Opportunity has to do with linking, using catalytic funding and technology (e.g., digital twins and advanced simulations) the independently verified needs of cities to compose the optimal combination of solutions, while Impact has to do with demonstrating value created and effectively reframing Potential to do even more.

Understanding how cities can translate Sustainable Development into Sustainable Value Creation will be critical for accelerating towards a more sustainable future, connecting them not only to solutions, but also to funding and investments. Getting the questions of Sustainable Value Creation right means helping cities help themselves and potential solution providers co-create their solutions for access by financiers. Unless the trust is there, the matchmaking stops. The 4 pillars of sustainable value creation combine to offer an evidence-based, future-oriented and practical approach to nurturing trust, joint action, and impact.

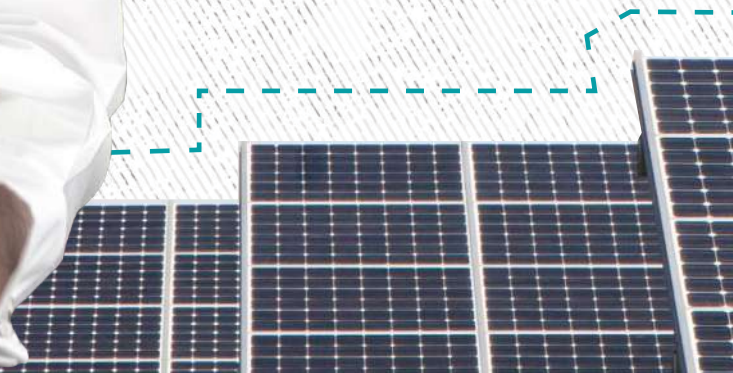
Source: U4SSC





INTERVIEW

# HIS EXCELLENCY SAEED MOHAMMED AL TAYER





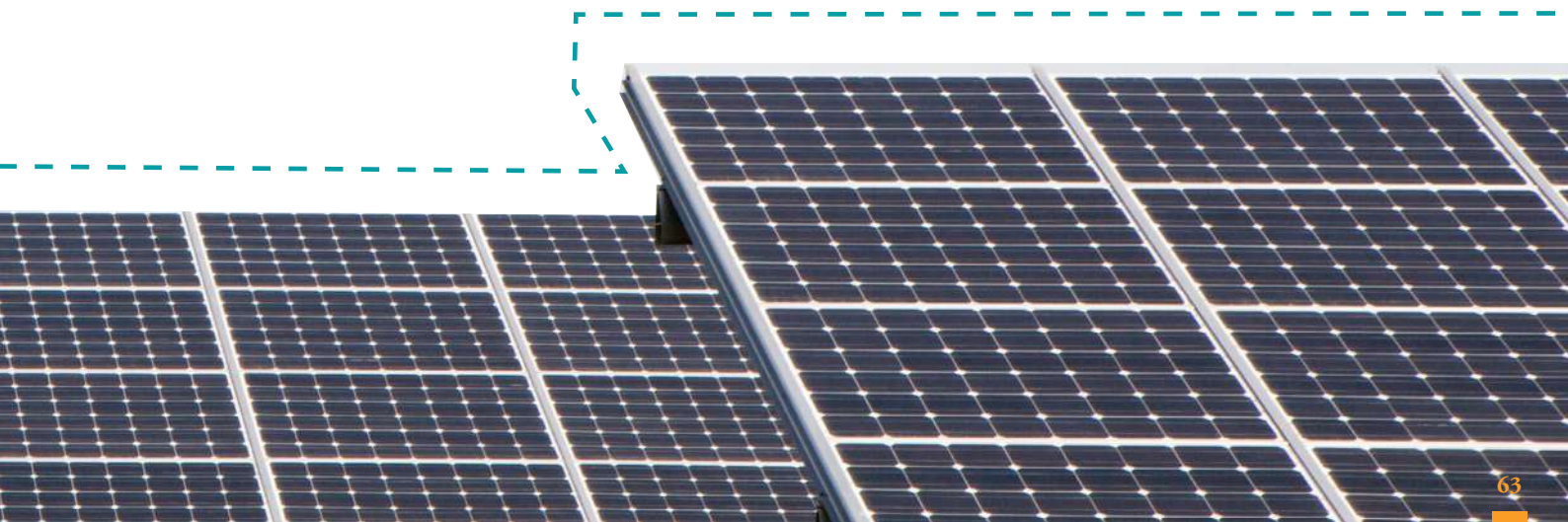
# AN OUTLOOK TOWARDS THE FUTURE OF ENERGY AND A GREENER ECONOMY

## Q1

**In one of its recent announcements, Dubai emphasizes its commitment towards a greener future for the energy sector, to ensure sustainable recovery from the COVID-19 pandemic. How is Dubai planning to diversify its energy mix? And what is the impact of that on its economic models?**

The Middle East and North Africa (MENA) region has become increasingly prominent on the global sustainability agenda. With preparations underway for the upcoming COP 28 scheduled to take place in the UAE, Expo City Dubai later this year, the UAE has reinstated its commitment to speed up efforts in tackling

climate change and global warming. The UAE is working towards diversifying its energy mix and implementing groundbreaking renewable energy and energy efficiency programs by increasing the use of renewable energy sources such as solar power. With its Net Zero by 2050 Strategic Initiative - the first of its kind in the Middle East and North Africa - the UAE seeks to create a sustainable economy by developing clean technologies, green industries, skills, and jobs. The Dubai Clean Energy Strategy 2050 and the Dubai Net Zero Carbon Emissions Strategy 2050 target of achieving 100% of Dubai's total power production capacity from clean energy sources by 2050. These goals are expected to have a positive impact on the economy by reducing dependence on fossil fuels, creating jobs in the renewable energy sector, and attracting investment in clean energy technology. As an added benefit, it will reduce carbon emissions and improve air





quality, which will benefit public health and contribute to combating climate change as well.

In a bid to reduce its dependence on natural gas and diversify its energy supply, the UAE is leading the way in advancing sustainability in the region. The Mohammed bin Rashid Al Maktoum Solar Park, the largest single-site solar park in the world, using the Independent Power Producer (IPP) model, is one of the prime examples to have attracted considerable interest from global developers, and around 40 billion Dirhams in investments. Furthermore, the state-owned Abu Dhabi National Oil Company (ADNOC), Taqa, and holding company Mubadala partnered in 2022 to become shareholders of Masdar, a provider of renewable energy and one of the biggest clean energy firms in the world.

These efforts have resulted in the UAE assuming a leading global position in various fields, especially in diversifying energy sources, supporting the circular economy, launching major clean energy projects, and having the largest and most efficient solar power plants. The UAE has achieved a leading global position, deserving the top ranks in many key indicators related to dealing with the COVID-19 pandemic, from the response stage to the recovery and overcoming the health, economic, and social repercussions of the pandemic. Many countries around the world, including some European countries, are expanding the use of fossil fuels, and retrofitting and operating old nuclear power plants, as a result of the Russia-Ukraine war and the subsequent geopolitical developments that have demonstrated the fragility of the global energy system. However, the UAE continues carrying out its renewable and clean energy plans as well as the development that balances the economy and the environment to support efforts to combat climate change.

The UAE's wise leadership is working toward the common goal of making today's energy cleaner, while also investing in the next generation's clean energy, and shaping the country's future clean energy path.

## Q2

In 2022, global and regional ministers, officials and experts gathered at the World

**Green Economy Summit to discuss sustainability, climate change, green economy, and renewable and clean energy, for a future fueled by a greener economy. In a world going through highly tense political climates, and rapidly changing socioeconomic systems, is greening the economy a lifeline or a liability?**

In my opinion, transitioning to a green economy has the potential to bring significant benefits, such as creating jobs, reducing dependence on fossil fuels, improving air and water quality, and mitigating climate change. It can also provide a more sustainable and resilient economic model that can help countries to recover from economic downturns like the one caused by the recent pandemic. Transitioning to a green economy can help reduce vulnerability when it comes to disruptions.

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**In a bid to reduce its dependence on natural gas and diversify its energy supply,**

**THE UAE IS LEADING THE WAY**

**in advancing sustainability in the region**



The energy sector is crucial to the fight against climate change as promoting sustainable development and combating climate change have become intertwined aspects of energy planning, analysis and policy-making. To further spearhead the transition towards a green economy, the UAE Cabinet, Chaired by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, approved the UAE to join the Global Alliance for Green Economy, announced by the World Green Economy Organization (WGEO) during the World Green Economy Summit 2022. The Alliance will play a pivotal role in promoting climate action, food security, and climate-resilient development. WGEO called for supporting this global alliance to accelerate the transition towards a green economy, achieve the goals of sustainable development and the implementation of the Paris Agreement by harnessing financing, technology, capacity building, and other factors that contribute to enabling a green economy. As an organization, WGEO seeks to promote the widespread acceptance and increased importance of a green economy in the context of Sustainable Development. We are creating a stronger partnership among ourselves to work towards a vision to which we already agreed by committing ourselves to achieve the SDGs and the Paris Agreement goals. This Global Alliance is not the outcome but the first milestone toward important work ahead. We will now be engaging with countries to identify their needs, priorities, and challenges in the context of the green economy, during the next three months.

This multi-stakeholder exercise and inclusive consultation with countries will lead to the launch of a suite of flagship projects by WGEO to support the green economy agenda in the countries joining the Alliance. The work under the Alliance will address pressing issues such as food security and carbon markets and how

cooperation can be increased at the South-South and North-South levels. I firmly believe that the Alliance and today's roundtable on the green economy will help us move closer to this goal, by making appropriate solutions available and accessible at the state level and leading us towards real change.

In a nutshell, the key is to make sure that the transition is done in a way that is sustainable, inclusive, and equitable, and that the benefits are shared by all. This can be achieved through a combination of policies and measures, such as investing in green infrastructure, creating green jobs, and providing training and education for workers. Additionally, the green economy should be integrated with other policies such as trade, education, and social welfare to ensure that the transition is inclusive and equitable.

### Q3

**The 8th World Green Economy Summit, held in September 2022, focused on four key pillars of the green economy: Energy, Finance, Food Security, and Youth. How did the model for financing sustainable energy solutions evolve over the past decade? And how can we shift the mindset from grant to investment for sustainable solutions?**

In the past, financing for sustainable energy projects was mainly provided by governments and development banks through grants and

subsidies. However, in recent years, there has been a growing awareness of the need to shift towards more private-sector investment in sustainable energy. One of the key ways that this shift has occurred is through the development of new financial instruments and platforms. For instance, green bonds and impact investing.

In addition, to shift the mindset from grant to investment for sustainable solutions, it is important to create an enabling environment that promotes sustainable energy investment by addressing the risks and obstacles that investors face. This can be done by providing clear, stable, and predictable policies and regulations that promote sustainable energy, as well as by providing technical assistance and capacity building for investors, and WGEO supports such actions.

Government can also facilitate investment in sustainable energy by providing financial incentives for companies and individuals to invest in sustainable energy. Additionally, Governments can also invest in R&D to develop new sustainable energy technologies, which can help to reduce the cost of sustainable energy and make it more attractive to investors. The majority of this investment is projected to come from the private sector, and hence public private partnerships in policy, innovation, and finance are crucial.

At the World Green Economy Summit, we saw global and regional ministers, officials, and experts discussing sustainability, climate change, the green economy, and clean and renewable energy. The UAE has been at the forefront of efforts to tackle global challenges, combat climate change, and promote high-quality investments in the green economy.

## Q4

**This year marks a special occasion, as global attention turns towards the road to COP28 in Dubai. How does a country, with a predominantly fossil based economy, pioneer a climate action conference, and set the scene for achieving the Paris agreement?**

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**In my opinion, transitioning to a green economy has the potential to bring significant benefits, such as**

**CREATING JOBS, REDUCING DEPENDENCE ON FOSSIL FUELS, IMPROVING AIR AND WATER QUALITY, AND MITIGATING CLIMATE CHANGE**

The UAE is carrying out its renewable and clean energy plans as well as the development that balances the economy and the environment to support efforts to combat climate change, and I recall the words that are full of confidence and hope by **His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the UAE**, at COP 27 who said, “As we prepare to host COP28 in 2023 at Expo City Dubai, we increasingly focus on supporting the implementation of recommendations from previous conferences, and we are working to complete the first global stock take of emission pledges under the Paris Agreement.” “On the same note, a recent partnership agreement we have signed with the United States will help accelerate this transition towards clean and renewable energy sources. The agreement aims to raise USD100 billion in investments to generate 100 gigawatts of renewable energy in the UAE, the US, and developing economies around the world,” **His Highness noted. His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai**, said that COP28 will be the most important event hosted by the nation in 2023.”.

The UAE has an advanced position as one of the biggest countries to invest in clean energy projects. It is a regional and global leader in



ambitious national policies and pioneering projects that anticipate the future to enhance sustainability and protect natural resources for future generations. The UAE utilizes its track record in clean and renewable energy and in reducing emissions, to organize the most successful global environmental event that will underline the role the region plays in supporting efforts to formulate the global sustainability agenda through effective strategies to adapt to the effects of climate change and mitigate its effects.

To achieve the words of **His Highness Sheikh Mohamed bin Zayed Al Nahyan**, who said “We have started our first steps and early preparations for the sustainability of our resources and to bid farewell to the last drop of oil,” the UAE has built major clean energy projects inside and outside the country. These support its strategic plans for the post-oil phase. By launching the UAE Net Zero by 2050 strategic initiative, the UAE was the first country in the MENA region to launch an important strategic initiative. The wise leadership has also launched the Dubai Clean Energy Strategy 2050 and the Dubai Net Zero Carbon Emissions Strategy 2050 to provide 100% of Dubai’s total power production capacity from clean energy sources by 2050. Abu Dhabi Future Energy Company’s (Masdar) clean energy projects are spread in over 40 countries around the world with investments totaling USD 20 billion. The Mohammed bin Rashid Al Maktoum Solar Park, is the largest single-site solar park in the world using the Independent Power Producer (IPP) model, using the latest and best photovoltaic solar power (PV) and concentrated solar power (CSP) technologies. We have developed a green hydrogen pilot project, which is the first of its kind in the Middle East and North Africa. We have also prepared the outline of a roadmap for a green hydrogen strategy that will be implemented in phases as part of our efforts to support the implementation of the net-zero by 2050 strategy. For many years now in Dubai, we have stopped launching new projects to produce energy using fossil fuels, and restrict new water desalination projects to reverse osmosis technology using clean energy, in addition to raising fuel efficiency in the main production units to about 90%, competing with the highest international benchmarks.

All to achieve climate neutrality, lower greenhouse gas emissions, solidify the nation’s positive impact on climate change, turn obstacles into opportunities, and envision and design a better future for all.

Sources: 1. DEWA 2. WGEO



## ABOUT THE AUTHOR

H.E. Saeed Mohammed Ahmad Al Tayer has an overall experience of more than 35 years in the field of telecommunications, energy, water, infrastructure, oil, gas and industry.

Under his leadership since 1992, DEWA group has achieved unprecedented success and is recognized today to be one of the most distinguished utilities worldwide. His Excellency founded several successful companies, notably Emirates Central Cooling Systems Corporation (EMPOWER), Etihad Energy Services Company (Etihad ESCO), Mai Dubai, Digital DEWA among others and some of these are already market leaders. Most recently HE Al Tayer steered DEWA group in its historic IPO, which attracted overwhelming global demand and was oversubscribed 37 times.

His Excellency Saeed Mohammed Al Tayer is a Member of the Dubai Council, Member of the Dubai Executive Council and Strategic Affairs Council, Dubai Supreme Fiscal Committee, Chairman of Infrastructure and Environment Committee of the Dubai Executive Council from 2009 up to 2018, Chairman of Emirates National Oil Company (ENOC), Chairman of Dubal Holding, Chairman of Dragon Oil Company, Chairman of Oilfields Supply Center Limited, Vice Chairman of Emirates Global Aluminium (EGA), Vice Chairman of Dubai Supreme Council of Energy, among other representations.



# SMART CITY SOLUTIONS FOR A CHANGING WORLD

It Is Not Technology, But Human Ingenuity That Will Make Smart Cities Smart

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According to United Nations projections, 68% of the world's population will live in cities by 2050. The migration to urban centers is accelerating the need for digital transformation as government and city leaders face increasing pressure to make cities safer, accessible, sustainable, and prosperous. Creating smart cities is not just about technology. It is about how technology improves residents' lives, how it helps businesses thrive, and how it enables governments to provide vital services to employees and citizens.



## NAIM YAZBECK

**Naim Yazbeck is the General Manager of Microsoft UAE, responsible for driving the company's growth aspirations in the UAE and supporting the country's leadership in realising its digital transformation agenda.** In his role, Naim stands at the forefront of Microsoft's collaboration with government entities, start-ups, and private enterprises to leverage technology to empower everyone in the country to achieve more. Naim also supports Microsoft's efforts to build a tech intensity culture, drive skills development across the country and enhance Emiratisation efforts. Since joining Microsoft in 2009 as Public Sector Lead: Gulf, Naim has played a pivotal role in accelerating Microsoft's impact across the region. He served as General Manager: Microsoft Qatar from 2011, before being appointed Regional Director: Enterprise and Partner Group (EPG) in 2016 and spearheading Microsoft's strategic partnerships with key customers and partners to accelerate digital transformation of key industries across the Gulf.



Microsoft's cloud ecosystem is set to generate over 97,000 jobs- including 29,400 skilled IT jobs- and \$27.9bn in cloud revenue for the country by 2026

## What is a smart city?

Smart cities are urban areas that use a range of technologies to improve living conditions, modernize services, increase accessibility, drive sustainability, and increase economic development. Updating infrastructure, providing healthcare, and securing adequate food supplies are a few areas that could benefit from investing in sustainable practices. To make sure these investments drive actual progress, organizations and individuals must share their collective learnings.

The United Nations' Sustainable Development Goal 11 (SDG11) concerns sustainable cities and communities. It embodies ideas of safety, resilience, and inclusivity. In many conversations today, SDG11 and smart cities are mentioned in the same breath. Our descendants will judge us on our sustainability policies and strategies. Their quality of life will be determined by the choices we make in the coming years about how to create and operate both smart and sustainable cities.

Much of the progress made during the height of COVID-19 occurred because the pandemic exposed the limitations of our cities. We now look ahead to a highway of challenges as we enhance our infrastructure and systems to make them ready for the future. For example, City Pandemic Response Centers which can help identify and contain future pandemics with the help of intelligent and predictive technologies are no longer an abstract idea.

At Microsoft, we have been very open about

how we view technology and the solutions we provide. Technology is not a problem solver; it is a problem-solving tool. Technology such as Microsoft Teams was able to facilitate remote work and virtual learning in the UAE from 2020 onwards, as lockdowns took effect. Now that we can meet in person again, tools which enable the new normal of hybrid work help to keep rush hour congestion at bay, freeing up workers' time and reducing carbon emissions.

## The challenge on the horizon?

Cyclic improvement is humanity's historic forte. As we build the smart cities in which our children and theirs will dwell, we must remember that by prioritizing sustainability and investing in technology, we can go a long way towards ensuring that the next generation is prepared for their challenges – health-related, economic, or other.

Motivated in part by concerns relating to climate and global change, in March 2021 ESI ThoughtLab released a study co-sponsored by Microsoft entitled "Smart City Solutions for a Riskier World." The results are described as "a forward-looking study that provides city decision-makers with an evidence-based playbook for driving better social, environmental, and economic outcomes in today's transformed world."

Arising from the survey of 167 city leaders spanning 82 countries is a nominal definition of Smart Cities 4.0: Hyperconnected cities that use technology, data, and citizen engagement to achieve the United Nations Sustainable



Development Goals (UN SDGs). They are in step with new ways of working under Industry 4.0 and excel at using partners to drive change and provide innovative funding methods. By identifying 20 cities that exemplify these qualities, the ESI ThoughtLab study illuminates key patterns for how urban areas can adopt the connected and sustainable practices of leading cities:

## Laying strong foundations



Taking Dubai as an example of a city that is wholeheartedly embracing smart city innovation, it is gratifying and encouraging to see what many of these best practices are being implemented: Expo City Dubai was famously the UAE's first 15-minute city and sparked discussions around the use of sustainable public-transit systems, and incentive measures to promote biking and walking, addressing the needs of citizens.

Technology has already made inroads in the UAE's education sector, with the advent of distance learning, which includes lessons, chatbots, learning tools, and assessment capabilities. It has also made a significant contribution to healthcare, most prominently through primary care services and telemedicine, but also in the rollout of the country's incredibly successful vaccination program.

## Defining modern work?

SDG11 calls for sustainable, inclusive urban development. That implies that close attention is paid to how people live and work so that city planners can make the right moves to accommodate them. Modern work is a complex notion. Some have returned to the office full-time, some remain permanently at home, and others are somewhere in between. And then there are frontline workers, who are split between bases of operations, the open road (locally or internationally), and the premises and homes of customers.

Smart cities and the technology that powers them must cater to all these use cases. Fortunately, the underlying technology is already there to empower any kind of workforce, including frontline employees, to be productive. It allows those who cannot stay home to be connected and well-equipped no matter where they are but also contribute to reduced carbon emissions as mentioned earlier.

Technology also has a place in the essential business premises that will remain. Such buildings may house critical infrastructure and services, making them impractical candidates for shuttering, so innovative administrators must find ways to make these facilities greener. An example is Dubai Electricity and Water Authority (DEWA), which used Microsoft technology in its new net-zero Al Shera'a headquarters. The

smart-building approach was also taken by Sharjah-based sustainability pioneer Bee'ah in the building of its headquarters, which used Microsoft AI technology to, among other things, provide a digital concierge for every occupant and visitor.

## Secure, cloud-powered sustainability

Based upon findings from the ESI ThoughtLab study, Cities 4.0 uptake of specific technologies can be assigned to the following broad categories:

- Established technologies – ubiquitous adoption of cloud computing and IoT leads the way, while mobile, biometrics, blockchain, AI, and Robotic Process Automation (RPA) lag behind.
- Innovative technologies – over the next three years, digital twins, data warehouses, augmented and virtual reality, blockchain, digital dashboards, drones, and even 3-D printing, are expected to factor into the mix.

At the heart of this smart city revolution is the cloud. Microsoft has invested heavily in cloud technologies in the region, opening two cloud

data centers in the UAE, which are bringing jobs, enhancing expertise, and delivering advanced problem-solving capabilities across industries. According to a recent IDC study, Microsoft's cloud ecosystem is set to generate over 97,000 jobs- including 29,400 skilled IT jobs- and \$27.9bn in cloud revenue for the country by 2026. We work to ensure that the entire MEA region can benefit from the business agility, efficiencies, and cost savings the cloud has to offer.

But one area that will be critical as we build our smart cities is security. Cyber-resilience and secure access are tricky propositions in the face of the modern threat landscape. The advanced technologies – AI, IoT, blockchain, and others – that will underpin our future smart societies will be protected by a range of sentinel technologies that never sleep, from robust encryption to the software sentries that watch, learn from, and pinpoint malicious incursions.

With these technological tools and insights at their disposal, I am confident that governments can progress towards building more connected and sustainable cities, that use technology to improve the lives of citizens and the health of the community for generations to come.

Source: Microsoft



# SDG LOCALISATION IN THE ARAB REGION

## Challenges and Opportunities

As the Arab region keeps moving forward on the path of urbanization, citizens face numerous challenges varying from urban sprawl to increased poverty. Aggravated by conflict in several areas of the region, policymakers and urbanists find a need for careful monitoring and acceleration of the Sustainable Development Goals (SDGs) at all levels – global, national, and local.

More than fifty per cent of the population in the Arab region live in urban areas. If properly planned, implemented, and maximized, urbanization can help countries to overcome many major challenges including poverty, inequality, climate change, fragility, and conflict. Leaving no one – and no place – behind, the 17 Goals form a blueprint to reach communities

where everyone enjoys well-being, health, and social inclusion. This is done through working toward reaching the interconnected Goals, aiming to eliminate poverty and inequality, address climate change and reach more prosperous cities.

Despite the SDGs being global, they can only be achieved if we manage to make them a reality in our cities. All the SDGs have targets directly related to the responsibilities of local governments, particularly to their role in delivering basic services.

Through the adequate translation of the Goals into local actions, as well as the implementation and monitoring at the local level, the achievement of the Goals can be accelerated



### ERFAN ALI

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# “ LOCAL GOVERNMENTS NEED TO UTILIZE LOCAL STRATEGIES AND MATERIALS IN SUSTAINABLE AND RESILIENT BUILDINGS IN THEIR CITIES

and the impact would be relevant to everyone, locally as well as nationally and globally.

Currently, there is a focus on tracking the progress of implementing the SDGs at both the local and national levels through Voluntary Local Reviews (VLRs) and Voluntary National Reviews (VNRs). To accelerate the achievement of SDGs, countries must demonstrate local-national coherence. For instance, indicators of SDG11 “make cities and human settlements inclusive, safe, resilient and sustainable”, cannot be fully reached without their implementation at the local level. Local governments need to utilize local strategies and materials in sustainable and resilient buildings in their cities. Local disaster risk reduction strategies should also be adopted and implemented in line with national disaster risk reduction strategies.

From the Arab region, the city of Amman, Jordan, presented its Voluntary Local Review (VLR) – the first VLR in the Arab region – and linked it to Jordan’s Voluntary National Review, marking Jordan as a trailblazer spotlighting the importance of national-local coordination.

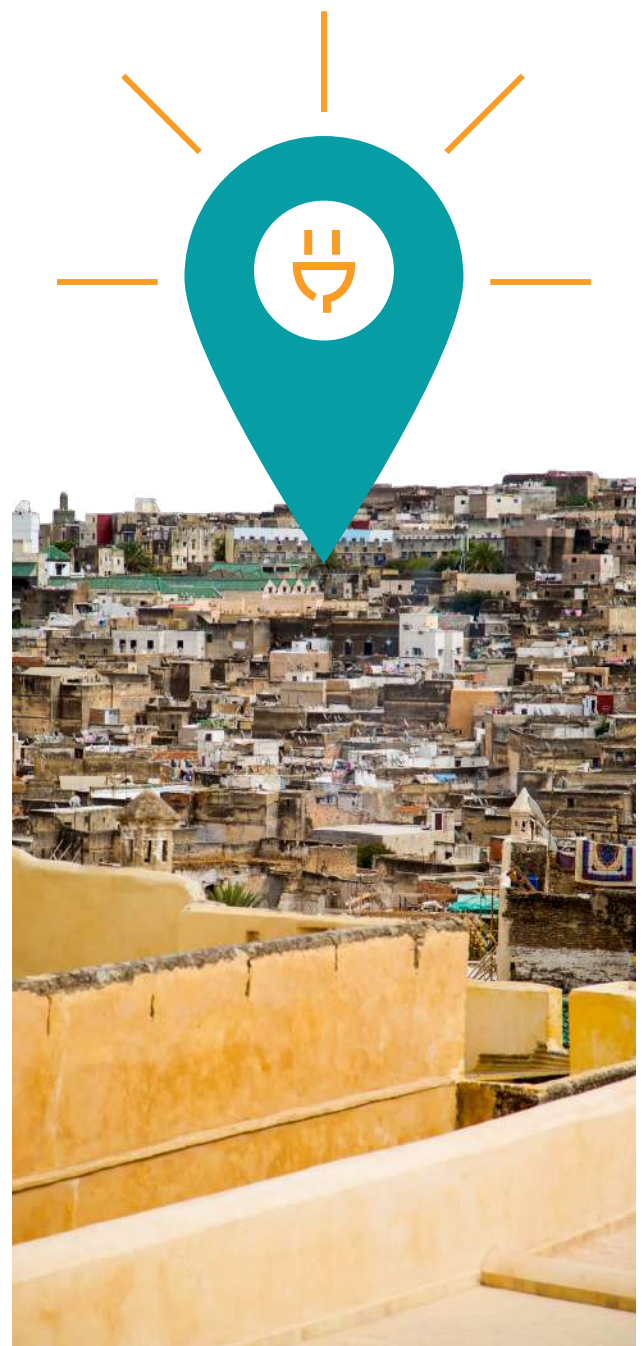
From the region, Agadir in Morocco, Irbid,

Jordan, Ramallah, Palestine, and Ennour, Tunisia, are soon to follow by developing their VLRs while the discussion is ongoing to develop the VLR for the city of Abu Dhabi.

Globally, UN-Habitat supports local and national partners to localize the SDGs through Voluntary Local Reviews, the Global Urban Monitoring Framework, and the SDG Cities certification.

2023 marks the midpoint in the implementation of the SDGs before the 2030 deadline and our work towards the implementation of the 2030 Agenda and its SDGs must be scaled up. UN-Habitat, along with its partners, is committed to continue with its efforts in advancing the localization of the SDGs and strengthening the capacity of national and local decision-makers in implementing, monitoring, and reporting on the SDGs.

Source: UN Habitat







# PUTTING WELLBEING AT THE FOREFRONT OF SUSTAINABLE CITIES

Understanding the role of wellbeing and digital influences  
in pursuit of SDG11

In the internet era cities, communities, and humans all exist in the digital realm. A realm beyond the physical that did not exist a few decades ago, is now increasingly becoming the space of choice for new generations. But as people across the world spend more time online and continue to choose digital interactions over physical interactions, can cities become more inclusive, safe, resilient, and sustainable by only addressing the non-digital?

The answer is, no, they cannot. An effort to improve cities that do not address the increasing number of digital interactions is not comprehensive. "Online" is not just a temporary state anymore, but for many, a constant side-by-side existence to the physical self. This side-by-side existence means being online has a more significant impact on people's wellbeing.



**MUSAD AFZAL**  
Project Manager, Dubai Digital

**Musad Afzal is a Project Manager at Digital Dubai working with key areas of digitalization impact including Digital Wellbeing,** its adverse effects on modern society, and the optimization of technology revolution for an improved impact on mental and physical health of individuals.

## SDG11 and Wellbeing

The Sustainable Development Goal 11's (SDG11) pursuit of safer, more resilient, and sustainable cities has a direct alignment with the wellbeing of people that make these cities their home. Being successful or making incremental improvements in this pursuit guarantees a positive impact on people's wellbeing.

In the physical realm, this can range from major improvements such as safe and affordable housing, green spaces, and effective public transportation. All key elements have been noted to improve both physical and mental health. Furthermore, inclusive physical spaces and assurance of safer communities form a sense of belonging and social connection, two essentials that contribute to people's wellbeing.

Without taking liberty in understanding the scope of SDG11, progress towards "making cities and human settlements inclusive, safe, resilient, and sustainable" will lead to an improvement of people's wellbeing.

## Defining Wellbeing

Often referred to as a state of being comfortable or happy, wellbeing is the amalgamation of positive and negative emotions or moods and their presence. A person has "one" wellbeing that is impacted by a variety of factors and elements. However, for the sake of segmenting actions that affect wellbeing, most frameworks use 6 to 8 elements to define their components.

### The 7 most common ones are:

	<b>FINANCIAL</b>
	<b>SOCIAL</b>
	<b>OCCUPATIONAL</b>
	<b>MENTAL</b>
	<b>PHYSICAL</b>
	<b>ENVIRONMENTAL</b>
	<b>INTELLECTUAL</b>

Wellbeing can be volatile, even within small increments of time (daily or hourly) and is dependent on the result of the perception of interactions that a person has throughout the day. These interactions and their perceptions can vary in their impact, depending on the individual that is experiencing them. Interactions can range from minor exchanges, such as listening to a song, or major ones, such as being offered a job. The impact or size of these interactions and their perception is subjective to the individual.

“

**A PERSON HAS “ONE”  
WELLBEING THAT IS  
IMPACTED BY A VARIETY  
OF FACTORS AND  
ELEMENTS**

In the context of SDG11, there are components of daily interactions people go through that would improve because of SDG11.

An interaction has three major components: the individual, the environment, and the influence. The individual, as a component, includes people's previous wellbeing, the set of skills they possess, their economic status, and so forth. The environment is a more macro component, focusing on what the community or city offers; this can mean elements such as air quality or efficient waste management. Finally, the influence, is the component that includes elements offered by service providers such as government services, entertainment/leisure services, healthcare services, and other private and public services available.

Through a roadmap that aims to achieve SDG11, all three of these components are improved, and consequently so are people's wellbeing.



## Digital Wellbeing

To reiterate, wellbeing is not limited to interactions that take place in the physical realm and an increasing amount of people's interactions now happen digitally. Therefore, the road to completing SDG11 is incomplete without addressing digital interactions.

The effect that the perception of digital interactions have on an individual's wellbeing can be defined as digital wellbeing. The components of digital interactions are like the earlier mentioned components of a physical interaction

However, the individual in this case brings specific elements such as their digital skills or personal connectivity, the environment consists of the internet infrastructure the city or community offers, and the influences are digital - services that an individual interacts with or through digitally and online.



**GOVERNMENTS,  
PRIVATE SECTOR,  
AND CIVIL SOCIETY  
MUST FORM  
WORKING GROUPS**



**to constantly  
measure and form  
interventions that  
will improve digital  
wellbeing**

## WELLBEING

**is not limited to interactions  
that take place in the physical  
realm and an increasing amount  
of people's interactions now  
happen digitally**

## SDG11 and Digital Wellbeing

To address digital wellbeing, all three components must be addressed in any roadmap that aims to achieve SDG11. Governments, the private sector, and civil society must form working groups to constantly measure and form interventions that will improve digital wellbeing.

For the individual, this means having upskilling programs, creating awareness around the threats of digital interactions, and laying out clear steps that can be taken to assure a positive perception of digital interactions.

At the environmental level, it's not just the offering of reliable and affordable connectivity but making sure the correct legal and social mechanisms are in place to discourage negative behavior in the digital world, just as is done in the physical realm.

Finally, and arguably most importantly, work with the providers of digital influences to add digital wellbeing controls across devices and software, reducing the risks of certain technology by providing the right disclaimers, and offering clear avenues for conflict resolution online.

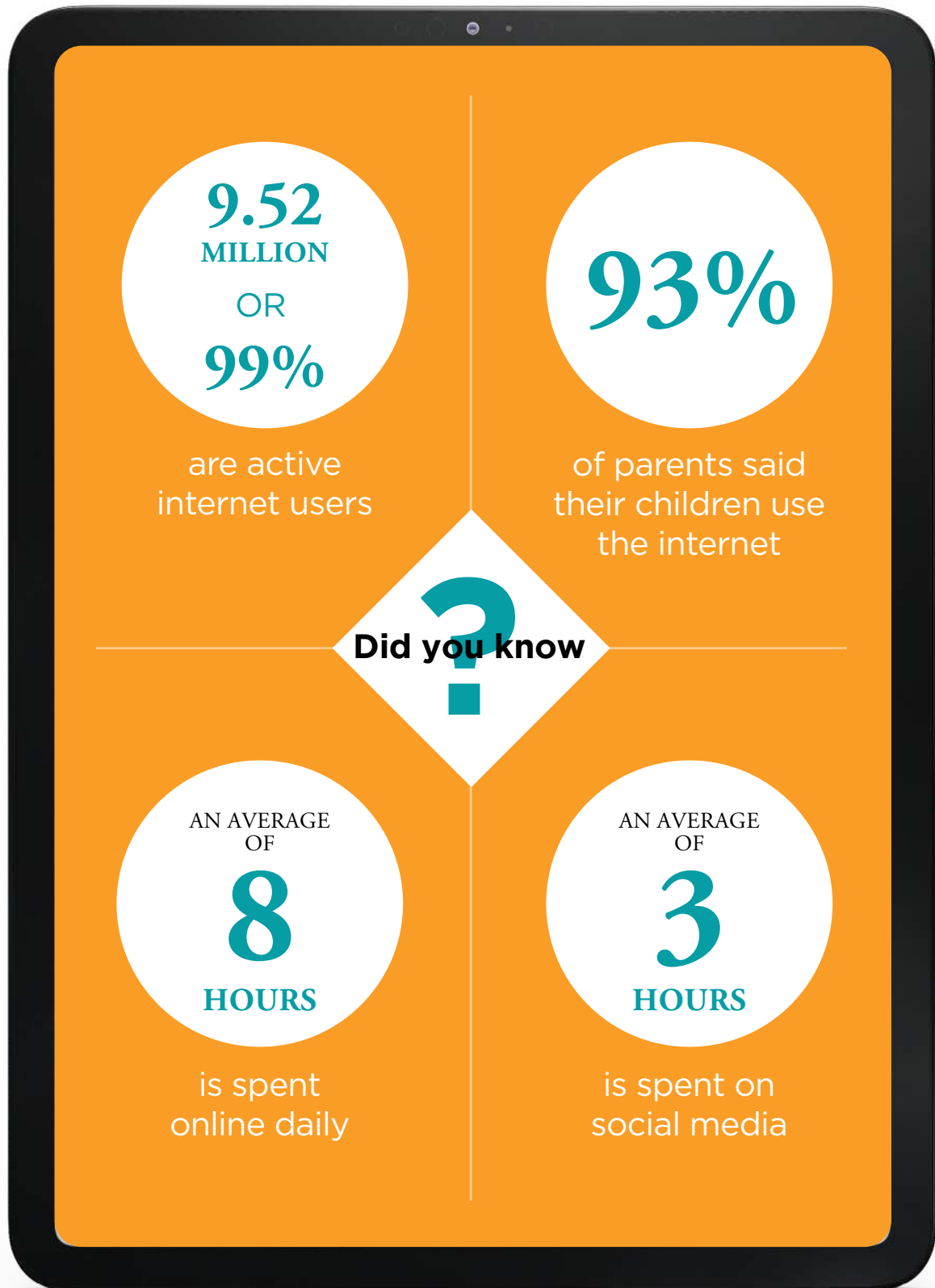
By addressing these three components, society by and large will address and improve the perception of digital interactions, consequently improving digital wellbeing.

Digital wellbeing in 2023 continues to take up an increasing amount of space in an individual's singular wellbeing, and addressing it empowers society to further strengthen their resolve towards making cities and communities more inclusive, safe, resilient, and sustainable.

Source: Digital Dubai

# SPOTLIGHT

## In the UAE



# FLASH FLOODS MITIGATION IN THE ARAB REGION

## Nature-Based Solutions

Nature-Based Solutions (NBS) form a powerful approach to addressing societal and environmental challenges, enhancing resilience, improving the lives and well-being of city dwellers, and protecting biodiversity. This is done through actions to protect, sustainably manage or restore natural ecosystems. NBS also provide cost-effective approaches to addressing urban sustainability challenges. NBS have a major role in achieving the Sustainable Development Goals in general and Goal 15 - Life on Land - in particular. If properly implemented in cities, NBS can certainly contribute to achieving Goal 11 by reducing the climate change and natural disasters impacts on cities.

In urban areas and cities, NBS, including the presence of wetlands and tree-covered areas, can improve communities' wellbeing and reduce pollution.

Through a project to strengthen the social stability and resilience of vulnerable communities in Amman, Jordan, against flash floods, UN-Habitat, in cooperation with the Greater Amman Municipality and supported by the Government of Japan, utilizes NBS as a flood mitigation measure.



## THE CASE OF AMMAN, JORDAN

Flash floods have become a serious problem in Jordan and are identified as the second-priority risk in the country. Just thirty minutes of heavy rainfall can cause a severe flash flood, leading to loss of life, damaged properties, and flooded streets, leaving people trapped in their cars and homes. In 2018, flash floods claimed 35 lives and affected approximately 150,000 citizens.

The capital, Amman, is among the most vulnerable areas to flash floods. In the last 100 years, it has experienced unprecedented growth from 5,000 inhabitants to the current estimate of over four million. This increase is both the result of natural urban growth and the continuous influx of refugees due to ongoing conflicts and political instability in the region. As a result, social services, infrastructure for water and sanitation, as well as drainage and waste management are under pressure.

Additionally, climate change, rapid population and spatial growth, lack of adequate land use planning and a deficient drainage management system have resulted in ever more frequent and intense flash floods, especially in downtown Amman.

UN-Habitat implemented a project to reduce the risk of flash floods in downtown Amman through a comprehensive and integrated response, including community consultations and awareness raising, training and capacity building on resilience to floods, urban planning management and construction standards.



“This is a unique project that is being implemented in Amman for the first time,” H.E. Yousef Al-Shawarbeh, Mayor of Amman, commented. “We look forward to it being a catalyst for hundreds of projects as well as for larger strategic solutions in the near future.” Deema Abu Thiab, UN-Habitat National Programme Coordinator, Jordan, explained that this project seeks to demonstrate two concepts for stormwater management, namely “bio-retention and bio-detention systems”, whereby it aims to improve the protection and resilience against flash floods in the city of Amman by providing a series of above-ground bio-retention areas and an underground rainwater storage tank with a capacity of 2500 m<sup>3</sup>.

Implementation of urgent flood effect mitigation infrastructure, such as building and rehabilitating stormwater drainage facilities using environmentally friendly construction technologies in downtown Amman, proactively reduced the vulnerability of local communities and refugees to flash floods, benefitting nearly 35,000 people.

UN-Habitat has also built the capacity of municipality officials in conducting assessments, emergency preparedness and planning, design, and implementation of flood infrastructure. It has also delivered vocational training on the principles of permaculture and conducted awareness-raising campaigns on appropriate flood resistance construction technologies and community-based practices.

**“WE LEARNED HOW TO RECYCLE HOUSEHOLD WASTE AND PLANT TO BENEFIT EVERYONE,”**



Sawsan Radwan, a participant in a vocational training session, said.



**“WE HOPE TO HELP SPREAD THIS INITIATIVE SO THAT EVERYONE BENEFITS.”**

Source: UN Habitat



## NATURE-BASED SOLUTIONS (NBS)

form a powerful approach to addressing

societal and environmental challenges, enhancing resilience, improving the lives and well-being of city dwellers, and protecting biodiversity



03



PROSPERITY IN  
DIVERSITY

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**"Prosperity in Diversity" is a chapter in the report that digs into the expanding global movement of Voluntary Local Reviews (VLRs) as a means of tracking and reporting on the development of the SDGs (SDGs). According to UN-Habitat, VLRs are effective accelerators of the SDGs' localization process, making them a vital tool for cities, local, and regional governments globally.**

The report will assess and summarize five global cities that have implemented VLRs, noting both the merits and flaws of their progress toward the SDGs in this chapter. These cities were chosen to demonstrate the variety of ideas and experiences available within the VLR movement, as well as to provide insight into what works well and what areas require improvement.

The examination of these cities will provide a high-level overview of the results of the VLR process and the triumphs and challenges, providing significant information for other cities and regions considering implementing their own VLRs. The findings of this analysis will be utilized to develop practical recommendations for cities and local governments targeted at enhancing VLR processes and, eventually, accelerating progress toward the SDGs.

The chapter is intended to celebrate the thorough efforts cities around the world have undertaken to understand and drive progress. It showcases the true potential of the VLR as a tool in structuring future policy making, design of products and services, and community engagement.

**Note:** The following city profiles rely mostly on the latest publicly available Voluntary Local Review reports, and are supplemented by key figures and highlights from references of those reports.

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# SUSTAINABLE CITIES AND COMMUNITIES: BARCELONA

## An Analysis of Barcelona's VLR



One of the cities that has taken part in the Voluntary Local Review (VLR) process, which allows local and subnational governments to report on their progress toward meeting the Sustainable Development Goals (SDGs) at the local level, is Barcelona, the capital city of Catalonia, Spain.

Barcelona's progress toward attaining SDG11, which calls for the creation of sustainable cities and communities, is one of the centerpieces of the city's VLR. Several measures have been put in place to increase the livability and sustainability of Barcelona's urban regions, which has earned the city a reputation as a pioneer in sustainable urban development.

The Barcelona Urban Landscape Plan is one of the primary measures Barcelona has implemented to achieve SDG11. (PLAB). The PLAB is a comprehensive plan to make the city's urban regions more environmentally friendly, livable, and egalitarian. The PLAB seeks to decrease the use of private vehicles in the city by promoting the use of public transportation, walking, and bicycling. The extension of the city's bike-sharing system, the establishment of new pedestrian-only zones, and the creation of new green spaces are just a few of the efforts the PLAB has put in place to accomplish these aims.

The sustainability and livability of the city have been significantly impacted by these activities, according to the city's VLR report. For instance, the new Urban Mobility Plan has been approved, with a target of 81.52% of journeys conducted by foot, public transportation, or bicycle by 2024. The progress Barcelona has made in tackling the issues of climate change and environmental deterioration is another feature of the city's VLR. Barcelona is susceptible to climate change's effects, including rising sea levels, severe weather, and a lack of water. The city has put

in place several measures to solve these problems, such as the creation of green infrastructure, the promotion of renewable energy, and the installation of waste management and recycling programs.

Barcelona is well-known for its superblocks. The superblock concept is centered on the establishment of a pedestrian space for leisure activities or a residential complex of buildings surrounded by landscaped grounds and limited traffic.

The Superblock concept is progressing to become the citywide street transformation model, with the goal of reclaiming some of the space currently occupied by private automobiles for citizens. The goal is to build a healthier, greener, more equitable, and safer public place that fosters social interactions and the local economy.

Barcelona's municipality has set two goals for itself: lowering greenhouse gas emissions by 40% by 2030 (relative to 2005) and producing enough energy locally to meet municipal demands. These actions, as noted in the city's VLR report, have significantly reduced the amount of greenhouse gases released into the atmosphere by the city, with emissions from the energy sector falling by 45% between 1990 and 2018.

In conclusion, Barcelona has significantly advanced the SDGs' local implementation, as seen by the city's involvement in the VLR process. The city's attempts to make its urban areas more livable and sustainable, such as the Barcelona Urban Landscape Plan and campaigns to support renewable energy, have significantly impacted the city's social and environmental sustainability. To accomplish the SDGs and build a more sustainable and equitable future for all its residents, the city's involvement in the VLR process is a crucial component of its efforts.

## HIGHLIGHTS OF BARCELONA'S VLR

**Highlights from Barcelona's VLR on the SDGs include the following:**

**1**

### ECONOMIC GROWTH

Barcelona has placed a high priority on innovation and economic growth, with a particular emphasis on luring investment and new employment.

**2**

### SOCIAL INCLUSION

The city has put in place a variety of programs to encourage social inclusion, including enhancing access to healthcare and education and assisting underprivileged populations.

**3**

### ENVIRONMENTAL SUSTAINABILITY

Barcelona has significantly improved its environmental performance and reduced its carbon footprint. The city has put in place a variety of initiatives to cut down on energy use, expand the use of renewable energy sources, and support environmentally friendly transportation.

**4**

### GOOD GOVERNANCE

Barcelona has a long history of democratic participation, and the city has put in place a variety of programs to involve people in the decision-making process. To increase the accountability and openness of its institutions, the city has also created a number of policies.

**5**

### PARTNERSHIPS

Barcelona has forged a variety of alliances with regional, global, and local groups to assist it fulfill the SDGs. Through these alliances, the city has been able to pool resources and knowledge to tackle difficult problems.

## KEY FIGURES OF BARCELONA'S VLR

**Targets for Barcelona for 2030:**

11.1 Affordable housing for all

11.2 More eco-mobility, based on a sustainable and inclusive public transport system of the highest quality

11.3 Achieve a change in urban model through social consensus in order to attain healthier and more sustainable public spaces, especially in areas surrounding schools

11.4 Greater protection, accessibility and knowledge of singular heritage and identity features of Barcelona and its neighborhoods

11.5 Maximum protection for people and prevention of material damage during severe climate episodes

11.6 Compliance with the air quality thresholds recommended by the WHO

11.7 Greener and safer public spaces where people can play

11.a By 2030, have a new Metropolitan Urban Planning Master Plan

11.b Develop Barcelona's urban resilience model

11.c Develop international cooperation associated with urban planning and housing

# SUSTAINABLE CITIES AND COMMUNITIES: NEW YORK

## An Analysis of New York's VLR



The Sustainable Development Goals (SDGs) Voluntary Local Review (VLR) on the Sustainable Development Goals (SDGs) in New York City is an annual report that offers a thorough review of the city's progress in attaining the SDGs. The report serves as a forum for the city to discuss its implementation of the SDGs, best practices, and lessons learned, as well as to solicit input and assistance from other cities and the global community. The city's progress toward reaching the SDGs, as well as the difficulties and possibilities it confronts, are all detailed in the most current New York VLR on the SDGs, which was published in 2020.

The progress the city has made in eliminating inequality and poverty is one of the report's major themes. Specially, project percentage of population living below the national poverty line by 2030. The city has launched several programs to address this problem, including "Fair Fares," which gave low-income people access to half-priced subway and bus fares, and the "Working Families Tax Credit," which has helped 150,000 families.

The report also highlighted the city's efforts in addressing economic disparity, one of the city's most urgent problems. A measure of economic inequality in the city, the Gini coefficient, decreased from 0.5 in 2017 to 0.48 in 2019, indicating a decline in income disparity.

The progress the city has made in enhancing access to affordable housing is another noteworthy aspect of the study. In 2018, New York City financed 34,160 affordable homes, establishing a new standard for affordable housing creation in the city. This comprises a

record for both new development (10,099 new dwellings financed) and preservation (24,061 units). The city has created several programs to increase the availability and caliber of housing, including "HomeFix," a program that assists homeowners in making repairs and renovations to their houses, and "NYC Housing Connect," which assists low-income individuals in finding affordable housing.

The review also highlighted how the city has improved its usage of renewable energy and decreased its greenhouse gas emissions. By 2050, New York City is committed to carbon neutrality, and it has made great strides in that direction. From a 2005 baseline, New York had cut municipal GHG emissions by roughly 30% and citywide emissions by 17% as of 2017. The city has boosted its usage of renewable energy as well; since 2014, solar power capacity has risen by more than 700%.

The progress the city has made in tackling social exclusion and prejudice is also noted in the report. The "IDNYC" program, which issues identification to residents regardless of their immigration status, and the "Language Access Plan," which helps ensure that city services are available in a variety of languages, are just two of the initiatives that New York City has put into place to encourage social inclusion. The "Fair Shot Act," which ensures that those with criminal histories have a fair chance of getting work, is one example of how the city has achieved success in combating prejudice. The city has implemented several programs to help bodegas stock healthier food options, such as the "Healthy Bodegas" program, and the "NYC Care" program, which guarantees health care for all New Yorkers, regardless of their immigration status or ability to pay.



Overall, the VLR offers a thorough picture of how New York City is doing in terms of achieving the SDGs and tackling significant global issues. The city has advanced in many areas, from lowering poverty and inequality to boosting sustainability and education. It also emphasizes the value of teamwork, data, localization, innovation, and inclusiveness, all of which are essential for attaining sustainable urban development. The VLR has been an invaluable tool for municipal officials, decision-makers, and the public, and it will continue to direct the city's efforts to create a more equitable and sustainable future for all its citizens.

## HIGHLIGHTS OF NEW YORK'S VLR

Highlights from the VLR on SDGs in New York with data and statistics include:

1

### QUALITY EARLY CHILDHOOD EDUCATION

To reshape New York's education system around the vision of quality education, the emphasis will be on expanding early childhood development programs, achieving on-time high school graduation rates that are comparable to the national average, improving college readiness, and, by 2026, achieving universal literacy by the second grade.

2

### EQUITABLE ECONOMIC GROWTH

New York City is looking ahead with the release of New York Works, a 10-year plan to create 100,000 good-paying employment in critical development areas. Overall, the city aspires to be the fairest big city in America. To create an equitable and inclusive economy, the city will attract and create good-paying jobs by investing in businesses and sectors that promise fair wages and working conditions.

3

### GREENHOUSE GAS EMISSIONS AND RENEWABLE ENERGY

New York City has already shown its willingness to face the climate change challenge, fight for climate justice, and play a worldwide leadership role in preserving a habitable environment. New York is committed to climate neutrality by 2050. This will mean 100% clean electricity resources, as well as overhaul the city's buildings, transportation, and waste sectors.

4

### SOCIAL INCLUSION

The report heavily features an initiative under the name OneNYC. At the core of the initiatives 2050 mission is Equity and is woven throughout the strategy. The City dedicates extensive efforts to issue a report called "Social Indicators", which analyzes social circumstances in New York City. The report is intended to assist the City in its efforts to minimize inequalities and enhance equity.

5

### ENGAGED AND EMPOWERED PUBLIC

New Yorkers responded to the call to extend democracy in 2018 by passing a charter revision that will strengthen participatory budgeting, make community boards more responsible to people, and improve civic engagement. The City established the position of Chief Democracy Officer, tasked with engaging residents from all throughout the city to engage in democratic processes.

## KEY FIGURES OF NEW YORK'S VLR

0.5 ► 0.48

2017

2019

New York's **Gini coefficient** decreased from **0.5** in 2017 to **0.48** in 2019



0%

New York's **greenhouse gas emissions** in 2019 were **28% lower** than they were in 2005



▲ 700%

New York's **solar power capacity** increased by more than **700%** since 2014

# SUSTAINABLE CITIES AND COMMUNITIES: JAKARTA

## An Analysis of Jakarta's VLR



One of the cities that has taken part in the Voluntary Local Review (VLR) process, which is Jakarta, the capital city of Indonesia.

Local governments can emphasize the steps they are taking to address the SDGs in their areas and share their experiences, obstacles, and accomplishments with implementing the SDGs at the VLR.

The progress Jakarta has made toward attaining SDG11, which calls for the creation of sustainable cities and communities, is one of the highlights of the city's VLR. Through programs like the Jakarta Smart City program, Jakarta has made considerable strides toward enhancing the viability and sustainability of its metropolitan regions. The Jakarta Smart City initiative is a comprehensive plan to employ data analytics and digital technology to increase the city's livability, sustainability, and efficiency.

The creation of an integrated transportation system is one of the main elements of the Jakarta Smart City initiative. Given that there are an estimated 2 million automobiles on the road daily, Jakarta experiences some of the worst traffic congestion in the whole globe. The city has put in place several intelligent transportation technologies, including public bike-sharing, electronic road pricing, and intelligent transport systems, to solve this problem. These programs have improved the city's traffic flow and helped to lessen congestion.

The progress the city has made in raising the caliber of its water and sanitation services is another feature of Jakarta's VLR. The health and wellbeing of urban inhabitants depend on having access to clean water and sanitary facilities. With over 95% of the population now having access

to piped water, Jakarta has made considerable strides in enhancing access to clean water. Over 75% of the population now has access to better sanitary facilities, demonstrating the city's success in this area.

In tackling the issues of climate change and environmental deterioration, Jakarta has also achieved headway. The city is susceptible to climate change's effects, including sea level rise, floods, and extreme weather. Jakarta has adopted several steps to solve these issues, such as the creation of green infrastructure, the promotion of renewable energy, and the introduction of waste management and recycling schemes. These programs have improved the city's ability to withstand the effects of climate change and cut greenhouse gas emissions.

**Conclusion:** As evidenced by the city's involvement in the VLR process, Jakarta has made considerable strides in implementing the SDGs at the local level. Through programs like the Jakarta Smart City program and attempts to provide access to clean water and sanitary facilities, the city has made progress in enhancing the livability and sustainability of its metropolitan regions. Through programs like the creation of green infrastructure and the promotion of renewable energy, Jakarta has also made strides in tackling the problems posed by climate change and environmental degradation. To accomplish the SDGs and build a more sustainable and equitable future for all of its residents, the city's involvement in the VLR process is a crucial component of its efforts.

# HIGHLIGHTS OF JAKARTA'S VLR

Highlights from the VLR on SDGs in Jakarta with data and statistics include:

1

## ERADICATING POVERTY

The poverty rate in Jakarta Province is at its lowest point, under 5, making eradication difficult because the poorest are in a considerably more complicated situation than simply a matter of financial requirements. Under Business as Usual scenarios, poverty in Jakarta is anticipated to reach 2.45% by 2030.

2

## INCLUSIVE HEALTH AND WELLBEING

Despite being significantly lower than the national average, the Maternal Mortality Rate (MMR) in DKI Jakarta warrants some concern, given an increased tendency in recent years, particularly during the COVID-19 pandemic. MMR is generally linked to a variety of characteristics, ranging from health-care services to socioeconomic considerations. Furthermore, women who marry at a young age have a higher risk of dying during childbirth.

3

## ENVIRONMENTAL PRESERVATION

Jakarta has put in place a variety of environmental measures, such as steps to lessen air and water pollution. Between 2000 and 2017, the city lowered the amount of particulate matter (PM10) in the air by 50%. From 2010 to 2016, Jakarta reduced its daily production of solid garbage by 18% per inhabitant.

4

## GOVERNANCE AND PARTNERSHIPS

In comparison to the aim, Jakarta's municipal tax income to GDP ratio is significantly low. The COVID-19 pandemic, in particular, reduced tax receipts in 2020 and 2021. Faced with these issues, DKI Jakarta has implemented a number of measures and steps to ensure regional income, beginning with economic recovery, which can, in turn, restore local tax revenues.

# KEY FIGURES OF JAKARTA'S VLR



1.55%

Projected ratio of **local tax revenue** to GDP by 2030, with BAU scenario



▲ 3.7%

Jakarta's **GDP increased** by **3.7%** annually between 2014 and 2018



2.45%

Projected percentage of **population living below the national poverty line** by 2030



# SUSTAINABLE CITIES AND COMMUNITIES: HELSINKI

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## An Analysis of Helsinki's VLR

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Helsinki, Finland's capital, has made public its Voluntary Local Review (VLR) on its progress toward achieving the Sustainable Development Goals of the United Nations (SDGs). The VLR highlights the city's initiatives to combat major global issues including poverty, inequality, and climate change and gives an overview of its development in this regard.

The city's efforts in reducing poverty and inequality are one of the VLR's major highlights. During the COVID-19 crisis, the number of Finns at risk of poverty or social exclusion has grown. Disparities in health and well-being between population groups have also grown, as have regional variances. Recognizing that challenge, the city has devised several policy and strategies interventions to reduce those gaps, and have already started to see early positive returns.

The city's dedication to sustainability and minimizing its carbon footprint is another hallmark of the VLR. Helsinki has set lofty targets to achieve carbon neutrality by 2035 and has achieved notable advancements in this direction. The city has launched a variety of efforts to promote renewable energy and

energy efficiency, including the growth of public transit and the installation of solar panels on public buildings, and its greenhouse gas emissions have decreased by 40% since 1990.

The VLR emphasizes the city's dedication to providing all its citizens a top-notch education in terms of education. The population of Helsinki have excellent levels of reading and numeracy thanks to a solid educational system. With efforts like the extension of pre-primary education and the introduction of focused assistance programs for disadvantaged children, the city has also achieved considerable strides in improving access to education for underprivileged populations.

Overall, Helsinki's progress toward achieving the SDGs and tackling significant global concerns is thoroughly outlined in the VLR. The city has advanced in many areas, from lowering poverty and inequality to boosting sustainability and education. The VLR is a useful tool for municipal officials, decision-makers, and the public, and it will direct the city's efforts to create a more equitable and sustainable future for all its citizens.



# HIGHLIGHTS OF HELSINKI'S VLR

Highlights from Helsinki's VLR on the SDGs include the following:

1

## STRONG COMMITMENT TO SUSTAINABILITY

Helsinki has a long history of environmental stewardship, and the city has established high standards for the SDGs' implementation. Helsinki has also created a Sustainable Development Advisory Council to make sure that all city policies and procedures include the SDGs.

2

## PROGRESS IN COMBATING CLIMATE CHANGE

Helsinki has achieved substantial strides in lowering greenhouse gas emissions, in part thanks to the promotion of energy efficiency measures and the use of renewable energy sources. The city has also put in place a variety of measures, such those that prevent flooding, to adapt to the effects of climate change.

3

## FOSTERING SOCIAL INCLUSION

Helsinki has put in place a variety of measures to foster social inclusion, such as through providing accessible housing, chances for education and work, and assistance for disadvantaged populations.

4

## STABILIZING THE CITY'S ECONOMY

The economy of Helsinki is robust and varied, and the city is aiming to foster economic growth and development while also making sure that all residents can benefit from it. Helsinki has also put in place policies to aid small and medium-sized businesses and promote innovation.

5

## ENVIRONMENTAL PROTECTION

Helsinki is dedicated to environmental protection and has put out a variety of measures to decrease pollution and waste, save biodiversity, and enhance the city's air and water quality.

# KEY FIGURES OF HELSINKI'S VLR

82%

of Helsinki's population are familiar with the Sustainable Development Goals.

73.4%

Employment rate (2020)

26%

Greenhouse gas emissions cut since 1990

46%

of Household waste recycled, and 52% of Municipal waste recycled (2019)

# SUSTAINABLE CITIES AND COMMUNITIES: CAPE TOWN

## An Analysis of Cape Town's VLR



One of the most recognizable cities on the African continent and the legislative center of South Africa, Cape Town, has submitted its Voluntary Local Review (VLR) on the Sustainable Development Goals (SDGs) to the UN. The VLR gives an overview of Cape Town's achievements toward the SDGs as well as the obstacles it still needs to overcome.

The success the city has made in eradicating poverty is one of the major highlights of Cape Town's VLR. The VLR reports that the proportion of families in Cape Town experiencing poverty declined from 23.3% in 2016 to 21.3% in 2019. This decrease may be due to numerous programs the city has put in place, such as the "Integrated Rapid Transit" system, which has facilitated inhabitants of low-income regions' access to employment and services. The city has also launched a "Social Housing" initiative, which has given nearly 22,000 households access to cheap housing.

The progress Cape Town has achieved in enhancing access to essential services is another feature of the city's VLR. The VLR claims that the city has improved citizen access to clean water, with 96% of homes currently having such access. With over 93% of homes now having access to sanitation services, the city has also made strides in improving sanitation access. The city also wants to make energy more accessible, and by 2019 it has succeeded in doing so for more than 80% of homes.

Additionally, Cape Town has improved its usage of renewable energy sources and cut greenhouse gas emissions. By 2019, the city has lowered emissions by 20%. The city has set a goal to reduce greenhouse gas emissions

by 30% by 2020. Intending to produce 10% of its energy from renewable sources by 2020, the city has also established a goal to boost the usage of renewable energy. The city has advanced in this area as well, with more than 6% of its energy currently coming from renewable sources.

The VLR also emphasizes the strides Cape Town has achieved in combating prejudice and socioeconomic exclusion. The "Inclusive Cities" program, which seeks to enhance the lives of underprivileged people, is only one of the efforts the city has put into place to encourage social inclusion. The city has also made strides in combating prejudice, with the adoption of a number of resolutions by the city council that support equality and anti-discrimination.

The VLR also highlighted Cape Town's improvements in terms of health and wellbeing. The city has set a target to reduce non-communicable disease-related premature mortality by 25% by 2020, according to the VLR. Premature mortality from non-communicable illnesses decreased by 20% in the city between 2016 and 2019 indicating success in this area. The city has also put in place several programs to enhance the health and wellbeing of its citizens, such as the "Good Living" program, which encourages healthy food and exercise.

The VLR for Cape Town emphasizes that the city has made great strides toward attaining the SDGs, but it also recognizes that there are still issues that need to be resolved. The city will continue to strive towards the SDGs and will provide the UN with progress updates every two years.



## HIGHLIGHTS OF CAPE TOWN'S VLR

Highlights from the VLR on SDGs in Cape Town with data and statistics include:

1

### ERADICATING POVERTY

As a result of programs like the "Social Housing" program and the "Integrated Rapid Transit" system, the percentage of families living in poverty in Cape Town dropped from 23.3% in 2016 to 21.3% in 2019.

2

### ACCESS TO BASIC SERVICES

96% of homes in Cape Town now have access to clean water, a significant improvement. More than 80% of families currently have access to electricity, and over 93% of households have access to sanitary facilities.

3

### GREENHOUSE GAS EMISSIONS AND RENEWABLE ENERGY

By 2019, the city has lowered emissions by 20%. The city has set a goal to reduce greenhouse gas emissions by 30% by 2020. It now gets more than 6% of its electricity from renewable sources.

4

### SOCIAL INCLUSION

The "Inclusive Cities" program is one of the efforts the city has put into place to encourage social inclusion. The city has also made progress in tackling prejudice, with the city council approving various resolutions to encourage equality and non-discrimination.

5

### HEALTH AND WELL-BEING

Premature fatalities have dropped by 20% between 2016 and 2019; the city has set a target to reduce premature mortality from non-communicable illnesses by 25% by 2020. The "Healthy Living" program is only one of the efforts the city has put in place to enhance the health and wellbeing of its citizens.

## KEY FIGURES OF CAPE TOWN'S VLR

23.3% ► 23.1%

2016

2019

Cape Town's **percentage of families living in** **dropped** from **23.3%** in 2016 **to 21.3%** in 2019



6%+

Cape Town **gets** more than **6%** of its **electricity from renewable sources**



▼ 20%

Cape Town's **premature mortality from non-communicable illnesses** **decreased** by **20%** in the city between 2016 and 2019

## SUSTAINABLE CITIES AND COMMUNITIES: DUBAI

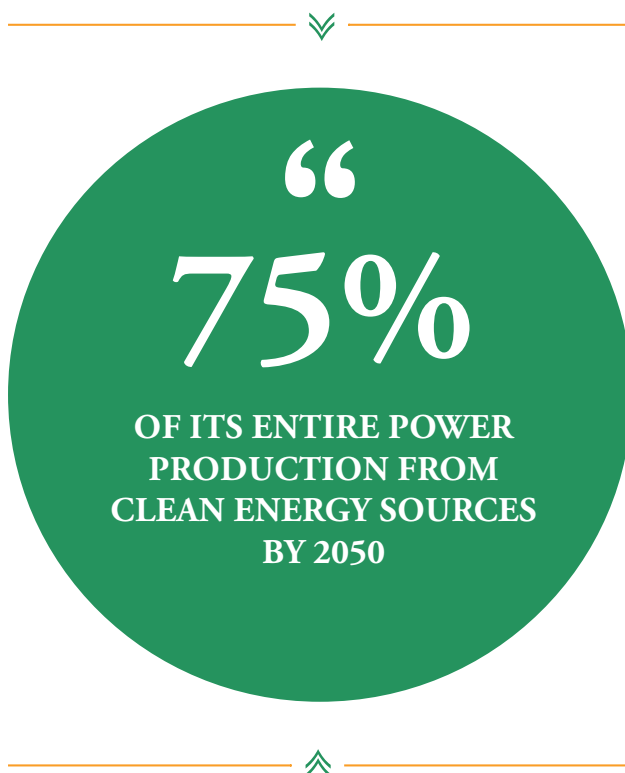
### A Brief Review of Dubai's Progress Towards the SDGs



Dubai is yet to produce its first Voluntary Local Review. However, the city has a proven track record of putting sustainable development principles and practices into effect. The city's strong infrastructure and varied economy allow it to offer its citizens high-quality services. The key to the city's advancement has been the leadership of the city, which has been proactive in putting ambitious visions that are then translated into strategies, policies and initiatives that address the SDGs into place. The city has been a pioneer in actively collaborating with businesses to develop solutions that address the SDGs, both locally and globally.

Dubai has established a goal to produce 75% of its entire power production from clean energy sources by 2050, starting with renewable energy. With the opening of the biggest single-site solar park in the world, the Mohammed bin Rashid Al Maktoum Solar Park, the city has already made great strides in achieving this objective. Over 25 billion kWh of renewable energy is anticipated to be produced by the park by 2030, which has a total capacity of 5,000 MW today. This will aid the city in achieving SDG 7, which seeks to guarantee that everyone has access to cheap, dependable, sustainable, and modern energy, and in reducing its carbon emissions considerably.

Dubai has also achieved tremendous strides in energy demand-side control. The Dubai Integrated Energy Strategy, which seeks to cut energy usage in buildings by 30%, is one of several energy-saving efforts the city has put in place. Energy-efficient lights and appliances have also been implemented by the city, which has greatly decreased energy usage. Additionally, the city has put in place a variety of



laws and rules to encourage the use of electric cars, which will aid in lowering carbon emissions and achieving SDG11, which calls for inclusive, secure, resilient, and sustainable cities and human settlements.

Additionally, Dubai has significantly reduced carbon emissions. By 2021 and 2030, the city wants to cut carbon emissions by 16% and 30%, respectively. This is anticipated to be accomplished through a variety of actions, including boosting the use of electric cars, renewable energy sources, and energy-efficient structures. Several laws and policies have also

been put in place by the city to encourage environmentally friendly transportation, such as the Dubai Green Mobility Initiative, which seeks to double the number of electric cars on the road by the year 2030. By doing this, the city will be able to fulfill SDG 13, which calls for immediate action to prevent climate change and its effects.

Dubai has established a goal to reach 40% of persons with higher education by 2030 in the domain of high-quality education. The city has also set a goal of raising to 85% by 2020 the proportion of children who are proficient in math and science. The Dubai Education Strategy, which seeks to raise the standard of education in the emirate, is one of the measures the city has put in place to help it reach these goals. Several initiatives have also been launched by the city to advance STEM education, such as the Dubai STEM Education Strategy, which intends to double the proportion of students studying STEM fields by the year 2021.

**“OVERALL, DUBAI HAS MADE SIGNIFICANT PROGRESS TOWARDS ACHIEVING THE SDGS ON A LOCAL LEVEL.”**

However, like any other city in the world, Dubai is navigating accelerated change that is impacting many aspects related to the 2030 agenda. The city has already started rolling out strategies and roadmaps that are characterized through the agility and resilience to withstand uncharted circumstances, with hopes of these being favorable.





04

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FUTURE  
FORESIGHT FOR  
SDG11

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**The chapter "Future Foresight for SDG11" aims to provide a forward-looking perspective on the problems and opportunities that sustainable cities and communities will face in the future. Urbanization is an unavoidable process, and efficient urban and territorial planning is critical for mitigating the negative social, economic, and environmental consequences of future urban growth.**

This chapter will look at the important future challenges and opportunities in technology, society, the economy, and the environment that are likely to determine the future of sustainable cities and communities. It will investigate the most recent trends and breakthroughs in these fields and provide a brief overview of their potential impact on achieving the targets of SDG11.

It will examine challenges that cities and communities are expected to face due to existing and upcoming trends in terms of financing, governance, and stakeholder involvement, and will make suggestions to solve these issues.

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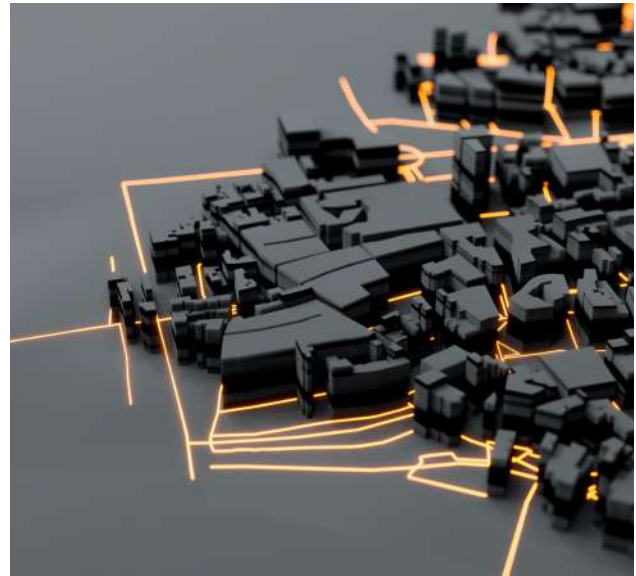
# FUTURE FORESIGHT: TECHNOLOGY THE ENABLER OF CHOICE

## Technological Challenges and Opportunities in the Future of Cities

As technology continues to have a greater impact on how people live, work, and play, cities' future is evolving quickly. A new age of technological innovation and the possibility for good change has been sparked by the emergence of smart cities, urbanization, and the demand for sustainable solutions. Looking ahead, it is evident that cities will experience a variety of technological obstacles and possibilities that will influence how they evolve in the years to come. In this article, we will examine these potential and difficulties with a focus on cutting-edge and emerging technologies, as well as how they relate to SDG11, which aspires to create inclusive, secure, resilient, and sustainable cities.

Future cities will face several technical difficulties, one of which is the requirement for effective and sustainable transportation systems. By 2050, there are projected to be 6.7 billion people living in urban areas, making it imperative for cities to invest in strategies that will ease traffic, enhance air quality, and encourage more environmentally friendly forms of transportation. Promising answers to these problems are provided by cutting-edge technology including driverless cars, intelligent traffic management systems, and shared mobility services. For instance, the widespread use of autonomous cars has the potential to cut down on traffic and improve mobility for city dwellers while lowering road accidents by up to 90%.

The demand for sustainable energy systems will provide another difficulty for cities in the



future. Cities must switch to clean, renewable energy sources as they expand and use more energy to lessen their carbon impact and advance a more sustainable energy mix. Innovative solutions to these problems include smart grid technology, energy-efficient structures, and renewable energy sources like wind and solar energy. The global market for renewable energy, for instance, is anticipated to reach \$1.5 trillion by 2030, providing cities with a major chance to switch to a more sustainable energy mix.

Future cities will also have to deal with the demand for secure and safe living conditions in addition to these difficulties. Cities must invest in programs that will safeguard their residents and increase their resilience in light of the increased danger of cyberattacks and natural catastrophes. By supplying safe and transparent data management systems and enhancing the general security and resilience of cities, cutting-edge technologies like blockchain and smart city platforms provide viable answers to these problems. Using blockchain technology, for instance, in cities can assist to increase the accountability and openness of government processes while simultaneously lowering the danger of cyberattacks.

Despite these obstacles, the future of cities offers a variety of fascinating chances for progress. The use of technology to encourage sustainability and enhance the quality of life for city dwellers is one of the most important opportunities. For instance, the usage of



**By linking the use of these technologies to the sustainable development goals and specifically SDG11**

**WE CAN CREATE FUTURE CITIES THAT ARE INCLUSIVE, SAFE, RESILIENT, AND SUSTAINABLE**



connected devices and smart city platforms can assist to increase the effectiveness of city services like waste management and energy consumption while also fostering a more sustainable and livable city. Additionally, the deployment of smart transportation systems, such as shared mobility services and driverless cars, can lower emissions while enhancing mobility for city dwellers.

Conclusion: To maintain a good quality of life for all people, the technological potential, and challenges that the future of cities brings must be properly evaluated and handled. Innovative and cutting-edge technologies, such as autonomous cars, smart grids, blockchain, and renewable energy, present substantial prospects for sustainable growth and advancement while also offering viable answers to these problems. Future cities may be more accessible, secure, resilient, and sustainable by connecting the application of these technologies to the SDGs, particularly SDG11. Looking ahead, it seems obvious that technology will be a key factor in determining how cities grow and how we may all live in a world that is more sustainable.



# FUTURE FORESIGHT: A SUSTAINABLE ECONOMY TO FUEL CHANGE

## The Future of Sustainable Cities through the Rise of the Digital Economy



Cities have long been at the forefront of economic progress, and they continue to shape the global economy today. It is becoming increasingly important to comprehend the future shifts in economic models occurring in cities and the implications for achieving the Sustainable Development Goals (SDGs). The rise of the digital economy is a major trend that is transforming the economic landscape of cities, and we must understand the opportunities and challenges it presents.

The digital economy is becoming more important in the future of sustainable cities. This new economic model is transforming traditional economic models and creating new opportunities for economic growth and job creation. It is based on the creation, production, and distribution of goods and services via the internet. The digital economy is also assisting in addressing some of the most pressing sustainability issues confronting cities, such as reducing energy consumption and carbon emissions and promoting more sustainable and inclusive forms of urban development.

According to a recent World Economic Forum report, the global digital economy is expected to reach \$23.9 trillion by 2025, accounting for a significant portion of global GDP. This expansion is being driven by several factors, including an increase in the number of people who have access to the internet, the expansion of e-commerce platforms, and rising demand for digital media and entertainment.

While the digital economy provides cities with numerous opportunities, it also presents several challenges. For example, the expansion of the digital economy may result in increased inequalities, as those with the necessary skills and access to technology may benefit from new economic opportunities, while those without may fall behind. Furthermore, the rapid pace of technological change can result in job displacement and the ongoing need for workers to learn new skills and receive training.

Despite these challenges, the digital economy has the potential to play a central role in achieving the SDGs, particularly SDG11, which aims to "Make cities and human settlements inclusive, safe, resilient, and sustainable". The digital economy, for example, can help to create new jobs, improve access to information and services, and boost economic growth in cities. Furthermore, it can help to alleviate poverty and create new economic opportunities for city dwellers, particularly those with limited access to traditional employment opportunities.

The digital economy, for example, has the potential to create jobs by spurring the growth of new industries and businesses. According to a World Economic Forum report, the digital economy is expected to generate up to 300 million new jobs by 2025. The e-commerce sector, for example, is expected to generate up to 75 million new jobs globally, including positions in logistics, customer service, and technology.

Furthermore, rising demand for digital media and entertainment is expected to generate up to 125 million new jobs in fields such as content creation and distribution. These new jobs are expected to create new economic opportunities for city dwellers, particularly those with limited access to traditional job opportunities.

Cities must take a strategic and inclusive approach to realize the full potential of the digital economy for sustainable development. This entails developing policies and regulations that address the digital economy's challenges, such as income insecurity and reduced worker benefits, while also promoting its potential benefits, such as new economic opportunities and increased access to information and services.

To summarize, the rise of the digital economy

represents a significant shift in urban economic models, presenting both opportunities and challenges for long-term development. To ensure that the digital economy contributes to inclusive and sustainable economic growth, cities must take a strategic and inclusive approach that takes the needs and perspectives of all stakeholders into account. With the right policies and investments in place, the digital economy has the potential to be a powerful force for good, assisting in the achievement of the SDGs and the construction of more sustainable and inclusive cities.

Source: World Economic Forum





# FUTURE FORESIGHT: ENVIRONMENTAL IMPACT OF DEVELOPMENT

## Considerations While Cities Rapidly Change



The globe is changing quickly, with technological developments and an expanding global population pushing city growth and development. However, the way cities are created and managed has a tremendous impact on the environment, and it is critical to evaluate the potential consequences of these changes as we strive for a more sustainable future.

The growing population is one of the most tremendous difficulties that cities face. According to the United Nations, by 2050, cities will house more than two-thirds of the world's population. This will place a strain on urban infrastructure and resources, resulting in increased waste, energy consumption, and greenhouse gas emissions. To address this issue, it is critical to promote sustainable urban development and build cities capable of accommodating growth sustainably.

Another big issue confronting cities is the growing amount of food waste. According to the Food and Agriculture Organization of the United Nations, nearly one-third of all food produced globally is lost or discarded, which not only contributes to resource waste but also to greenhouse gas emissions from the production, transportation, and disposal of wasted food. The world wasted 1.3 billion tons of food in 2018. To address this issue, cities must take novel measures to decrease food waste, such as lowering food losses along the supply chain, enhancing food storage and distribution, and promoting sustainable consumption behaviors.

On another note, the move toward

remote working, fueled by technological advancements, is having an impact on the environment. Although remote working reduces transportation emissions and energy consumption, it nevertheless necessitates significant energy consumption for communication and data storage. To maximize the benefits of remote working, it is critical to promote energy-efficient technology and limit the environmental impact of data storage.

Meanwhile, upcoming technologies such as Artificial Intelligence, Autonomous Vehicles, Cloud Computing, Metaverse, and Blockchain are expected to have a substantial environmental impact. These technologies have the potential to transform the way cities are constructed and operated, but they also have the potential to increase energy consumption, waste, and emissions if not deployed sustainably. To ensure that these technologies are used to assist sustainable urban development, it is critical to encourage the development of environmentally friendly solutions as well as the establishment of sustainable technological standards.

Adopting a circular economy model, where waste is avoided and resources are conserved and reused, could be one response to the issues posed by these developments. In Copenhagen, Denmark, for example, the

city has adopted a comprehensive waste management system, including composting and recycling programs, which has resulted in a 25% reduction in garbage output in recent years. To lower their carbon footprint, communities can also invest in renewable energy sources and energy-efficient technology such as smart grid systems.

Another option is to promote environmentally friendly transportation, such as bike-friendly infrastructure and public transportation fueled by renewable energy sources. In Amsterdam, the Netherlands, for example, bikes are the main means of transportation, accounting for more than 60% of all journeys. This has resulted in lower air pollution, better public health, and a more livable city.

To solve all the difficulties and more, cities must be structured to suit the demands of all citizens sustainably and efficiently. One method is to create communities based on the "20-minute city" paradigm, in which individuals

can access all their necessities, such as jobs, education, healthcare, and recreation, within a 20-minute radius of their houses. This would eliminate the need for long travel as well as the associated energy usage and greenhouse gas emissions.

Finally, as cities continue to grow and evolve, they must be structured in such a way that they suit the requirements of all citizens while also conserving the environment. Cities may become more efficient, habitable, and sustainable in the future by addressing the environmental impact of emerging technology, implementing sustainable energy systems, and embracing sustainable transportation. We can meet the Sustainable Development Goals, particularly SDG11, and build cities that are sustainable, efficient, and livable for all citizens with the correct investments, policies, and planning.

Sources:

1. World Economic Forum
2. United Nations

**By 2050,  
cities will house**



**more than two-  
thirds of the world's  
population**

**One-third of all  
food produced**



**globally is lost or  
discarded**

# FUTURE FORESIGHT: SOCIETAL CHARACTERISTICS DICTATE FUTURE CITIES

## Placing Individuals at the Heart of Future Urban Planning

The world's city composition is changing dramatically because of aging populations, rapid urbanization, globalization, and changing preferences among younger generations. These changes are altering how we live, work, and interact with one another, and they are having a significant impact on how cities are developed and planned. As a result, cities face both opportunities and challenges in meeting the United Nations' Sustainable Development Goals (SDGs), particularly SDG11, which calls for cities and human settlements to be inclusive, safe, resilient, and sustainable.

The aging of populations is one of the most significant changes in the composition of cities. According to a United Nations report, the number of people over the age of 65 is expected to grow faster than the overall population in many countries, putting additional strain on healthcare and social services. This aging trend creates opportunities for the development of new technologies and services that can improve the quality of life for older populations, but it also raises concerns about city sustainability and the availability of resources to meet the needs of an aging population.

The rapid pace of urbanization is another significant shift in the composition of cities. With cities expected to house more than two-thirds of the world's population by 2050, the demand for housing, infrastructure, and services is increasing rapidly. Economic opportunities and improved access to education and healthcare are driving this



trend. It does, however, present challenges such as overcrowding, increased environmental pressure, and the need to ensure that the benefits of urbanization are distributed equitably.

Globalization and changing preferences of younger generations are also having an impact on city composition. The rise of the gig economy and remote work is changing people's lifestyles and making cities more diverse and dynamic. This trend, however, raises concerns about the future of work and the availability of high-quality jobs for all.

The digital divide has serious consequences for achieving the United Nations' Sustainable Development Goals (SDGs), particularly SDG11, which focuses on sustainable cities

**Ensure that everyone has access to digital technologies and services.**

and communities. If cities are to be genuinely sustainable and inclusive, they must seek to bridge the digital divide and provide all inhabitants with the tools and services they require to prosper in the twenty-first century.

Cities may address the digital divide through a variety of strategies. The expansion of public private partnerships that provide internet access, training, and assistance to underserved



populations is one viable option. Initiatives such as TechSoup's "Digital Inclusion Fund" and "EveryoneOn," for example, are assisting in the distribution of digital tools and training to low-income homes. Cities can also invest in digital infrastructure, such as broadband internet and public Wi-Fi, to increase resident access and lower prices.

To address these challenges and ensure that cities' futures are bright for all, policymakers and city planners must collaborate to build more inclusive and sustainable cities. This includes making infrastructure and services available and affordable to all residents, regardless of income or background. It also entails bridging the digital divide by giving those who are currently excluded access to digital technologies and services, as well as supporting the development of digital skills and literacy among all residents.

In Amsterdam, the city government has developed an innovative digital strategy to ensure that everyone has access to digital technologies and services. This includes projects like providing free Wi-Fi in public places, developing digital skills programs for underserved communities, and investing in

digital infrastructure and services that are accessible and affordable to all residents.

Another example is Barcelona, which has been identified as a leader in sustainable urban development. The city has successfully reduced its carbon footprint, improved access to public transportation, and created a more vibrant and inclusive urban environment through a combination of innovative policies and investments in infrastructure and services.

Finally, changes in the societal compositions of cities are transforming the way we live and work, presenting both opportunities and challenges for achieving the SDGs, particularly SDG11. It is critical that policymakers and city planners consider these shifts when developing plans for the future of cities, and that all residents have access to the technologies and services they require to thrive. We can help to ensure that the future of cities is bright for everyone by addressing the digital divide and working to create more inclusive and sustainable cities.

Sources:

1. United Nations
2. Digital Future Society
3. Digital Dubai Analysis



# DUBAI FUTURE FOUNDATION'S VIEW ON MEGATRENDS

By The Dubai Future  
Foundation



Shaped by uncertainties, assumptions and megatrends, the Dubai Future Foundation approaches foresight from the perspective of growth, prosperity and well-being (Dubai Future Foundation, 2022). While uncertainties and assumptions are relevant over multiple decades, megatrends are relevant over a shorter period, namely a decade or so.

As research-led thematic paths towards the future, megatrends are complex and interrelated. Intersecting with uncertainties and assumptions, megatrends guide thinking about choices of the future and are the basis of novel ideas that cross many sectors leveraging respective benefits and mitigating respective challenges. The megatrends provide a vantage point for future opportunities, and the choices made for the future impact how megatrends evolve and affect economies, people, and the planet.

The Dubai Future Foundation introduced ten megatrends for future growth, prosperity and well-being in the first edition (2022) of the Future Opportunities Report: The Global 50 (Dubai Future Foundation, 2022). Subsequently, in January 2023, the Dubai Future Foundation published a megatrends report that includes some related signals to watch for (Dubai Future Foundation, 2023a) as one looks to identify areas of future opportunity, as was done in the second edition of The Global 50 (Dubai Future Foundation, 2023b).

When it comes to the Sustainable Development Goals (SDGs), the megatrends and the SDGs align on both the overall narrative focused on future growth, prosperity and well-being and a comparable time horizon,

i.e., a decade. In this section of the City Insights report, the Dubai Future Foundation briefly reflects on the megatrends in the context of SDG11 and how megatrends will help or hinder 'human towns and settlements from becoming inclusive, safe, resilient and sustainable'. In this context, some megatrends may be more significant than others. Given the megatrends' interrelated nature, the opportunities and challenges mentioned are non-exhaustive, as other opportunities and impacts may become relevant.

For more details on each  
megatrend and other areas of  
future opportunity,

**REFER TO THE DUBAI  
FUTURE FOUNDATION  
WEBSITE, WHERE THE  
GLOBAL 50, MEGATRENDS  
REPORT, AND OTHER  
RELEVANT REPORTS CAN  
BE FOUND.**

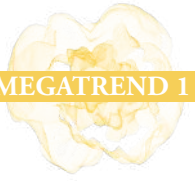


<https://www.dubaifuture.ae/the-global-50>

# 10 MEGA-TRENDS

## SHAPING OUR FUTUR IN 2023

### MEGATREND 1



#### Materials



### MEGATREND 6



#### Borderless



### MEGATREND 2



#### Data



### MEGATREND 7



#### Digital Realities



### MEGATREND 3



#### Vulnerability



### MEGATREND 8



#### Robots



### MEGATREND 4



#### Energy



### MEGATREND 9



#### Humanity



### MEGATREND 5



#### Ecosystems



### MEGATREND 10

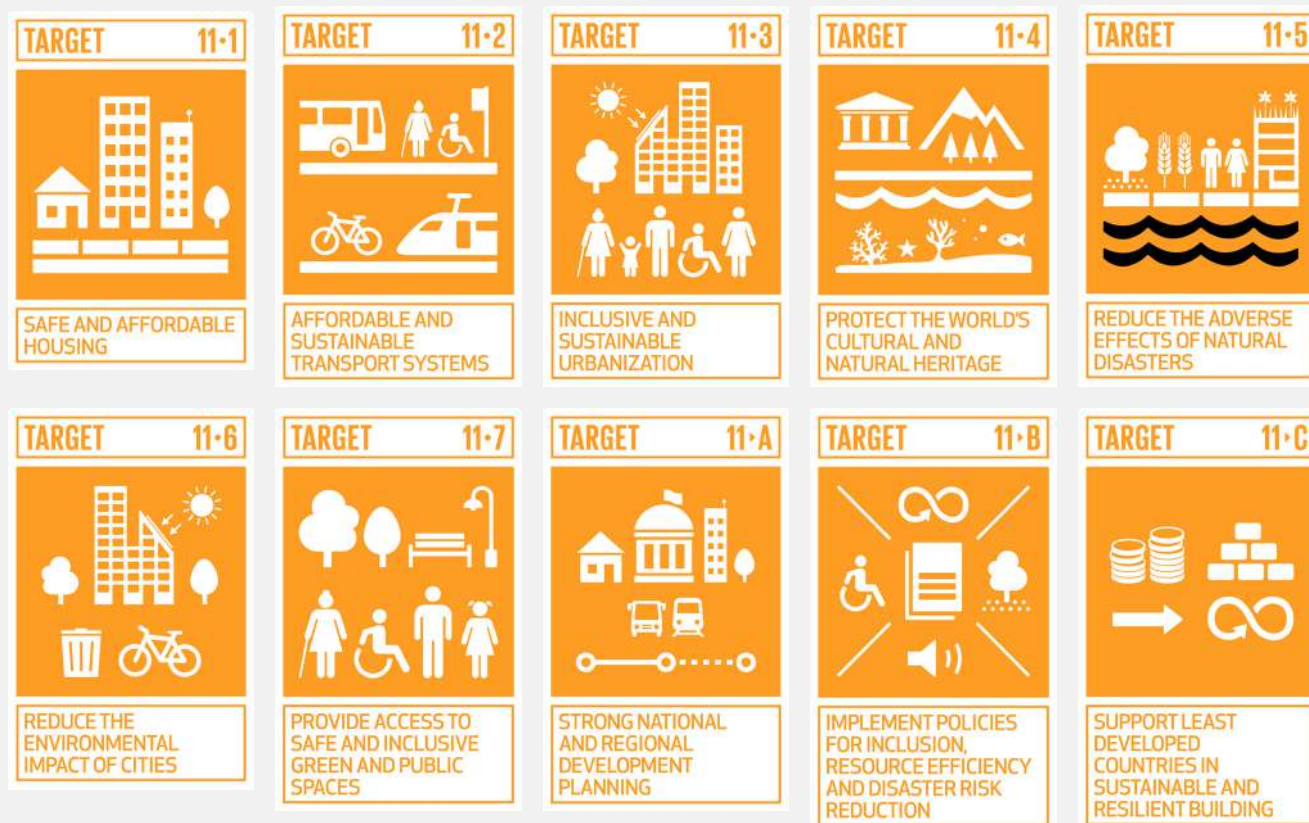


#### Health





## KEY TARGETS FOR SDG11



### MEGATREND 1: Materials Revolution

Materials science can enable improvements in the energy, health, sanitation and transport sectors, reducing environmental footprints and enhancing the ecological sustainability of cities. Advances in materials, both in terms of properties and multipurpose use, will mitigate the impacts of urbanisation, including air and water pollution and transform construction techniques, including 3D printing solutions. Biomaterials can help achieve a low-waste society or reduce waste to biodegradable components, enable surface coatings that enhance health and reduce stress with noise-absorbing materials. Concurrently, the increased investment in materials science and its applications in cities may not be sufficient to keep pace with rising emissions (if not mitigated), noise pollution or urban

city needs. Delayed regulatory reforms may stall innovation and scalable use of new or improved materials, and cities may face unintended toxicity in the mishandling of biodegradable waste.

Most relevant target impacted:



### MEGATREND 2: Devaluation Of Raw Data

From artificial intelligence, automation and quantum computing to the Internet of Things (IoT) and smart city technologies, technological advances make raw data more

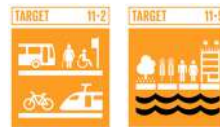
available between, within and for cities. The availability and accessibility of raw data will enable improvements to how cities provide services and approach inclusive and accessible housing, energy, waste management, water and transportation. This megatrend also encourages creative and innovative thinking, faster and more accurate modelling and simulation for future policy development and impacts, including resource consumption and testing the resilience of cities. At the same time, with the increased adoption of smart city technologies, data may be exploited for criminal purposes making systems vulnerable to cybersecurity threats while exposing privacy issues due to interoperability or compatibility issues between varying technological infrastructure.

Most relevant target impacted:



expected to be primary energy sources as the push for renewable energy continues. In parallel, advances in how power is distributed and transmitted through microgrids and reliable hybrid systems will improve grid resiliency in cities. While space-based solar power and energy storage for the earth may or may not be operational by 2030, they will become a prominent area of exploration. Low carbon energy, along with access to clean and sustainable forms of transport, will enable the growth of new industries with less environmental damage in power services. Conversely, barring accidental incidents that cause harm, hazardous waste and end-of-life parts may increase, and suitable solutions to reduce and recycle related waste will be needed.

Most relevant target impacted:



### MEGATREND 3: Technological Vulnerabilities

Advanced connectivity, digitisation, and the Internet of Things (IoT) mean cities are increasingly connected across sectors and communities. More cities will seek to become cyber-resilient to manage associated cybersecurity risks within processes and systems that impact every part of urban life. However, the rapid pace of digitisation may surpass the speed at which new approaches to encryption and safeguarding of systems evolve and are implemented.

Most relevant target impacted:



### MEGATREND 4: Energy Boundaries

Continued exploration and use of alternative energy sources, including hydroelectricity, battery technologies, solar and wind energy and small modular reactors (SMRs), are



### MEGATREND 5: Saving Ecosystems

Monitoring and managing carbon footprints, applying ecological economics and environmental, social and governance (ESG) solutions, investing and reporting will gain momentum. In parallel, defining and managing new ecosystems to apply the land-food-water-energy nexus and achieve net-zero or net-positive emissions will be part of cities' response to saving ecosystems. The focus will move beyond reducing the environmental impact of a specific building, area or service to applying interdisciplinary approaches focusing on low-carbon and resource-efficient 'cities as ecosystems' balancing affordability, inclusion, safety and sustainability. As ecosystem monitoring and management of urban infrastructure and services increases dependence on technology and artificial intelligence, it can also expose systems to misuse, accidental errors, or harm.

Most relevant target impacted:





## MEGATREND 6: Borderless World – Fluid Economies

A borderless world will help cities become more sustainable and resilient by facilitating increasingly borderless transactions from finance, health, education, trade and services. A borderless world enables the free movement of goods, services and people, i.e., the digital economy, with access to a broader pool of resources and ideas for sustainable infrastructure and services. A borderless world enables city resilience and disaster reduction during pandemics and natural disasters and enhances income equality and employment opportunities. To benefit from a borderless world, however, means that collaboration within and across cities globally will be vital while finding ways to enhance the positive exchange of ideas and knowledge enabled by necessary legal transformations.

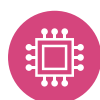
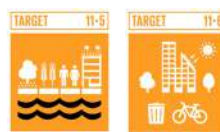
Most relevant target impacted:



## MEGATREND 7: Digital Realities

Advanced connectivity through cellular (5G, 6G) and broadband networks, along with increasing use of wearables, may significantly impact cities. Increasingly, digital communities and immersive technologies will usher in an expedited move to further digitise and improve many 'real-world' tasks and behaviours. More reliable, cost-effective, and secure high-speed connectivity will bring even greater resilience in delivering essential services. Virtual prototyping will enhance capabilities to explore future impacts, uncover better ways to provide basic services and simulate disaster response under hypothetical scenarios. Despite that, not all cities will enjoy high-quality access and connectivity and, some parts of society - within cities - may lack the digital literacy to benefit from associated income, engagement and learning opportunities. More integrated systems increase the impact of outages, and with the risk of fragmenting communities, virtual environments may become untrustworthy with more sophisticated deep fakes and large-scale misinformation campaigns.

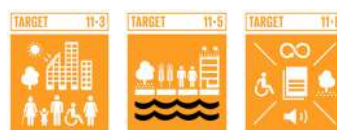
The most relevant target impacted:



## MEGATREND 8: Life With Autonomous Robots

Driven by profound progress in mechanical engineering, materials science, artificial intelligence and communication networks, automated guided vehicles (AGVs), and the population of collaborative robots (cobots), service robots, and social robots will increase, particularly in cities. Robots will help make cities more resilient through more efficient transport, assist in cleaning congested and complex areas and communities, build new homes and improve existing housing structures, and quickly respond to emergencies and disasters. As their contribution to society increases, and as a proxy for human rights, robot rights could make people feel inferior or think that their rights have been diminished as robots take over more tasks and grow in influence. In addition, as robots provide opportunities for efficiency and innovation, there will also be ethical and societal challenges related to control and the need to balance efficiency with the need for quality human interactions.

Most relevant target impacted:



## MEGATREND 9: Future Humanity

Our ability to manage our goals and associated mental and physiological health will be essential in the future. Artificial intelligence, digital realities, technological developments in science and medicine and an increasingly borderless world will shape societies' understanding of self-realisation, the purpose of work, education and what it means to thrive in the 21st century, particularly in cities. Communities may become more involved in urban policies, planning, and decision-making.



Improved services and opportunities may attract migration that rapidly outpaces the speed at which basic services evolve. While greater resident and citizen involvement in urban policies may improve outcomes and well-being, there is a risk of losing public sector control over strategic assets and public goods and challenges in aligning community and individual needs. With continued migration into cities, cities are expected to become more congested, bringing up more complicated questions about the future of affordable housing and residential developments while improving urban mental health.

Most relevant target impacted:

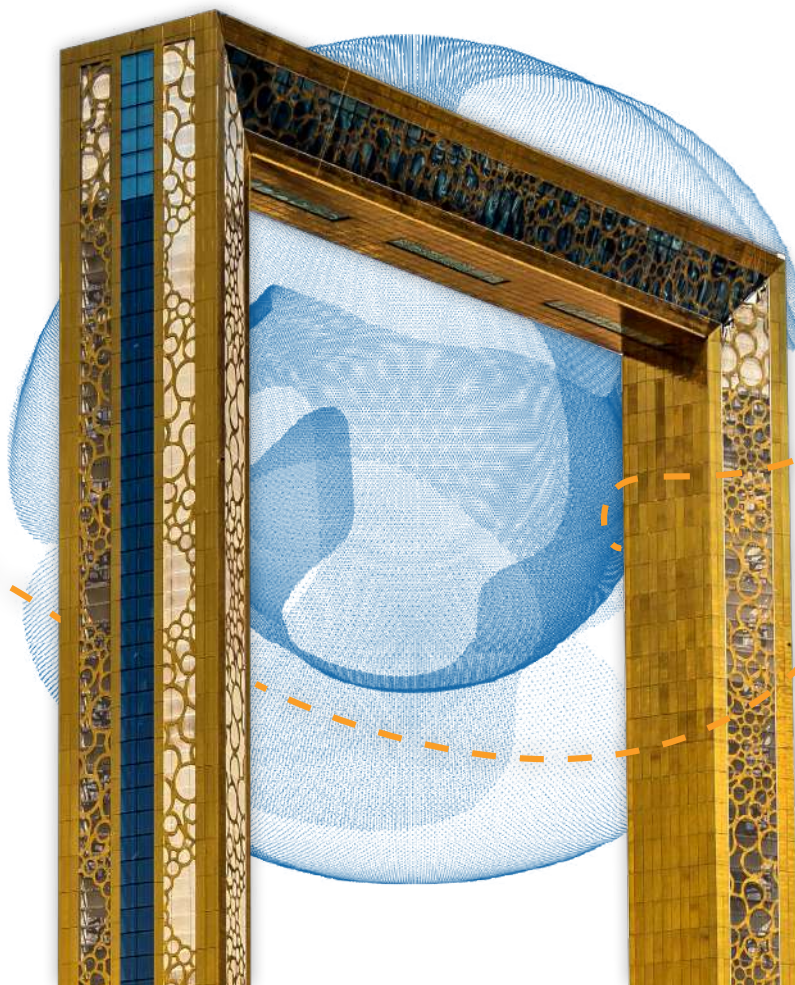
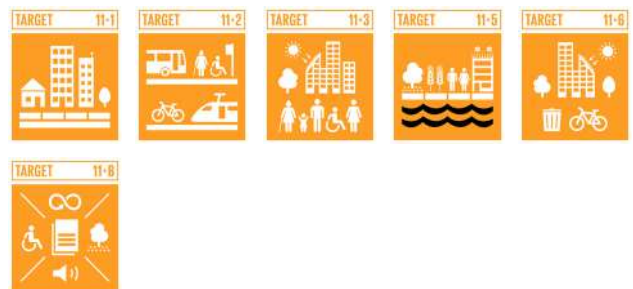


## MEGATREND 10: Advanced Health And Nutrition

Health, food and agriculture are core to resilient cities. Part of essential human services, agritech and precision farming, alternative proteins, diversified food

sources, and personalised medicine will all be necessary for future resilient cities. By transforming what we mean by health and nutrition, we may reduce, if not eradicate, infectious and non-infectious diseases, and enhance the sustainable use of and access to water and food. Longer lifespans, greater productivity and self-optimisation will lead to improved growth, prosperity and well-being. Nonetheless, over-reliance on technology may leave health systems vulnerable to cyberattacks and intentional or unintentional harm. Deliberate or accidental misdiagnosis may occur, and a generation of viruses may become more virulent and infectious. Longer lifespans will also mean that urban populations will increasingly include people aged over 65, bringing up opportunities and challenges for continued prosperity and well-being.

Most relevant target impacted:






**We would like to express our gratitude to all those who have taken the time to read this report** on the key issues relevant to Sustainable Development Goal 11: Sustainable Cities and Communities. We hope that this report has provided valuable insights into the challenges and opportunities facing sustainable cities and communities worldwide.


**OUTRO**





As we continue on our journey towards sustainable urban development, we invite you to join us in our efforts by visiting our website at [www.sdg11gc.com](http://www.sdg11gc.com). On our website, you will find a wealth of information about our work, including updates on our initiatives, reports and publications, and opportunities to get involved in our efforts.

We believe that together, we can make a real difference in promoting sustainable cities and communities worldwide. Thank you again for your interest in our work, and we look forward to working with you in the future.





## KEY CONSIDERATIONS

Several focus areas and considerations have featured throughout the report as significant catalysts towards achieving SDG11 targets. Below are a few:

### 1 | CIRCULAR ECONOMY IS KEY

The adoption of a circular economy at a larger scale has the potential to significantly reduce waste, conserve resources, and create a more sustainable future. A circular economy aims to keep resources in use for as long as possible, minimizing waste and maximizing value. By adopting a circular economy, organizations and governments can work towards a more sustainable future, reducing their environmental impact and creating a more resilient economy.



**Call for action:** Organizations and governments should consider transitioning towards a circular economy and prioritize the adoption of circular practices.

### 2 | DEVELOPMENT MUST CONSIDER SUSTAINABILITY

The Gross National Happiness (GNH) framework and the Sustainable Livelihoods Approach (SLA) are examples of frameworks that prioritize sustainability in development. These frameworks consider the interconnection of social, economic, and environmental factors in order to create a more equitable and sustainable future.



**Call for action:** Development should prioritize sustainability, incorporating frameworks such as GNH and SLA in order to ensure a more balanced and equitable future.

### 3 | STRATEGIZE FOR A GREEN FUTURE

The urgency for designing city-level strategies with KPIs that ensure sustainability and achieve the SDGs in the future is critical. Cities are at the forefront of sustainability and must lead the way in creating a more sustainable future. City-level strategies must prioritize the reduction of carbon emissions, the preservation of natural resources, and the overall well-being of citizens.



**Call for action:** Governments and city leaders should prioritize the design of city-level strategies that ensure sustainability and contribute towards achieving the SDGs in the future.

## 4 | CONTEXT IS EVERYTHING

The context in which development takes place is critical. Each city has its own unique set of challenges and opportunities, and development must be tailored to meet the specific needs and conditions of each area. Understanding the context in which development takes place is critical in ensuring that development is sustainable, equitable, and effective.



**Call for action:** Development should be context-sensitive and tailored to meet the specific needs and conditions of each location.

## 5 | FOSSIL IS NOT THE ENEMY, CO2 IS

Carbon reduction is critical, but carbon capturing and storage is equally important. Advances in carbon capture and storage technology have the potential to significantly reduce carbon emissions, helping to mitigate the impacts of climate change.



**Call for action:** Governments and organizations should prioritize the development and implementation of carbon capture and storage technology.

## 6 | TECHNOLOGY CAN BE OUR GREATEST ALLY

Technology has the potential to positively impact the three pillars of sustainability: social, economic, and environmental. Advances in renewable energy, sustainable transportation, and green building technology have the potential to significantly reduce our environmental impact and create a more sustainable future.



**Call for action:** Governments and organizations should prioritize the adoption of technology that supports sustainability and reduces our environmental impact.

## 7 | OUR INTERACTION WITH CITIES IS BEYOND PHYSICAL ASSETS

The overall experience in the city and the livability of the city is critical, but the focus should be on overall well-being. A city that prioritizes well-being will provide its citizens with access to quality education, healthcare, and a healthy environment.



**Call for action:** City leaders should prioritize the overall well-being of citizens in order to create cities that are livable and provide access to quality education, healthcare, and a healthy environment.

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In this publication, unless otherwise indicated, the term “Ministry” refers to the “UAE Ministry of Energy and Infrastructure”.

In this publication, unless otherwise indicated, the term “council” refers to the Global Council on SDG11.

In this publication, unless otherwise indicated, the term “youth” refers to all those between the ages of 15 and 35, as defined in the UAE Youth Strategy. The term “young people” may be used interchangeably with the word “youth”.

For the context of this report, “Arab Region”, unless otherwise indicated, refers to countries in the Middle East, North Africa, and Levant Region. Therefore, consequently, “Arab Youth” refers to those “youth” from these regions.

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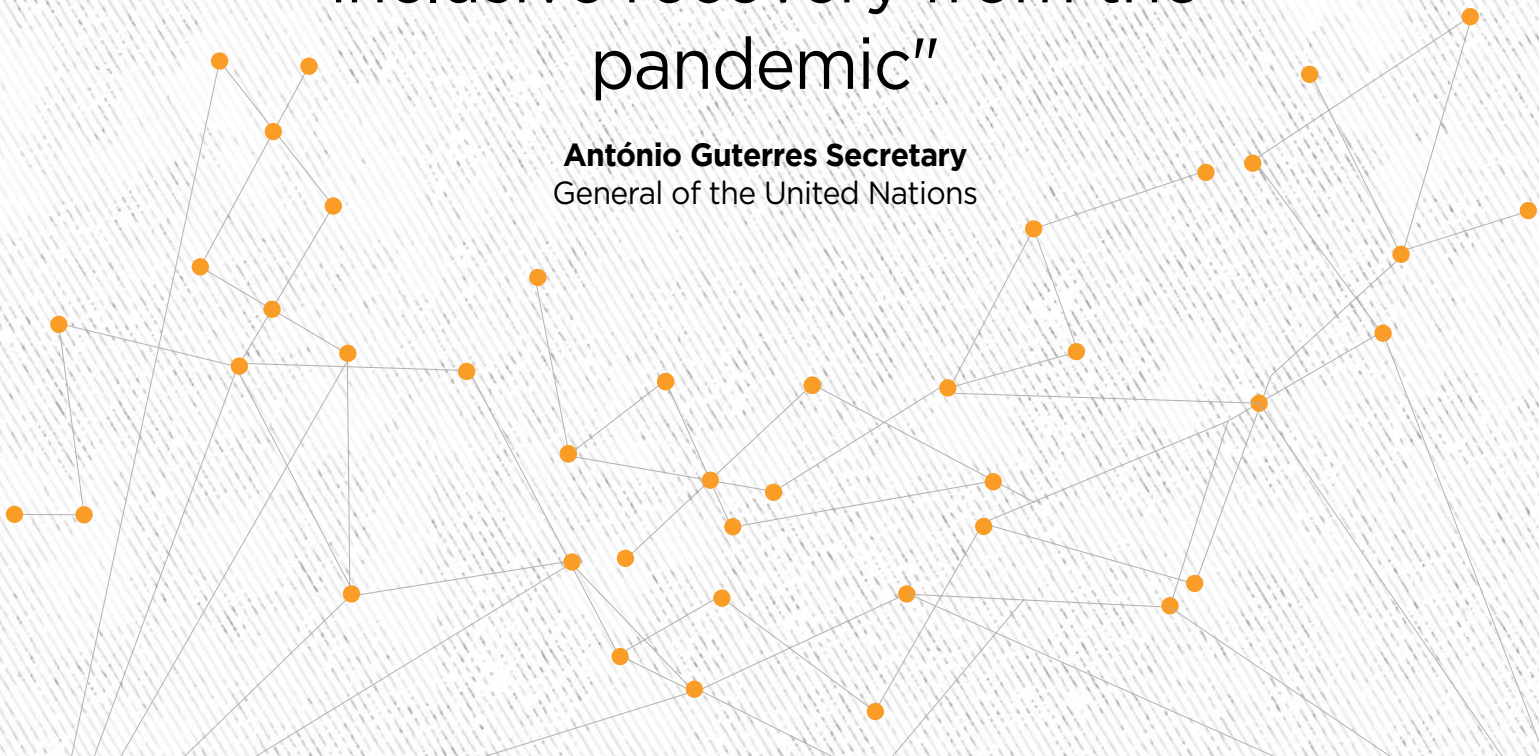
# LOCAL

is the space where we  
connect the dots.



"Cities and towns can  
spearhead innovations  
to bridge the inequality  
gaps, deliver climate action  
and ensure a green and  
inclusive recovery from the  
pandemic"

**António Guterres Secretary**  
General of the United Nations





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