

Advancing SDGs in the UAE: Policies, Challenges, and Strategies for Inclusive Sustainability

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Abstract

This study provides an in-depth analysis of the United Arab Emirates' (UAE) commitment to achieving the United Nations' Sustainable Development Goals (SDGs), focusing on the nation's policies, challenges, and strategic priorities. Through a mixed-methods approach that includes a comprehensive literature review and a survey of policymakers, government officials, academics, and private sector employees, the research assesses the UAE's progress towards the SDGs. The findings highlight significant achievements in various areas, alongside persistent challenges such as limited public awareness, resource constraints, and policy gaps. Respondents emphasize the need to enhance public education on the SDGs, invest in renewable energy, strengthen partnerships, and promote gender equality. The study concludes that while the UAE has made notable strides in its SDG journey, further efforts in public engagement, sustainable investments, and collaborative partnerships are essential to optimize the country's sustainable development trajectory and contribute to global SDG attainment. Future work is recommended to explore the development and effectiveness of targeted public awareness programs, assess the long-term impacts of renewable energy investments, and investigate strategies to enhance intersectoral collaboration and gender equality initiatives.

Keywords: UAE, SDGs; public awareness; renewable energy; gender equality; policy gaps; sustainable investments; partnerships; inclusive sustainability.

Introduction

The UAE has begun a transformative journey toward achieving the United Nations SDGs. With a steadfast commitment to sustainability and a proactive approach to addressing global challenges, the UAE has emerged as a regional and international exemplar in advancing these critical goals. Establishing the National Committee on SDGs in 2017 marked a significant milestone in the UAE's pursuit of sustainability. Composed of representatives from various ministries and government bodies, this committee plays a pivotal role in orchestrating the implementation of the SDGs. Each ministry assumes responsibility for specific SDGs, ensuring a well-coordinated and comprehensive approach to the nation's sustainable development agenda. This article delves into the UAE's progress and challenges

in its SDG journey, examining key areas where remarkable strides have been made and persistent challenges remain. From addressing water scarcity to promoting responsible consumption and mitigating climate change, the UAE's multifaceted efforts span across diverse domains. One noteworthy achievement is the UAE's distinction as one of only three countries globally to achieve a green score for SDG 1—Zero Poverty. This accomplishment underscores the nation's dedication to eradicating poverty through comprehensive and effective policies. Furthermore, the UAE's proactive stance on climate action and affordable clean energy, as reflected in SDG 13 and SDG 7, aligns with the goals of the Paris Agreement. The UAE has ratified the agreement and set forth ambitious targets, including a midcentury net-zero emissions goal, demonstrating its commitment to addressing climate change comprehensively. The UAE has made significant progress in its commitment to the UN SDGs. In 2017, the UAE established the National Committee on SDGs, which is responsible for overseeing the implementation of the goals. The committee is composed of representatives from relevant ministries and government bodies. Each ministry is responsible for a specific set of SDGs. For example, the Ministry of Energy and Industry is responsible for Goal 6 (Clean Water and Sanitation), while the Ministry of Climate Change and Environment is responsible for Goals 12 (Responsible Consumption and Production) and 13 (Climate Change). The UAE has made significant progress in achieving some of the SDGs. For example, the country has reduced its water consumption per capita by 40% since 2010. However, the UAE has also faced some challenges in achieving the SDGs. For example, no UAE cities are included in the top 100 of the ARCADIS Sustainable Cities Index. In response to these challenges, the UAE government has launched several initiatives to improve sustainability. For example, the Water Security Strategy 2036 aims to enhance water productivity and alleviate water scarcity. The strategy includes measures such as reducing water demand, increasing treated wastewater reuse, and expanding water storage. The Dubai Electricity and Water Authority (DEWA) is also playing a leading role in the UAE's sustainability efforts. DEWA has reduced moderate carbon dioxide CO₂ emissions and minimized water and electricity losses. The organization is also committed to generating 25% of its electricity from renewable sources by 2030 and 75% by 2050. The UAE's commitment to the SDGs is evident in the strategic efforts of the government and its partners. These efforts are essential to ensuring a sustainable future for the country and its people.

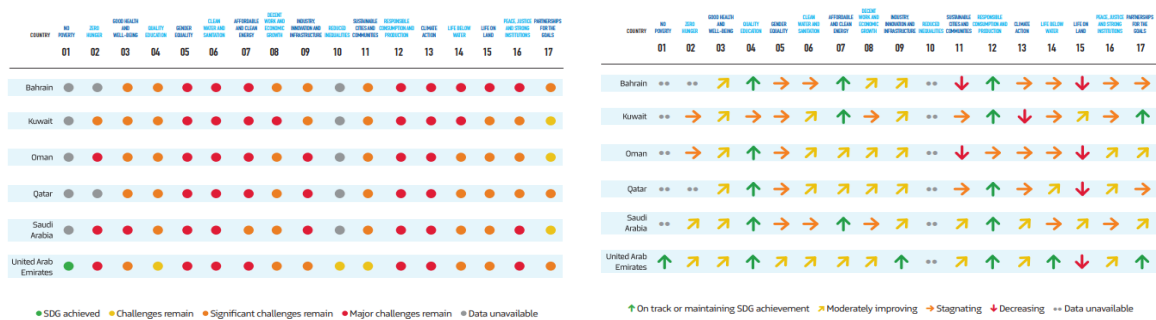


Figure 1: SDG Trend Dashboard for the Gulf Cooperation Council The 2022 Arab Region SDG Index

The UAE stands out as one of the world's leading countries in achieving a green score on an SDG, particularly excelling in SDG 1, which aims to eradicate poverty. This accomplishment is underscored by positive green scores across all indicators related to poverty alleviation, see fig 1. As the UAE has already hosted COP 28, climate action

has become an even more prominent commitment on the regional agenda, solidifying the nation's dedication to advancing sustainable practices and addressing climate challenges.

The UAE's strategic position allows it to leverage the synergies between the SDGs and the objectives of the Paris Agreement. This alignment positions the region optimally to tackle a myriad of challenges, including poverty, gender inequality, pollution, and climate change, through comprehensive and harmonious actions.

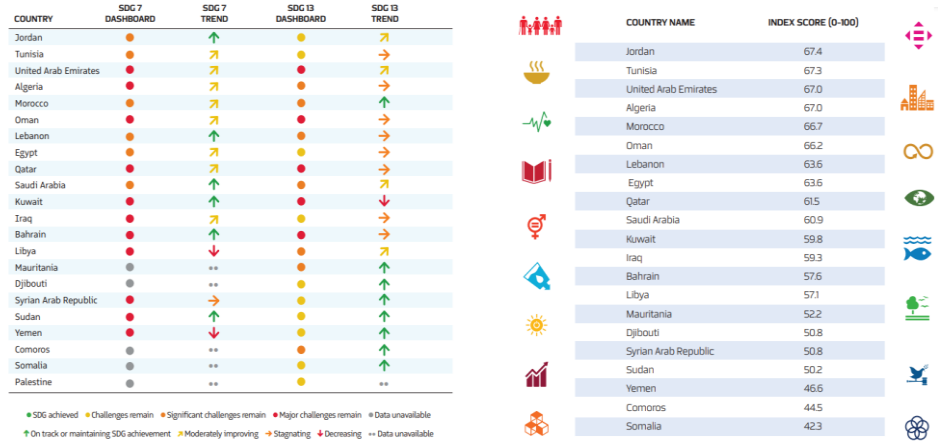


Figure 2: Arab countries Progress toward SD 7 and 13.

When it comes to SDG 13, which focuses on Climate Action, and SDG 7, which centers on Affordable and Clean Energy, the UAE's progress, as indicated by the 2022 regional Index, shows a moderately increasing trajectory toward these goals. This trajectory signals the UAE's commitment to addressing climate change and ensuring access to clean energy, see fig 2. Moreover, the UAE has taken substantial steps in the fight against climate change by ratifying the Paris Agreement on climate change in 2022. Alongside this commitment, the country has submitted nationally determined contributions (NDCs) that outline ambitious targets and plans at the national level, aimed at both mitigating and adapting to the impacts of climate change. Notably, in 2021, the UAE announced a midcentury goal of achieving net-zero emissions, further solidifying its dedication to combatting climate change and fostering a sustainable future.

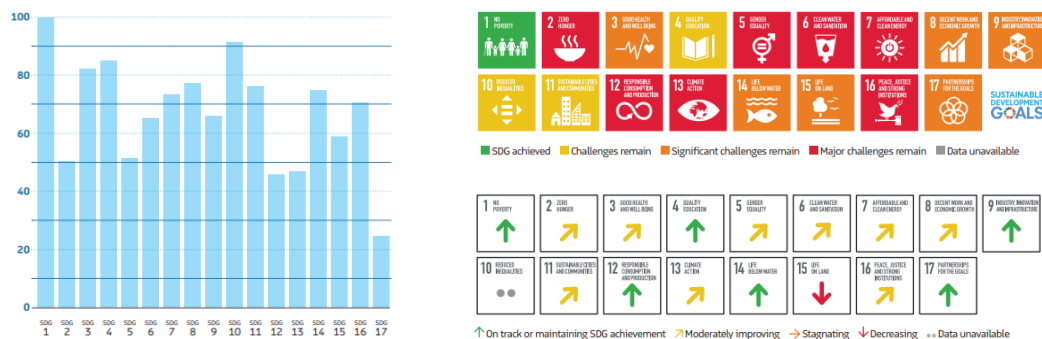


Figure 3: The UAE performance indicators for each of the SDGs.

From figure 3, we can see that the country has exhibits notable achievements and challenges across various SDGs indicators, reflecting its commitment to sustainable development. In terms of SDG1 - End Poverty, the UAE has made

remarkable progress, with a very low poverty headcount ratio at both \$1.90/day (0.2%) and \$3.20/day (0.3%). Moreover, the prevalence of working poor at PPP\$3.20 a day is relatively low at 0.4%, indicating a small portion of the population engaged in low-wage employment. The UAE demonstrates a relatively low prevalence of undernourishment (3.1%), reflecting a strong commitment to food security. However, a concerning aspect is the high prevalence of obesity, with 31.7% of the adult population having a BMI \geq 30. This highlights the need for addressing lifestyle and dietary factors. On the agricultural front, cereal yield stands at 27.6 t/ha, indicating productive agriculture, and the Sustainable Nitrogen Management Index suggests moderate sustainability efforts at 1.2. The UAE excels in various health indicators. Low maternal and neonatal mortality rates, as well as a low under-5 mortality rate, underscore the effectiveness of its healthcare system. Additionally, the country reports a low incidence of tuberculosis (1.0 per 100,000 population) and boasts a high life expectancy at birth (76.1 years). The Universal Health Coverage Tracer Index indicates substantial progress toward universal healthcare (76). Despite these positive indicators, the UAE faces challenges, such as a relatively high prevalence of diabetes (16.3%) and moderate age-standardized suicide rates (5.2 per 100,000 population). The country demonstrates strong educational access and outcomes. Near-universal net primary enrollment (99.8%) and high literacy among youth (99.4% of 15–24-year-olds) reflect the nation's investment in education. However, lower secondary completion rates (81.7%) and moderately harmonized test scores (448.0) indicate room for improvement in educational outcomes. Gender equality (SDG5) is notable in the UAE, with a demand for family planning satisfied by modern methods (59.5%), a balanced female-to-male mean years of schooling ratio (94.4), and women holding 50.0% of seats in national parliaments. The country ensures high percentages of its population have access to basic drinking water (98.0%) and sanitation services (98.6%). However, the country faces challenges related to freshwater withdrawal and wastewater treatment. Scarce water consumption embodied in imports is also an area for consideration at 91.4 m³/capita (Vaidian et al., 2019; Al-Naqbi & Hazza, 2023).

UAE's Commitment to SDGs

The UAE has made efforts to address poverty and promote the "Leave No One Behind" principle in response to the COVID-19 pandemic. This principle emphasizes transparency, trust, and equal healthcare, particularly for vulnerable populations like the homeless. The UAE's commitment to this principle aligns with SDG 1 to end poverty and SDG 3 for good health and well-being. SDG 1 aims to eradicate extreme poverty for citizens living on less than \$1.25 daily, reduce the proportion of people living in poverty, and build resilience among low-income groups. The UAE has implemented various policies and initiatives to combat poverty, focusing on education, equal employment, social support, business financing, and charity. Investments in education, such as the Education 2020 strategy plan, aim to provide equal learning opportunities for all Emiratis, breaking the cycle of poverty. Employment initiatives like Emiratisation and labor protection laws seek to improve job opportunities and working conditions, particularly for minority groups. Social and financial support is offered through the Ministry of Community Development and enterprise development initiatives, including the Abu Dhabi Fund for Development (ADFD). However, the UAE faces challenges in achieving SDG 1 due to the residual impacts of the COVID-19 pandemic, high infection rates among expatriates, economic instability, and wealth inequalities. These challenges have disproportionately affected low-

income citizens, necessitating increased resource allocation to protect vulnerable populations from economic shocks. One major obstacle is the widening wealth gap, with a small number of wealthy individuals owning a significant portion of the nation's wealth. The pandemic exacerbated this issue, particularly impacting those in the informal sector. Addressing wealth inequalities is crucial for sustainable efforts to end poverty among disadvantaged citizens.

SDG2 - Zero Hunger. The UAE presents an interesting combination of factors. On one hand, the country has a relatively low prevalence of undernourishment, indicating that a significant portion of its population has access to an adequate food supply. However, the UAE faces challenges related to a high prevalence of obesity. This suggests that while there may be enough food available, there are issues related to the quality and balance of diets. Additionally, the UAE exhibits a moderate level of cereal yield, indicating its capability to produce a substantial amount of cereal crops, although there may be room for improvement in agricultural productivity. The sustainable nitrogen management index, a measure of responsible agricultural practices, suggests that the UAE is mindful of environmental sustainability in its food production. One notable aspect is the moderate human trophic level, which relates to dietary habits and resource consumption. The high prevalence of obesity alongside this metric may indicate a need for better nutritional education and dietary choices to promote healthier eating habits among the population.

SDG3 - Good Health and Well-Being. The country has impressive health outcomes, with very low rates of maternal, neonatal, and under-5 child mortality. Tuberculosis is also rare, and there are low death rates from chronic diseases and traffic accidents. Additionally, people in the country tend to live long, healthy lives. However, there are challenges to address, such as a high prevalence of obesity, diabetes, and moderate suicide rates. In terms of maternal and child health, the UAE aims to reduce global maternal mortality rates and prevent child deaths. The government invests in healthcare, particularly preventive care and partnerships for medical advancements. Additionally, the expansion of healthcare facilities and cities, including specialized care for individuals with special needs, is a priority. The COVID-19 pandemic prompted the UAE to implement various mitigation initiatives, such as the National Disinfection Program and the Law of Strategic Stock of Food Commodities to ensure food reserves for vulnerable populations during the crisis. Despite these achievements and efforts, the UAE faces challenges in optimizing its health sector. The nation's demographic diversity, with a significant expatriate workforce, creates fluctuations in the labor market.

Turning to SDG4 - Quality Education. The country demonstrates high net primary enrollment and literacy rates, indicating widespread access to primary education. However, there is room for improvement as the lower secondary completion rate is moderate, suggesting some students do not complete their lower secondary education. Nevertheless, the UAE exhibits a high gross enrollment ratio for pre-primary education, emphasizing the importance of early childhood education. The UAE's commitment to achieving SDG 4 is evident in its investments in smart learning and online education. These initiatives have played a pivotal role in supporting the SDGs, particularly by bridging the digital divide and enhancing access to online learning materials. The country's efforts extend beyond its borders, actively promoting the SDGs on a global scale, including collaborations with international organizations like UNIDO (SDG 9), FAO (SDG 2), WHO (SDG 3), and initiatives against electronic waste (SDG 12). One of the UAE's significant contributions to advancing the SDGs is its focus on technology in education. The Ministry of Education has launched initiatives like the "Smart Learning Program" and "Smart Classrooms" to provide digital resources and training for teachers, fostering a technology-driven educational environment. The Mohammed bin Rashid Smart

Learning Initiative, launched in 2012, aimed to equip all schools with tablets, smart classrooms, and high-speed 4G networks. Additionally, the UAE government introduced the "Distance Learning Program" to ensure access to online education during school closures or disruptions. Furthermore, private schools and universities in the UAE have embraced technology in education, offering online and blended learning options. They invest in e-learning platforms and digital content to enhance the overall learning experience (Aljaradin et al., 2024).

In SDG5 - Gender Equality. The country exhibits a moderate level of demand for family planning satisfied by modern methods, suggesting that family planning services are accessible to a significant portion of the population. Additionally, the UAE records a high female-to-male mean years of schooling, indicating that women have access to education and are pursuing their studies alongside their male counterparts. However, there are areas where gender equality still faces challenges in the UAE. Despite having a relatively high proportion of women in national parliaments, the female-to-male labor force participation ratio remains moderate. This suggests that while women are actively engaged in political representation, there may be barriers or factors affecting their participation in the workforce. To address gender equality comprehensively in the UAE, efforts can be directed towards promoting greater women's participation in the labor force and creating an enabling environment for women to balance work and family responsibilities. This might include initiatives such as improving workplace policies and providing support for childcare services to facilitate women's workforce participation.

SDG6 - Clean Water and Sanitation. In UAE, there is a noteworthy advancement in ensuring a substantial proportion of the population has access to fundamental drinking water and sanitation services. This development signifies that a considerable number of residents have the privilege of accessing clean and safe water sources along with appropriate sanitation facilities. Nevertheless, the UAE's scenario presents a critical concern regarding its extensive freshwater extraction in relation to its total renewable water resources. This pattern suggests a potential overconsumption of water, which may impose stress on the nation's natural water reserves, posing challenges for future sustainability. The prudent management of water resources is paramount, alongside the exploration of innovative strategies aimed at curtailing excessive water usage capita (Vaidian et al., 2019; Al-Naqbi & Hazza, 2023).

The country exhibits a moderate performance in the domain of anthropogenic wastewater treatment, showcasing efforts towards the management and treatment of wastewater originating from diverse sources. The importance of efficient wastewater treatment is underscored by its critical role in safeguarding environmental integrity and public health. The UAE's engagement with various wastewater reuse technologies is evident in pioneering projects across Masdar City, Al Wathba 2 plant in Abu Dhabi City, and the Jebel Ali Sewage Treatment Plant (JASTP) and Al Warsan Sewage Treatment Plant (WSTP) in Dubai. An encouraging aspect is the low mortality rate associated with unsafe water, inadequate sanitation, and poor hygiene practices, reflecting the UAE's success in providing safe water and sanitation infrastructure that significantly mitigates water-related health hazards.

Furthermore, the UAE demonstrates a robust commitment to enhancing its wastewater infrastructure, as evidenced by substantial budget allocations for projects like Dubai's Deep Tunnel. This ambitious project aims to consolidate rainwater and surface groundwater storage across the emirate, aiming to supplant over 121 sewerage pumping stations and secure a sustainable water supply for the forthcoming century. Abu Dhabi's initiative to construct the world's longest waste tunnel by 2030 further exemplifies this commitment, intending to streamline wastewater conveyance to

treatment facilities via an extensive network. Dubai's visionary goal to augment its recycled water output to surpass 8 billion cubic meters by 2030 highlights a steadfast dedication to sustainable water management and environmental preservation. The UAE has invested significantly in research and the application of cutting-edge technologies. The adoption of artificial intelligence and remote sensing for water quality studies, groundwater fluctuations, rainfall patterns, and the impacts of climate change represents a proactive approach. Studies have also delved into seawater intrusion into aquifers, assessing its implications on groundwater quality and small-scale agriculture (Sherif et al., 2023). The combined pressures of population growth, rapid urbanization, and agricultural expansions, especially within the context of the Gulf Cooperation Council (GCC's) countries arid environment, have placed considerable strain on the water supply system. These challenges have necessitated the utilization of medium-quality brackish water in agriculture, reflecting adaptive strategies to the region's water scarcity (Sherif et al., 2023).

The domestic sector's water consumption, representing 13% of the total usage and marked by the world's highest per capita consumption, underscores the urgency for efficient water management practices. The evolution of new AI technologies has significantly enhanced water monitoring and management capabilities, offering sophisticated solutions for treatment system optimization, leak detection, and water quality improvement (Al-Naqbi & Hazza, 2023). Guided by innovative strategies, the UAE's policies aim to foster innovation, integrate water management practices, and mitigate water security risks. This strategic vision is supported by the development of comprehensive water sustainability frameworks that project water demand and consumption patterns over a twenty-year horizon, ensuring a resilient and sustainable water future for the nation (Al-Naqbi & Hazza, 2023).

SDG 7- Affordable and Clean Energy. The country has adopted a comprehensive Energy Strategy 2050. This ambitious plan outlines targets for energy production, with the aim of sourcing 44% of energy from clean sources, 38% from natural gas, 12% from clean coal, and 6% from nuclear energy. To support these objectives, the UAE is committed to investing AED 600 billion by 2050 to fortify its energy sector and accommodate the demands of a growing population and economy (Ministry of Economy UAE, 2022). The UAE also diligently tracks its progress in energy sustainability using the Energy Trilemma Index, which evaluates countries based on three vital dimensions: energy security, energy equity, and environmental sustainability (Ministry of Economy UAE, 2022). In 2017, the UAE ranked 40th in the Energy Trilemma Index, with scores of 21 in energy security, 14 in energy equity, and 116 in environmental sustainability. Remarkably, by 2022, the UAE significantly improved its standing, securing the 26th spot with scores of 57 in energy security, 3 in energy equity, and 91 in environmental sustainability (WEC Energy Trilemma Index, 2022). Nevertheless, the UAE's energy sector faces substantial challenges, including rapid population growth, the imperative of accommodating economic expansion, and climate-related factors such as high temperatures and air quality concerns (Derhally, 2022).

SDG10 - Reduced Inequalities. The country displays moderate levels of income inequality, as indicated by metrics like the Palma ratio and Gini coefficient. These measurements are essential for understanding wealth and income distribution within the UAE, as they provide valuable insights into the economic disparities that exist among its diverse population. The UAE is known for its economic prosperity and rapid development over the past few decades, which has attracted a substantial expatriate workforce to contribute to the nation's growth. However, this economic growth has also resulted in varying income levels, with a portion of the population enjoying significant wealth while others

may face income challenges. Efforts to address these inequalities have been ongoing, with the government implementing various policies and initiatives aimed at reducing income disparities and ensuring that economic opportunities are accessible to a broader range of citizens and residents. Some of these initiatives include Emiratization policies that seek to promote the employment of UAE nationals in various sectors, social support programs to assist those in need, and measures to protect labor rights and improve working conditions.

SDG 11- Sustainable Cities and Communities. The country has embraced the concept of sustainable urban development to mitigate environmental harm and elevate living standards. Dubai stands out as a shining example of urban transformation, where the arid desert landscape has been reimagined into a futuristic metropolis, complete with some of the world's tallest skyscrapers. The commitment to sustainable development permeates all sectors, particularly in the realm of construction, where efforts are consistently made to balance economic growth with environmental preservation. The UAE government's vision is centered on creating smart, eco-friendly cities, aligning with its broader national strategy to become the "most sustainable city in the world" by 2021. This ambition extends beyond Dubai, as other Emirates also strive to develop their sustainable urban areas. Policies and initiatives have played a pivotal role in advancing SDG 11 in the UAE. Some of these include establishing a legal framework for public-private partnerships to fund crucial infrastructure projects, launching ambitious mangrove planting projects to protect coastal environments and biodiversity, and implementing urban plans like the Dubai Urban Plan 2040, which promotes sustainable transportation, green spaces, and interconnected communities. Additionally, community councils have been formed to engage residents in the urban planning process. Furthermore, innovative projects, such as cool pavements and rubberized asphalt for highways, have been introduced to combat urban heat island effects and create more sustainable roads. The UAE has also dedicated resources to monitor and improve air quality in construction projects. Despite these significant strides, the UAE faces several challenges in achieving SDG 11. These include the need for shared accountability among stakeholders, raising awareness and knowledge about SDGs, addressing workforce training and capability gaps, and fully integrating SDGs into the Ministry of Energy and Infrastructure's design processes. Establishing a national urban observatory and collecting relevant data to establish baseline Key Performance Indicators (KPIs) are also ongoing challenges.

SDG12 - Responsible Consumption and Production. The UAE has made commendable progress in certain aspects of responsible consumption and production but also faces challenges in achieving a more sustainable balance. One notable aspect is the UAE's moderate municipal solid waste generation, which signifies a commitment to managing waste responsibly. The nation has invested in waste management infrastructure and initiatives to reduce waste generation, increase recycling rates, and minimize the environmental impact of waste disposal. However, challenges persist in further reducing waste generation, especially in the face of population growth and increased consumption. Similarly, the moderate levels of nitrogen emissions embodied in imports indicate the UAE's recognition of the environmental footprint associated with its consumption patterns. Efforts to reduce nitrogen emissions are crucial for mitigating air and water pollution. Nevertheless, achieving significant reductions remains challenging due to the country's dependence on imports and its role as a global trade hub. E-waste generation and sulfur dioxide (SO₂) emissions at moderate levels highlight areas where the UAE must remain vigilant. Managing electronic waste is essential for preventing environmental contamination and safeguarding human health, particularly as the use of

electronic devices continues to rise. Addressing SO₂ emissions is vital for air quality and environmental protection. One of the challenges the UAE faces in SDG 12 is the need to further enhance sustainable consumption and production patterns. Balancing the rapid economic growth, increased urbanization, and rising consumer demands with environmental sustainability remains a delicate task. Encouraging responsible consumer behavior, reducing overconsumption, and promoting circular economy principles are ongoing challenges. Additionally, promoting sustainable practices in industries and supply chains is essential. The UAE's role as a global trade and logistics hub necessitates a robust framework for sustainable sourcing and production, including responsible sourcing of raw materials and energy-efficient manufacturing processes.

In SDG13 - Climate Action, the UAE. The UAE's approach to climate action is characterized by moderate CO₂ emissions from fossil fuels and low CO₂ emissions embodied in imports, yet it also faces notable challenges in its pursuit of more sustainable practices. The UAE's moderate CO₂ emissions from fossil fuels indicate a level of commitment to mitigating climate change. The nation has taken steps to diversify its energy mix, invest in renewable energy sources, and improve energy efficiency, which has helped limit the growth of CO₂ emissions from fossil fuels. Initiatives like the UAE's Energy Strategy 2050, which aims to increase the share of clean energy in its total energy mix, demonstrate a forward-looking approach to reducing greenhouse gas emissions. However, the UAE still relies heavily on fossil fuels for its energy needs, and addressing this dependence remains a significant challenge. Low CO₂ emissions embodied in imports highlight the UAE's relatively small contribution to global emissions through its consumption of imported goods. While this is a positive aspect, the UAE's status as a global trade and logistics hub means it plays a role in the supply chains of products with varying carbon footprints. Balancing the economic benefits of global trade with the need for sustainable consumption patterns is an ongoing challenge. Challenges related to climate action in the UAE include the need for further reducing carbon emissions from its energy sector and transitioning to more sustainable energy sources. Despite progress in renewable energy adoption, the nation's heavy reliance on fossil fuels presents challenges in aligning with international climate goals. Additionally, addressing water scarcity, which is exacerbated by climate change, is a pressing issue in the UAE. Strategies for sustainable water management and conservation are essential components of climate resilience.

DG14 - Life Below Water. The UAE due to the nation's reliance on its coastal and marine ecosystem for various economic, social, and environmental purposes. The UAE's coastlines serve multiple sectors, including port operations, petrochemical industries, and desalination plants. Balancing the preservation of marine resources while meeting the demands of these diverse sectors is a crucial challenge addressed by the UAE's Ministry of Climate Change and Environment (MOCCA) in collaboration with public and private partners. To achieve SDG 14, the UAE has implemented several policies and initiatives aimed at sustainable marine development. The foundation of the country's fisheries law is the modified Federal Law 23 of 1999, which sets the stage for achieving fisheries sustainability. The National Framework Statement (2019–2030) emphasizes environmentally friendly fisheries supported by social and economic factors to ensure sustainability. The UAE launched the National Plan for Conservation and Management of Sharks from 2018 to 2021, focusing on the protection of rays and sharks. Simultaneously, the National Plan for the Conservation of Marine Turtles, covering the same period, aimed to safeguard marine turtles and their habitats in the nation's waters. The UAE is also a global leader in mangrove habitat conservation through the Mangroves Alliance

for Climate Change (MAC), aiming to reduce climate change impact and promote mangrove habitat preservation, restoration, and expansion. Approximately 12.01% of the UAE's coastal and maritime regions are protected, and the nation recognizes 16 federally designated marine natural areas. MOCCA's strategic plans prioritize maintaining marine water quality to enable global sustainable development, closely aligned with SDG 14. Their efforts have resulted in achieving 81% of the marine water quality monitoring program. However, the UAE faces challenges in implementing SDG 14. The effects of climate change and extreme weather events on the maritime environment require vigilant monitoring and adaptation efforts. A lack of historical data on biodiversity can hinder the development of programs focused on marine biodiversity conservation and species protection. There may be misunderstandings about species and their ecosystems due to insufficient understanding of the value of biodiversity. An example of sustainable initiatives in the UAE is the Jumeirah Group, which emphasizes sustainability across various KPIs, including resource management, community well-being, sustainable supply chains, environmental preservation, and workers' welfare. Specifically, the group contributes to SDG 14 - Life Below Water by funding programs like the Dubai Turtle Rehabilitation Program and establishing rehabilitation lagoons, promoting marine life preservation.

SDG 15 - Life on Land, reflects the UAE's environmental position with moderate terrestrial and freshwater biodiversity threats related to imports, coupled with a commendable high Red List Index, signifying species survival. Protected areas play a pivotal role in global conservation efforts, serving multifaceted purposes that extend beyond ecological significance. These sanctuaries are essential for conserving biodiversity, providing crucial ecosystem services, and acting as buffers against natural disasters. Moreover, they hold cultural and emotional value for local communities and serve as places of solace and connection with nature. Protected landscapes also preserve cultural heritage and showcase sustainable land management practices while supporting research and education. Economically, they contribute to local and regional economies through tourism and leisure. In the UAE, particularly in Dubai, protected areas are diverse and contribute to various SDGs. For instance, they align with SDG 14 by preserving marine biodiversity and supporting sustainable fisheries in marine and coastal areas. Additionally, these protected regions combat land degradation and conserve terrestrial ecosystems, supporting SDG 15's goal of protecting life on land. Furthermore, safeguarding water catchment areas in these regions contributes to SDG 6 by ensuring access to clean water and sanitation. Protected areas also promote responsible consumption (SDG 12) through ecotourism initiatives, and their sustainable tourism offerings enhance the quality of urban life (SDG 11). By sequestering carbon dioxide, they contribute to climate change mitigation (SDG 13) and, as educational hubs, raise environmental awareness (SDG 4) while positively impacting mental and physical well-being (SDG 3). Moreover, these protected spaces create livelihood opportunities for local communities, addressing SDG 1's goal of reducing inequalities, and contribute to economic growth through sustainable practices (SDG 8). By fostering partnerships, governance, and regulatory enforcement, protected areas align with SDG 16's objective and serve as centers for community engagement, addressing inequalities (SDG 10) and potentially supporting sustainable agriculture (SDG 2). They also inspire innovative practices (SDG 9), exemplifying the power of collaboration and aligning with the overarching goal of SDG 17 for cross-sector partnerships to achieve sustainable development. An example of this can be seen in Dubai's natural desert reserves, which are part of its protected areas network. These reserves showcase the emirate's commitment to preserving its natural heritage while contributing to multiple SDGs through conservation efforts, sustainable tourism,

and Dubai has made significant strides in preserving its natural heritage through the establishment of various protected areas and nature reserves, which align with international sustainability goals. The Dubai Municipality, particularly the Dubai Municipality Environment Sustainability Department (DM-ESD), plays a pivotal role in managing and safeguarding these reserves. The emirate boasts six desert reserves, each with unique ecological features, contributing to eco-tourism, scientific research, and biodiversity protection. Jabal Nizwa Reserve, Al Marmoum Desert Reserve, Al Wuhush Desert Reserve, Al Ghaf Reserve, Hatta Reserve, and Dubai Desert Conservation Reserve (DDCR) exemplify Dubai's dedication to preserving diverse ecosystems. These reserves provide habitats for a wide range of plant and animal species, including endangered ones, and contribute to environmental awareness, scientific research, and sustainable tourism. Dubai has also implemented innovative strategies to ensure the sustainability of these protected areas. These include the use of solar power, waste recycling, controlled visitor access, enhanced guide training, and mitigating environmental pressures. These measures aim to strike a balance between preserving the natural environment and promoting responsible tourism. Community participation is essential for the success of these conservation efforts, aligning with Sustainable Development Goal 15, which focuses on preserving terrestrial ecosystems and combating biodiversity loss. Engaging local communities enriches decision-making processes, enhances policy relevance, and safeguards indigenous knowledge. Community engagement initiatives.

SDG16 - Peace, Justice and Strong Institutions indicates. The UAE demonstrates low homicide rates and a minimal number of unsentenced detainees, indicating a commitment to maintaining law and order within the country. Additionally, a significant portion of the population in the UAE reports feeling safe at night, highlighting the efforts made by the government to ensure the safety and security of its residents and visitors. Property rights in the UAE are well-protected, with a high score indicating a robust legal framework for property ownership and protection. Birth registrations with civil authorities are also high, signifying the efficient functioning of civil registration systems, which is essential for ensuring the legal identity of individuals. Moreover, the UAE performs well in the Corruption Perception Index, reflecting a strong commitment to transparency and combating corruption within its institutions. This commitment to good governance and anti-corruption measures contributes to the overall strength of institutions in the country.

Finally, SDG17 - Partnerships for the Goals. The UAE is distinguished by its high Corporate Tax Haven Score, underscoring its appeal as a conducive environment for business and investment. This attribute dovetails with the UAE's overarching economic strategy aimed at cultivating a business-friendly milieu to spur economic development and foster international collaborations. Additionally, the nation secures a moderate ranking in the Statistical Performance Index. This indicates a commendable proficiency in data acquisition, management, and statistical dissemination, an aspect vital for enlightened decision-making and the facilitation of both domestic and international cooperative ventures in sustainable development pursuits. The UAE's extensive international relations network is instrumental in cultivating partnerships and forging international agreements that pave the way for sustainable projects and initiatives benefiting a broad spectrum of stakeholders (Writer, 2024).

A pivotal study released by IRENA in 2018 on the geopolitical ramifications of renewable energy has delineated multiple mechanisms that intertwine renewable energy with geopolitics. These mechanisms encompass geopolitical tensions arising from the supply chain of materials, owing to the scarcity of rare earth resources and their distribution.

They also include challenges related to the transfer of new technologies to developing countries and economic destabilizations resulting from shifts between traditional energy producers and emergent ones. Foreign policy and diplomatic endeavors are crucial for positioning the UAE advantageously within the domestic energy sector and the broader global energy transition. This transition is influenced by various factors, including global energy market dynamics, a country's role as an importer or exporter of energy, its status as a technology developer or purchaser, and its reliance on electricity. The shift towards a more diversified energy mix is expected to instigate dynamic alterations in competition and cooperation on the global stage (Luomi, 2018).

From its inception until 2019, the UAE has contributed over USD 80 billion in aid, positioning itself as the premier global foreign aid donor annually since 2013. This philanthropic leadership has not only bolstered the UAE's international standing but also epitomized the effective execution of its political and economic objectives, significantly enhancing its soft power strategy. The nation's commitment to countering extremism is exemplified through its participation in the Organisation for Economic Co-operation and Development's Development Assistance Committee (OECD DAC), which supports the formulation and execution of development cooperation programs. Furthermore, the UAE, in collaboration with the USA, established the Sawab Center, aimed at thwarting terrorist recruitment and propaganda efforts (UAE & US Launch Sawab Center – New Digital Communications Hub to Counter Extremist Propaganda | UAE Embassy in Washington, DC, 2023). In 2017, the UAE's international aid efforts culminated in providing USD 5.3 billion to 147 countries worldwide, marking its recognition as the foremost official development aid donor globally for the fifth consecutive year (Krzymowski, 2022). The UAE's triumphs in international cooperation are also reflected in the establishment of the International Renewable Energy Agency (IRENA) in 2011, with its headquarters based in the UAE, signifying a major stride towards global renewable energy advocacy (Øverland & Reischl, 2018). This comprehensive approach to fostering global partnerships underlines the UAE's strategic efforts in leveraging its economic policies and diplomatic relations to champion SDGs on the international stage.

Methodology

This research adopted a mixed methods approach to comprehensively investigate the UAE's progress, challenges, and strategic priorities in achieving the SDGs. An extensive literature review was conducted to analyze existing research, policies, initiatives, and progress reports pertaining to the UAE's pursuit of the SDGs. This provided a foundational understanding of the country's SDG landscape. A structured survey was designed to gather primary data from a diverse sample of policymakers, government officials, academics, and private sector employees. The survey explored respondents' perceptions of the UAE's SDG progress, challenges, and priorities. Quantitative data from the survey was analyzed using descriptive statistics to identify patterns and trends in respondents' perceptions. The data was analyzed thematically to uncover underlying themes and insights.

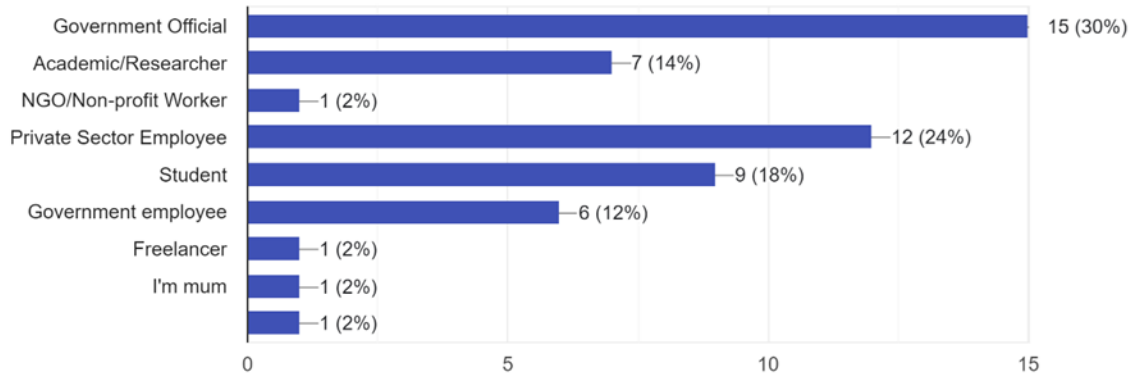


Figure 4: Distribution of survey respondents by occupation

The survey was distributed to a diverse sample of individuals across various occupational backgrounds. As depicted in Figure 4, government officials constituted the largest respondent group (30%), followed by private sector employees (24%) and students (18%). Academics/researchers and government employees comprised 14% and 12% of respondents, respectively. The remaining categories represented smaller proportions of the sample. This diverse representation enhances the study's generalizability and provides a comprehensive understanding of stakeholder perspectives on the UAE's SDG journey.

Results and Discussion

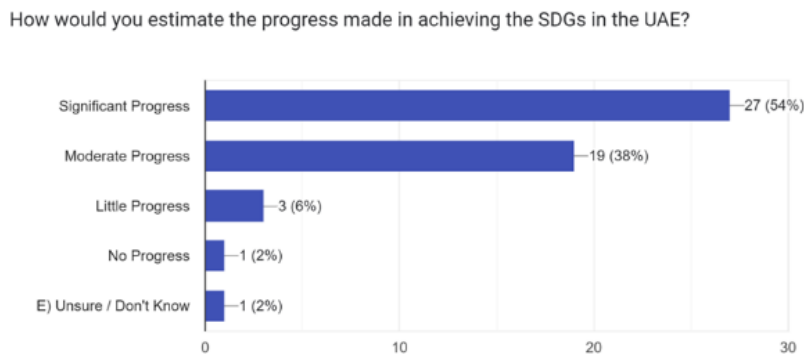


Figure 5: Progress made in achieving the SDGs in the UAE

Figure 5 presents survey respondents' perceptions of progress made in achieving the SDGs in the UAE. The results indicate a generally optimistic outlook, with a clear majority (54%) perceiving significant progress. This is followed by a substantial proportion (38%) who believe moderate progress has been achieved. Conversely, a small minority reported little progress (6%), while an even smaller fraction indicated no progress (2%) or expressed uncertainty (2%).

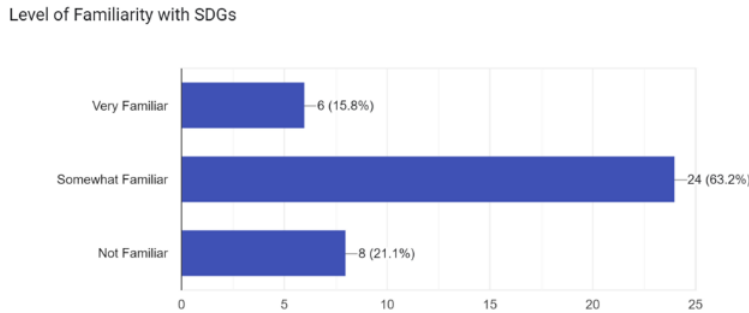


Figure 6: Progress made in achieving the SDGs in the UAE

Figure 6 illustrates the perceived level of organizational preparedness for AI&ET adoption. The data reveals a notable disparity, with a significant majority of respondents (63.2%) indicating some familiarity with the concept. However, a substantial portion (21.1%) expressed being not familiar at all, highlighting a knowledge gap. A smaller group (15.8%) reported being very familiar, suggesting a range of understanding within the surveyed population.

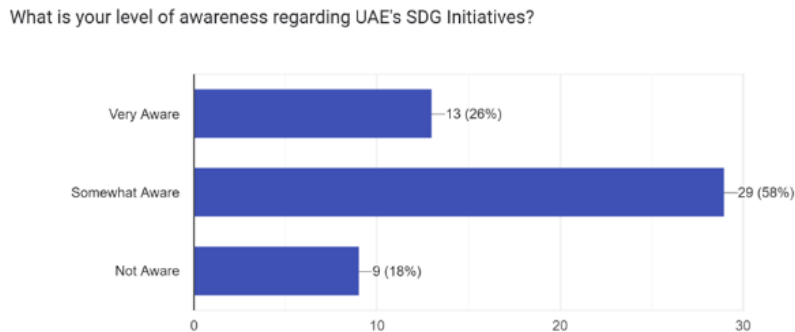


Figure 7: Level of engagement in SDG-related activities

Figure 7 presents the perceived level of engagement in SDG-related activities. The data indicates a relatively high level of engagement, with the majority (60%) of respondents claiming to be actively involved. A significant portion (30%) reported some involvement, suggesting a general interest in SDG initiatives. However, a smaller group (10%) indicated no involvement, highlighting a potential gap in engagement.

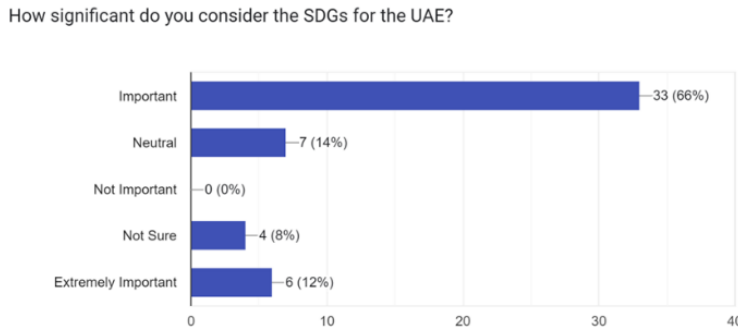


Figure 8: Level of engagement in SDG-related activities

Figure 8 illustrates the perceived significance of the SDGs for the UAE. Overwhelmingly, respondents consider the SDGs to be important (66%), indicating a strong awareness of their relevance. A smaller but still notable proportion (12%) view the SDGs as extremely important, suggesting a high level of commitment. While a portion of respondents (14%) hold a neutral stance, a negligible number (0%) consider the SDGs not important. This further emphasizes the overall positive perception of the SDGs' significance in the UAE.

In which areas do you think the UAE has demonstrated exceptional progress regarding the SDGs?

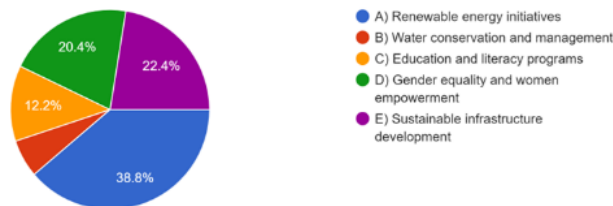


Figure 9: Area of progress in achieving the SDGs

Figure 9 presents respondents' perceptions of the area that UAE's progress in achieving the SDGs. The results indicate that renewable energy initiatives are perceived as the area where the UAE has made the most exceptional progress, accounting for 38.8% of responses. This is followed by water conservation and management at 22.4%, suggesting a strong focus on environmental sustainability.

Education and literacy programs garnered 20.4% of responses, indicating a perceived positive impact in human development. Gender equality and women empowerment received 12.2% of responses, highlighting the importance of social progress. Finally, sustainable infrastructure development was selected by 6.2% of respondents.

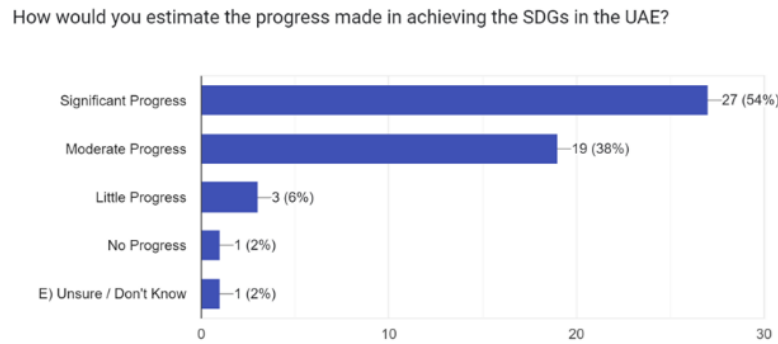


Figure 10: The progress in achieving the SDGs

Figure 10 represents the distribution of respondents' perceptions regarding the UAE's progress in achieving the SDGs. The most prominent finding is the dominance of "Significant Progress" as the perceived level of achievement, constituting 54% of responses. This suggests a strong belief among respondents that substantial strides have been made in implementing the SDGs in the UAE. Following this, "Moderate Progress" accounts for 38% of responses, indicating a considerable portion of respondents view the progress as positive but not as extensive as the "Significant Progress" category. The remaining categories represent a small fraction of the responses, collectively amounting to 6%. This suggests that a vast majority of respondents have a clear understanding of the UAE's progress in achieving the SDGs and express a generally positive outlook.

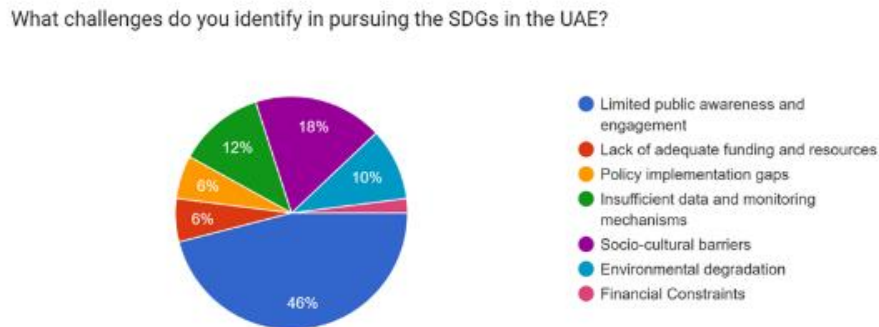


Figure 11: Challenges in pursuing the SDGs in the UAE

Figure 11 presents the perceived challenges in pursuing the SDGs in the UAE. The most significant challenge identified is limited public awareness and engagement, accounting for 40% of responses. This suggests a need for increased public education and mobilization around SDG initiatives.

Following this, lack of adequate funding and resources is cited by 18% of respondents, indicating a potential financial constraint in SDG implementation.

Policy implementation gaps and insufficient data and monitoring mechanisms are both identified by 12% of respondents, highlighting the need for improved policy frameworks and data-driven decision-making.

Socio-cultural barriers and environmental degradation are each mentioned by 10% of respondents, emphasizing the complex interplay of social, cultural, and environmental factors in achieving the SDGs, financial constraints are identified by 6% of respondents, reinforcing the importance of adequate funding for SDG initiatives. The data indicates that a multi-faceted approach is required to address the challenges in pursuing the SDGs in the UAE, with a particular focus on enhancing public awareness, securing adequate resources, and strengthening policy and data management.

Which strategies can be employed to improve progress towards SDGs?

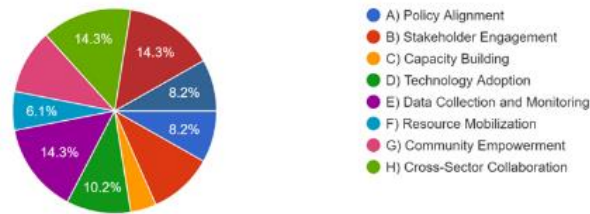


Figure 12: Effective strategies for improving progress towards the SDGs

Figure 12 presents the perceived most effective strategies for improving progress towards the SDGs. The results indicate a relatively balanced distribution among the proposed strategies. Policy Alignment and Stakeholder Engagement emerged as the most frequently selected strategies, each accounting for 14.3% of responses. This suggests a strong recognition of the importance of well-aligned policies and inclusive decision-making processes for achieving the SDGs. Capacity Building and Community Empowerment follow closely behind, with 14.2% and 10.2% of responses respectively. This highlights the need for developing human capital and empowering communities to drive sustainable development. Technology Adoption, Data Collection and Monitoring, Resource Mobilization, and Cross-Sector Collaboration each received a smaller but significant portion of responses, ranging from 8.2% to 12%. These strategies collectively emphasize the importance of technological innovation, data-driven decision making, financial resources, and coordinated efforts across different sectors for advancing the SDGs.

Do you think that the current Strategies for SGDs are effective?

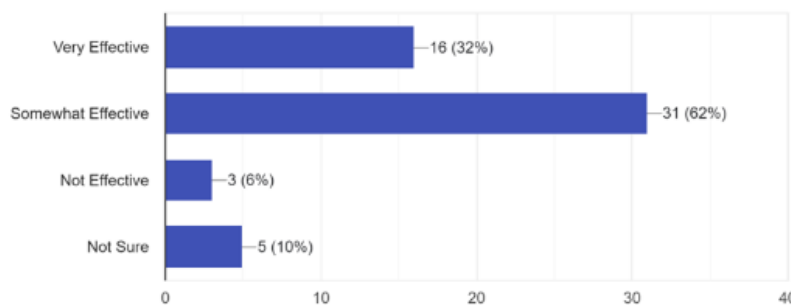


Figure 13: Effectiveness of current strategies for achieving the SDGs

Figure 13 presents respondents' perceptions of the effectiveness of current strategies for achieving the SDGs.

The most prevalent view is that the current strategies are Somewhat Effective, with 31 respondents (62%) selecting this option. This indicates a general recognition of the efforts made but also suggests room for improvement. A smaller group of 16 respondents (32%) believe the strategies are Very Effective, demonstrating a positive assessment of the current approach. A very small minority of 3 respondents (6%) indicated that the strategies are Not Effective, highlighting a need to address specific shortcomings. Finally, 5 respondents (10%) expressed uncertainty about the effectiveness of the strategies, suggesting a lack of clarity or information regarding current initiatives.

Suggested Strategies for Improvement How do you suggest the UAE can enhance its efforts in pursuing SDGs?

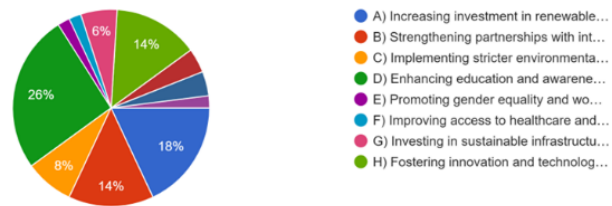


Figure 14: The suggested strategies for enhancing efforts in pursuing the SDGs.

Figure 14 presents a pie chart illustrating the suggested strategies for enhancing the UAE's efforts in pursuing the SDGs. The respondents identified enhancing education and awareness about the SDGs as the most critical strategy for advancing the UAE's sustainability agenda, constituting 26% of responses. A significant proportion also emphasized increasing investment in renewable energy (18%), reflecting a growing recognition of the need for a greener future. Strengthening partnerships with international organizations and NGOs (18%), investing in sustainable infrastructure (14%), and promoting gender equality and women's empowerment (12%) emerged as additional key priorities. While improving access to healthcare and social services, fostering innovation, and implementing stricter environmental regulations garnered smaller percentages, they collectively underscore the multifaceted nature of achieving the SDGs.

What do you think the optimal role of government in accomplishing SDGs?

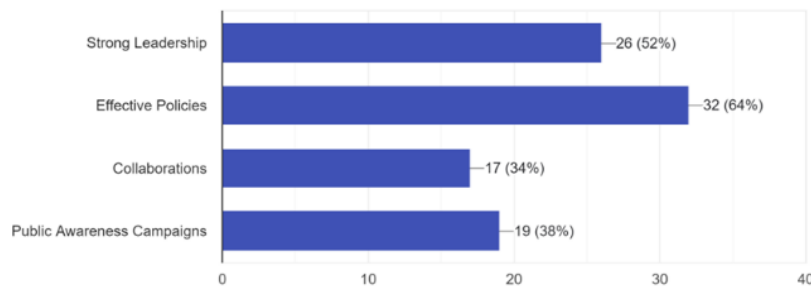


Figure 15: The optimal role of government in accomplishing the SDGs

Figure 15 presents respondents' perceptions of the optimal role of government in accomplishing the SDGs.

The data indicates a clear prioritization of strong leadership and effective policies as the most crucial government roles in achieving the SDGs. These two factors together account for nearly 90% of responses.

Strong Leadership is seen as essential by 52% of respondents, highlighting the importance of visionary and decisive leadership in driving the SDG agenda. Effective Policies are considered crucial by 64% of respondents, emphasizing the need for well-designed and implemented policies to support SDG achievement. Collaborations and Public Awareness Campaigns are also viewed as important, but to a lesser extent. These two factors together account for approximately 62% of responses.

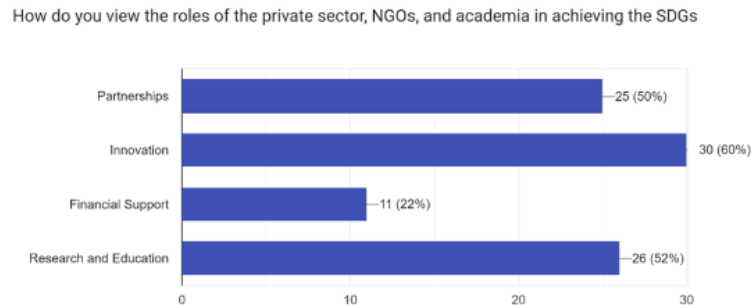


Figure 16: The roles of the private sector, NGOs, and academia in achieving the SDGs.

Figure 16 presents respondents' perceptions of the roles of the private sector, NGOs, and academia in achieving the SDGs. The results reveal a clear prioritization of Innovation and Partnership as the most crucial roles. These two factors together account for approximately 70% of responses. Innovation is considered essential by 30 respondents (60%), highlighting the importance of groundbreaking solutions and technological advancements in addressing SDG challenges. Partnership is viewed as crucial by 25 respondents (50%), emphasizing the need for collaborative efforts among different stakeholders to achieve the SDGs. Financial Support and Research and Education are also seen as important, but to a lesser extent. These two factors together account for approximately 34% of responses.

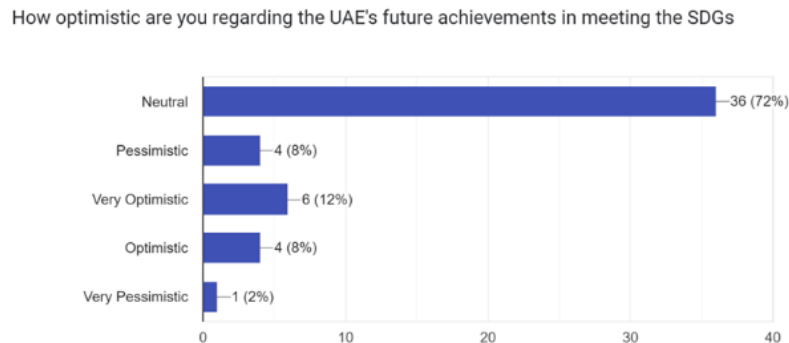


Figure 17: The optimism levels regarding future achievements in meeting the SDGs

Figure 17 presents respondents' optimism levels regarding the UAE's future achievements in meeting the SDGs. The most prominent finding is a high level of neutrality in respondents' outlook, with 72% selecting this option. This suggests a balanced perspective, with neither strong optimism nor pessimism prevailing.

A smaller but significant proportion of 12% expressed very optimistic views, indicating a positive outlook on the UAE's future progress in achieving the SDGs. A similar percentage of 8% selected the optimistic category, further supporting the overall positive sentiment towards the UAE's SDG trajectory. The remaining 8% of respondents were divided between pessimistic and very pessimistic views, representing a minority perspective.

Suggestions for Future Initiatives (Open-ended) Which initiatives should the UAE prioritize for future progress towards SDGs?

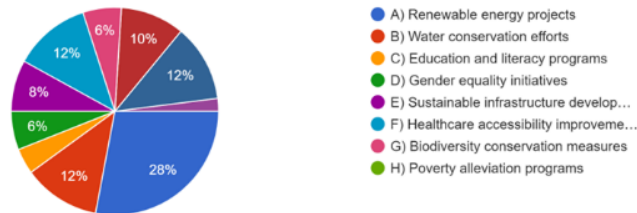


Figure 18: The suggested initiatives for to prioritize for future progress towards the SDGs

Figure 18 presents the suggested initiatives for the UAE to prioritize for future progress towards the SDGs. Renewable energy projects emerged as the top priority, capturing a significant portion of 28% of responses. This highlights the strong emphasis on transitioning to a sustainable energy future. Water conservation efforts and education and literacy programs followed closely behind, with 12% of responses each, reflecting concerns about water scarcity and the importance of human capital development. Gender equality initiatives, sustainable infrastructure development, healthcare accessibility improvements, biodiversity conservation measures, and poverty alleviation programs each received a moderate level of support, ranging from 6% to 10% of responses. This indicates a broad recognition of the importance of these areas in achieving the SDGs.

The survey results reveal a diverse range of perspectives on the most effective strategies for advancing progress toward the SDGs in the UAE. Respondents emphasized the critical importance of policy development, stakeholder engagement, capacity building, and community empowerment in driving success. While the data suggests that most participants view current strategies as somewhat effective, a minority perceive them as ineffective or are uncertain about their impact. This indicates a need for further evaluation and potential refinement of these strategies.

Environmental sustainability and human development were identified as areas of exceptional progress in the UAE's SDG journey, underscoring the nation's commitment to these priorities. The data also highlights the significance of education and awareness, renewable energy, international cooperation, infrastructure development, and social equity as key areas where the UAE could further enhance its efforts toward achieving the SDGs.

A strong emphasis was placed on the government's role in providing strategic direction, creating enabling environments, and fostering public engagement in pursuing SDG objectives. Additionally, respondents highlighted the vital contributions of the private sector, NGOs, and academia in driving innovation, fostering collaboration, and supplying both financial and intellectual resources to support the SDGs.

The overall outlook among respondents was predominantly neutral to optimistic regarding the UAE's future achievements in meeting the SDGs. While optimism is evident, the presence of neutral responses suggests a need for

continued efforts to build confidence in the country's ability to meet its sustainability goals. The survey results also pointed to environmental sustainability, human development, and social equity as key priorities for future initiatives, emphasizing their importance in the UAE's ongoing SDG efforts.

In the context of SDG 2 (Zero Hunger), the UAE faces the dual challenge of addressing obesity and ensuring sustainable, balanced nutrition. This involves improving food access, promoting healthier eating patterns, and encouraging sustainable agricultural practices. For SDG 3 (Good Health and Well-Being), while the UAE has made considerable progress, demographic and educational challenges, as well as the need to strengthen pandemic preparedness, remain areas for further development. The nation's commitment to SDG 4 (Quality Education) is reflected in its investments in smart learning, online education, and technology integration, aiming to ensure high-quality education and equal access to learning opportunities both domestically and globally.

However, achieving SDG 5 (Gender Equality) requires ongoing efforts to empower women and eliminate barriers to their full participation in political and economic spheres. SDG 6 (Clean Water and Sanitation) presents challenges related to sustainable water resource management and wastewater treatment, which need to be addressed to ensure continued access to clean water and sanitation. The UAE's energy sector, relevant to SDG 7 (Affordable and Clean Energy), faces challenges such as rapid population growth, economic expansion, and climate-related factors, necessitating intensified efforts in promoting renewable energy and enhancing energy efficiency.

The UAE's commitment to SDG 10 (Reduced Inequalities) is evident in its efforts to address income disparities through various policies and initiatives. The nation's urban development aligns with SDG 11 (Sustainable Cities and Communities), but ongoing efforts are necessary to ensure sustainability. For SDG 12 (Responsible Consumption and Production), the UAE has made progress, but challenges remain in consumer behavior and supply chains. SDG 13 (Climate Action) underscores the need for a more sustainable energy mix and enhanced climate resilience, while SDG 14 (Life Below Water) calls for continued efforts in marine ecosystem protection. Finally, the UAE's strong performance in SDG 16 (Peace, Justice, and Strong Institutions) reflects its dedication to promoting peace and justice.

Conclusion and Recommendations

The UAE is making significant strides toward achieving the Sustainable Development Goals (SDGs), with a strong emphasis on renewable energy, education, and infrastructure, alongside a generally positive public perception. However, challenges like limited public awareness and resource constraints still need to be addressed. To accelerate progress, the UAE should prioritize enhancing public awareness and engagement. Launching comprehensive public education campaigns will deepen understanding of the SDGs and encourage a sense of ownership among citizens. This effort will help boost confidence in the UAE's capacity to achieve its sustainability goals. Another critical focus should be on investing in renewable energy and sustainable infrastructure. Fast-tracking the transition to a low-carbon economy while developing resilient infrastructure is crucial for tackling the challenges posed by rapid population

growth and economic expansion. Strengthening partnerships is also essential. Collaborating with international organizations, NGOs, and the private sector will pool expertise and resources for SDG implementation. This approach will improve the UAE's ability to address complex challenges and foster innovation. Promoting gender equality and women's empowerment is fundamental to sustainable development and social equity. Investing in initiatives that empower women and ensure their equal participation in decision-making processes is vital for achieving these goals. Additionally, the UAE should focus on strengthening data collection and monitoring systems. Enhancing data systems to track progress, identify gaps, and support evidence-based policymaking is essential for assessing the effectiveness of current strategies and making informed decisions. Addressing policy implementation challenges is another area that needs attention. Streamlining policy implementation processes and improving coordination among government agencies will ensure that policies are effectively translated into action and achieve the desired outcomes. Lastly, allocating sufficient resources is crucial. Increasing investments from both public and private sectors in SDG-related initiatives is necessary to support innovative solutions and address resource constraints. By implementing these recommendations, the UAE can further accelerate its progress towards achieving the SDGs and continue to serve as a regional and global model for sustainable development. A commitment to innovation, technology, education, and international cooperation will be critical in overcoming the identified challenges and securing a sustainable, inclusive future for all.

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