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SPECIAL REPORT:

- SUSTAINABLE MOBILITY
- NUCLEAR POWER
- OCEAN ECONOMY

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Editor's Opinion	05
The Middle East Prioritizes Blue Economy	08



Chris Gorell Barnes Is A Force Of Nature	14
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Navigating The Blue Economy: A Global Comparison	21
---	-----------

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Water For The Middle East Could Be Provided By Desalination, Sparing Aquatic Life In The Process	27
---	-----------



A Healthy and Sustained Ocean System Critical For Ocean Health: David Suggett	31
--	-----------

Unlocking The Gulf's Blue Wealth: Opportunities Abound	38
---	-----------

The Red Sea Project's Approach to Environmental Responsibility	43
---	-----------

Transitioning Towards Sustainable Mobility Fuel Technologies	48
---	-----------

Rolls-Royce's Yuri Jongkind Discusses A Range Of Game-Changing' Technologies Set To Enable A Pathway To Net Zero Flight And Advanced Air Mobility	54
--	-----------

Siemens' CEO Franco Atassi On The Future of Mobility And Energy In The Middle East 58



How Sustainable Transport Has Played A Part In Transforming Qatar 64

Glimpse Of Middle East's Urban Mobility Landscape Of Tomorrow 69

Eyes In The Sky: Middle East's Drone Industry Potential Unleashed 75

Advancing GCC Mobility Through ITS 83



FalconViz's Dr Luca Passone: A Bird's Eye View On UAV Demand in the Middle East 87

Continental's Mostafa Farouk Sheds Light On Sustainable Future Of Mobility In The Middle East 95

Infrastructure And Smart Mobility Solutions Middle East 100



Smart E-Commerce and Logistics Lead the Future Middle East 105

Nuclear Energy: An Answer To Growing Energy Demands In The GCC 110

UAE And Finland: Bolstering Clean Nuclear Energy In The Mix 115

Nuclear Energy Is Seen As A Clean And Sustainable Future Option By The GCC And Israel 119

Modern And Sustainable Human Resources: Mohammed Hijan 128

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Editor's Opinion

The Thirty To Net Zero Magazine was launched to campaign for the Middle East's net zero agenda. It does so with a formula through factual descriptions, and polarised opinions through our exclusive interviews and feature articles.

Sustainability and Net Zero have always been catch phrases however, to a degree, it is hard even now, in 2023, to recognise the world of the 1950s and 1960s: when few had mobile phones, e-mail was in its infancy and the internet was strictly for nerds. Yet the potential was there for the spread of sustainable values. But will they persist? Plenty of people would like to stop them, even some who think they care about profits. In much of the rich world, the net zero agenda is seen as a threat, to jobs, incomes and the environment. Protectionism is always a danger and always will be those who lose out from competition make louder noises about it than the more dispersed, albeit larger groups who gain.

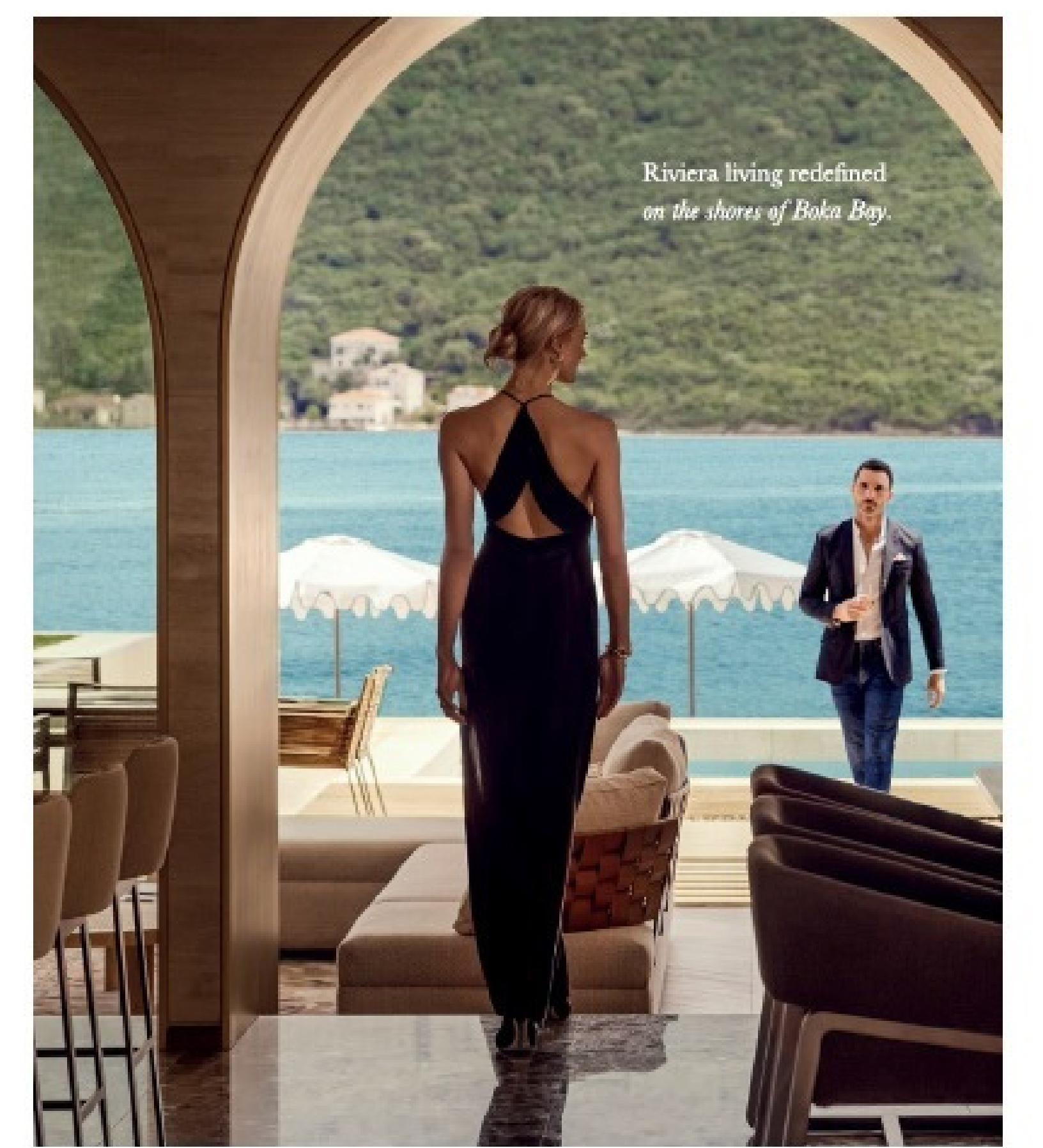
However, a revival of reinforced commitment from the Middle Eastern countries in dealing with the net zero agenda, and a firm acknowledgement by politicians and bureaucrats everywhere that the case for international engagement and openness needs to be made continually. It will certainly be made by Thirty To Net Zero.

In this issue, we present three special reports - Sustainable Mobility, Oceans and the Blue Economy and Nuclear Power.

Enjoy Reading

Pallavi Shevade

Pallavi Shevade
Editor-In-Chief
Thirty To Net Zero Magazine
Secretariat's World Groupe

A woman in a black, backless, floor-length dress stands on a terrace, looking out at a man in a dark suit and blue jeans who is walking towards her. The terrace is furnished with a light-colored sofa and several white patio umbrellas. In the background, there is a large body of blue water (Boka Bay) and a lush green hillside with some buildings. The scene is framed by a large, arched opening in a building's facade.

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THE MIDDLE EAST PRIORITIZES BLUE ECONOMY

The "blue economy," which the World Bank defines as the "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem," is seen by many as a fantastic solution to many of humanity's current problems as the world changes rapidly and new needs and issues continue to appear on the global agenda.

An "emerging concept" that promotes "better stewardship of our ocean or 'blue' resources," as defined by the Commonwealth of Nations.

The blue economy concept is making its way into the region as well.

The National Center for Innovation and Blue Economy was recently opened in Haifa, Israel with the goal of encouraging technology innovation and entrepreneurship in the maritime sector.



Aquaculture, shipping, marine tourism, and marine nature conservation are just some of the projects mentioned in a joint statement from the Environmental Protection Ministry and the Haifa Municipality.

The United Arab Emirates and Oman are also working hard to explore these areas, according to Mohammed Baharoon, Director General Of B'huth - The Dubai Public Policy Research Centre. He acknowledged that current investment levels are low but noted that this is a promising area for future development.

He elaborated on why the four seas surrounding the Arabian Peninsula make the blue economy so vital to the economies of the Gulf Cooperation Council states.

Moreover, "their economic ties with countries in the Indo-Pacific Region are enormous," he said. Baharoon went on to say that "the blue economy complements all their efforts towards carbon neutrality, energy transition, and economic diversity," establishing blue as the new green.

Haifa is home to the National Center for Blue Economy, and its CEO, Lior Hanuka, runs the show there at HiCenter. Investment in blue economy projects in Israel is also low, he told a media house, but "we are going to change this number to hundreds of millions of dollars, maybe billions of dollars because we do think that the blue economy is going to bring to the table a lot of opportunities to innovate."

Hanuka elaborated, adding that Israeli innovation may extend from the land to the sea, citing examples from AI, ML, cybersecurity, and agricultural technologies.

"The blue economy conceptualization and financing mechanism, as well as sustainability standards, are now where green finance was 10 years ago," said Gregor Paterson-Jones, managing partner at PJ & Company, a blue and green finance firm.

In an interview with the media, he mentioned many important blue economy sectors that have a major impact on sustainable development in the region.

According to Paterson-Jones, the well-being of the ocean is crucial to the success of a number of major tourism projects and existing assets. Investment in blue economy-based projects could also boost the region's maritime trade and logistics.

energy mix benefits from the exploitation of new fossil fuel discoveries. He also mentioned waste management and alternative energy sources as potential winners.

Paterson-Jones argues that the novel method has the potential to improve water provision in water-scarce regions of the world and to open up new avenues for fisheries and aquaculture in the area.

A further positive aspect of the blue economy, as stated by Hanuka, is that "once you bring the innovation, or build the project, it contributes to all the countries around you, and maybe beyond."

He continued, "and they're looking for our innovation," saying that the Israeli National



Branch of The World Bank // The World Bank

Center for Invention and Blue Economy has already made contact with counterparts in Jordan, Egypt, and Morocco.

He argued that regional cooperation was crucial to the blue economy's ability to effectively combat pressing problems like climate change. It's not enough to only solve problems in one country, as Hanuka put it; "some of the challenges belong to the whole region," he noted.

Baharoon argued that an ocean-based economy means connectivity, which could significantly improve ties between Middle Eastern countries and East Asian countries, in addition to addressing important issues like climate change, food security, energy transition, and economic cooperation.

According to him, "blue waters projects will help create new corridors for moving food, energy, and data," and "marine urbanisation will create people traffic between these two regions," necessitating cooperation on new sorts of governing structures.

The MENA Blue Programme

The cost to society of polluting the ocean is high. The prevalence of plastic debris in the ocean lowers the allure of popular vacation spots. Urban infrastructure is vulnerable to the effects of sea level rise and coastal erosion. Approximately 0.27 percent of Morocco's GDP, or US\$260 million, is lost each year due to environmental degradation in the country's coastal areas. More long-term economic models need to be developed immediately.

Towards this end, the MENA Blue Program promotes a greener ocean economy. Its goal is to improve countries' ability to create climate-resilient coastal investments and expand the blue economy at the national and regional levels. The World Bank's Program aims to improve marine and coastal ecosystems by assisting countries in understanding the factors that contribute to their decline. MENA Blue examines the economic effects of coastal erosion on a regional scale. It helps the Moroccan government determine how widespread marine plastic pollution is and design a plan to eliminate the problem across the country. Capacity for integrated marine and coastal planning is also developed, and the government is assisted in using natural capital accounting procedures thanks to the Program.

The MENA Blue Program organises various initiatives to assist countries in using the blue economy to rebuild after the spread of the COVID-19 pandemic. The World Bank and the Tunisian government collaborate to conduct an assessment of the blue economy and its current state. It helps the Moroccan government assess the pandemic's effect on the fishing industry.

Sustainable maritime industries can boost the economy and protect marine life. To create a more robust, inclusive, sustainable, and efficient (RISE) and blue economy, it is time to reevaluate and reset economic structures and undertake a paradigm shift.

The Green Blue Deal In A Nutshell

It's not easy to get all the players in the Middle East to sit down and talk.



There is still no culture of peace in place, and young people on both sides are largely exposed to negative generalisations about the other. However, the fact that climate change and environmental challenges transcend national boundaries makes them powerful tools for fostering regional collaboration. The proposed agreement is not meant to be a comprehensive policy agenda. Instead, it's meant to encourage government agencies to come up with their own "green blue" initiatives.

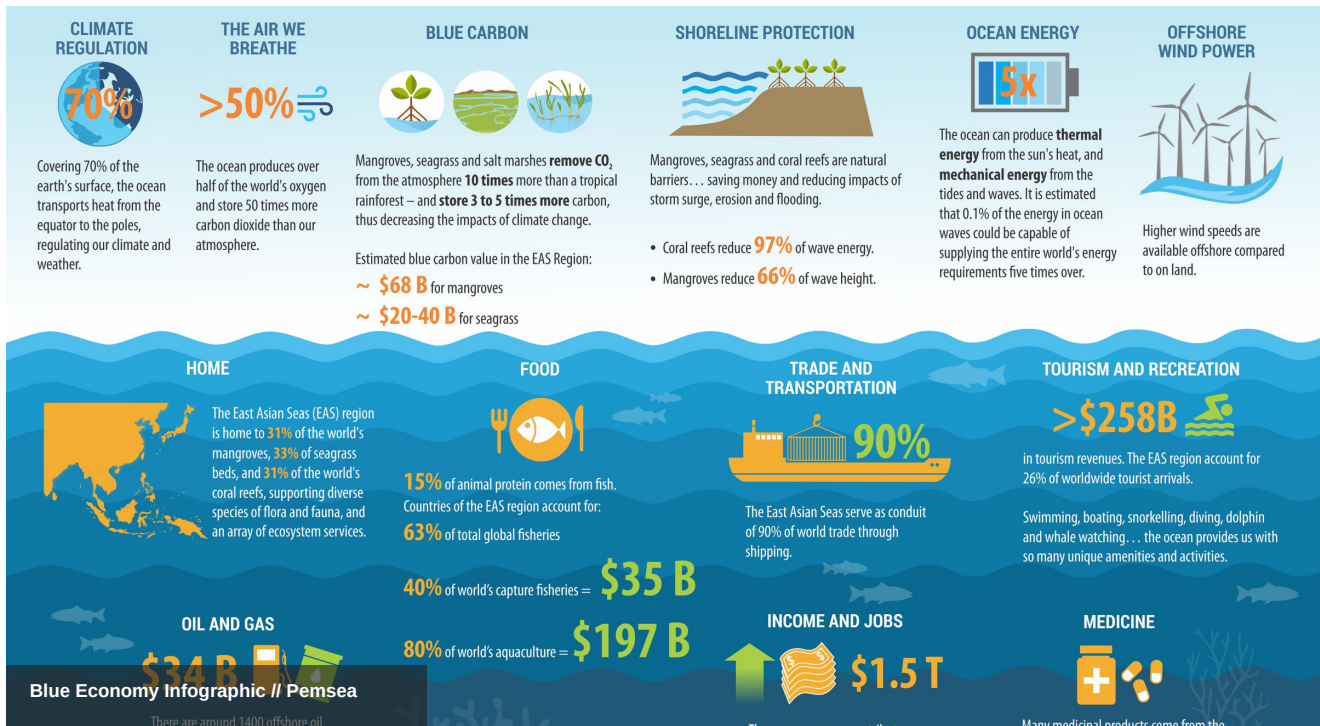
There are four main components to the Green Blue Deal:

1. Working together to strengthen water and energy security's adaptive capacities EcoPeace is in charge of a major water and energy initiative that aims to promote regional interdependence by establishing a desalinated water and solar energy community, with the former coming from Israel and Palestine and the latter from Jordan. Although at first everyone was hesitant of developing such mutual dependencies, nations are beginning to see the benefits of cooperating for their own security objectives. Exploring these possibilities would be beneficial for all parties involved, according to a preliminary feasibility study: Israel would meet its Paris climate commitments; Jordan would increase its GDP by 3-4%; and Palestine would become less reliant on Israel for water and energy.

2. Moving forward with reallocations of natural water resources between Israel and the Palestinian Territories

Modern water technology makes it possible to grant Palestinians their water rights without jeopardising Israel's supply. To achieve this equilibrium, Israel must cut its own water pumping while increasing desalination, which currently provides about 70% of Israel's drinking water. The COVID-19 pandemic has shown how critical it is to establish conditions in which basic hygiene standards can be maintained, which are currently absent in Palestine, leading to intolerable conditions for Palestinians and causing health problems that spread throughout the region.

3. Investing in climate-smart projects and green employment throughout the Jordan Valley region Since 1967, Palestine has not had access to the Jordan River, which has led to pollution and excessive water diversion by Israel, Jordan, and Syria. The river serves as a natural boundary between the two states, making international cooperation essential to its restoration. A Regional Jordan Valley Master Plan (JVMP) with international backing has developed a plan to restore the entire valley and reap numerous advantages in the process. While it has been accepted by Jordan, it has not yet been embraced by Israel or Palestine due to difficult relations between the three countries. EcoPeace has enlisted the help of the valley's business community to sustain its recent upswing in environmentally conscious initiatives including ecotourism, climate-smart farming, fish farming, and solar-powered refrigeration for local farms, as well as initiatives like grey water reuse and green employment. A planned Jordan River Commission, involving the three riparian states plus potentially Lebanon and Syria, would further enhance regional cooperation.



Educating the public and raising awareness about the role of diplomacy in resolving conflicts and establishing peace in the water and climate sectors Education has a key role in a troubled region that has been at war for almost fifty years. EcoPeace thinks that by including young people, public support for collaboration may be built together with the next generation of local leaders.

4. Water and climate diplomacy programmes in K-12 and higher education have been shown to be effective in fostering international networks and raising awareness of transboundary regional challenges.

The Green Blue Deal suggests utilising two abundant resources in the Middle East (the sun and the sea) to build confidence and cooperation among nations, lessen the negative effects of climate change on the environment and strengthen national security.

In order to do this, EcoPeace Directors Yana Abu Taleb (Jordan), Nada Majdalani (Palestine), and Gidon Bromberg (Israel) suggested focusing on "low-hanging fruits" in the Arab-Israeli conflict.

The water problem is one of these "low-hanging fruits." The Oslo Accord has provisions about water. The relatively easy problem of shared water management is left unaddressed because parties cannot reach an agreement on other topics of the Accord (and so do not sign it). EcoPeace proposes separating water management from other difficult areas in the peace deal in its Green Blue Deal proposal. This should pave the way for future cooperation and foster a culture of peace in which parties view each other as a negotiating partners, leading to improved water management and living circumstances for all. Gives diplomacy in the region a much-needed boost.

CHRIS GORELL BARNES IS A FORCE OF NATURE

Through all his different roles, as one of the tech industry's most powerful leader's, blue economy champion, venture capitalist, executive producer for *The End of the Line* and serial businessman, Gorell Barnes exudes quiet determination and strength. As the company he co-founded, Ocean 14 Capital grows from strength to strength, especially with the global spotlight staying on marine conservation, Gorell Barnes speaks to *Thirty To Net Zero* Magazine about amplifying his voice.

Gorell Barnes also founded a digital content agency called Adjust Your Set in 2008 and has sat on the board of Eagle Eye Solutions, a digital consumerism business, since 2007. However, this London-born entrepreneur's passion has remained ocean conservation and safeguarding the interests of marine life, globally.

"The ocean is the most important ecosystem on Earth. If we don't have a healthy ocean, there's absolutely zero



Chris Gorell Barnes - Founding Partner at Ocean14capital

chance of us being able to protect humanity, as the ocean provides half the oxygen we breathe, and absorbs half the carbon. It feeds the world. It's vital for the health of the planet and our survival.

"As far as the opportunities for the sustainable blue economy are concerned, the blue economy is vast. It's a US\$3 trillion economy. We look at it as a fund at Ocean 14 Capital, where we think that the two primary concerns and opportunities are in food security. We are looking at driving investment into sustainable aquaculture and the innovations around sustainable fisheries.

"We are looking at driving innovations in alternative protein to feed fish because one of the issues with aquaculture is that you're often feeding farmed fish, wild fish.

"And then the other area we look at is protecting and restoring marine ecosystems. We see opportunities in seaweed, and of course, the collecting, sorting and recycling of plastics," he stated.

Climate change increases the uncertainty in projections of water supply and demand and increases the uncertainty in feasibility and economic performance assessments of water infrastructure. Technology, particularly disruptive technology has multiple roles in water management, across the spheres of infrastructure design, systems planning, and real-time operations.

Recent studies have suggested that using new and disruptive technology could help increase



Tilapia fish



Traceable solution to plastic waste

water supply in global water resource planning and management of the world, providing new opportunities for fisheries and aquaculture. Collectively, these changes can help to 'democratize' water management through improved access to data and information.

Disruptive Tech Solutions In The Agro Sector

Agreeing Gorell Barnes stated, "I think there's a huge amount of innovation in the aquaculture space. We're seeing a lot of new technologies in data and AI. We have much more efficient processes to manage the food feed, like in precision feeding, so there's not a lot of feed that's wasted. We should also be able to look at disease prevention using AI and cameras, and of course, be able to utilise water systems. So you know, there's a new RAS system I use that has zero discharge, which is incredibly exciting.

"We're seeing a lot of technologies and innovations in the space. The ones that I'm very excited about are our new types of feed, new types of monitoring of the animals and the data & technology that enable farming to be much more efficient," he surmised.

Sustainable Marine Tourism Is Key

If they were a single economy, oceans would be the seventh largest, with an annual estimated value of \$1.5 trillion per year, according to The Commonwealth. With diversification plans underway in the region, developing sustainable coastal and marine tourism has vast potential. It is projected to be the largest value-adding segment of the ocean economy by 2030, with global growth rates of more than 3.5 percent forecast by the World Bank. This indicates that investing in non-oil sectors such as the tourism industry is an opportunity to help better diversify the economy.

“Well, let's hope that by 2030 that we still have most of the coasts because the sea levels have risen too much because of what's happening with the melting icecaps and global warming. I think sustainable tourism is key and most people want to go to the ocean for their holidays.

“I do think that probably the fastest-growing area of the ocean economy is blue foods. I think there's a deviation from governments now that actually, there is a serious food security issue. I think the war in Ukraine has shone a very bright light on that.

“And seeing the fact that, if you build your own aquaculture systems, you can have protein very near to the citizens of your country, it's a really important investment area.

“And, of course, investing in wild fisheries to make sure that the ocean is full of fish to make sure that the ocean can survive. So, I think there'll be a huge investment throughout the blue economy. It's been very slow to catch the eye of governments and institutional capital. And we're only now starting to see the blue economy. On the top table at Davos when I was recently in Washington at the World Bank meeting, the economy was being discussed. So there'll be a lot of investment into it across all of the areas,” he said.

His sentiments were in line with research driven by the World Bank which has estimated that fisheries contribute US\$270 billion annually to global gross domestic product.

More than 80 percent of trade takes place by sea and the volume of trade by sea is expected to double by 2030.

“I think shipping, marine tourism, a lot of investment will go into adaptation for these coastal communities to ensure that they can be resilient and protect themselves from issues that we discussed earlier. So I wouldn't say it is one area, rather I think the entire blue economy is at a point right now where there is going to be a big blue gold rush into trying to fix the problem. And also the huge investment opportunity that there is within this,” said Gorell Barnes.

Pursuing the blue economy and the sustainable use of the oceans can help enable economic diversification and move the Gulf region towards a post-oil era.

With diversification plans underway in the region, developing sustainable coastal and marine tourism has vast potential. It is projected to be the largest value-adding segment of the ocean economy by 2030, with global growth rates of more than 3.5 percent forecast by the World Bank. This indicates that investing in non-oil sectors such as the tourism industry is an opportunity to help better diversify the region's economy.

UAE and Saudi Arabia Making Bigger Bets On The Blue Economy

“There are a lot of projects happening all over the world,” said Gorell Barnes, “but the UAE and Saudi Arabia are really looking at the Blue economy.

We've had many conversations with those countries on investing in aquaculture, food security, and looking at how they're going to invest in the ocean, and marine resources."

A sustainably managed ocean sector can drive job creation while preserving ocean health.

"Of course, looking at the big shipping areas, there are opportunities around clean shipping. So I think there's a lot of investment across all those thematic. And specifically in that region, where I think the investment within the coastal and the communities has been slightly overlooked. So I think we will start to see a lot of interest and capital going into those projects," he affirms.

Corell Barnes' connection to the blue economy stems from a deep understanding and passion for the ocean ecosystem and he has developed a system for routinely challenging the people that have been routinely underestimating the segment across various industries.

"What we need within the ocean is to ensure that the capital that's coming in is driving a positive impact on the ocean. So, in terms of resetting, it would be how do we ensure that investments are going into the ocean and the businesses within the ocean that are having not only a positive impact on the economics of the businesses but also a positive impact on the ocean.

"The ocean has a very unique formula. Where there is this convergence of drivers, indeed the businesses that are the most sustainable and impactful will also be the ones that are the most valuable.

So I think, we need to ensure that there are frameworks and measurement systems put in place so that the capital knows that it's investing in the right businesses, that are doing the right thing, and having a positive impact on the ocean as opposed to a negative impact," he said.

Challenges That Are Holding Horses

"I think, the degradation of the ocean is a huge problem all over the world. Overfishing is one of the biggest threats to humanity's survival. And we need to desperately solve it. And we need to create marine protected areas, and we need to manage our fish docks better and create sustainable fishing models and support small-scale fishers. We need to stop all of the large factory vessels that are destroying and stealing all of the fish from countries like Tunisia and Morocco," he said.

Championing the blue economy is something that excites Chris Corell Barnes. Despite the large number of the kind of eyeballs on it and resultant incumbent scrutiny, the tech magnate has not shied away as he believes it's worth all the hard work.

Corell Barnes, the founder of the digital content agency called 'Adjust Your Set', was named by the London Evening Standard newspaper in 2013 as one of the most powerful 'Tech Stars' in the UK Corell Barnes.



The Tilabras Farm

He is also the co-founder of the marine conservation charity, the Blue Marine Foundation which aims to create marine reserves and Ocean 14 Capital an investment advisor to a private equity fund that invests in venture and growth companies and technologies that offer sustainable solutions for our ocean, whilst aiming to generate attractive returns for investors.

Investing In Your Beliefs

“Our company, Ocean 14 Capital, advises one of the largest funds in the blue economy. The fund is investing in food security and marine ecosystems.

Some of the projects that the fund is investing in, is aquaculture. So it's recently invested in a company called SyAqua. It's a business in Singapore and our vision there is how do we support the intensification of the shrimp farming industry so that we can reduce the environmental externalities that farming has on the environment.

“So, this is a genetics and technology company that enables farmers to have virus-resistant broodstock. So that they can guarantee the life of the animals because one of the issues with shrimp is, it doesn't have an immune system.

“So often, a lot of farmers are using a lot of land, a lot of water and a lot of feed because they don't know if the shrimp are going to survive or not. So this enables survival rates to go up, which enables fewer resources to be used and guarantees economic stability for the farmer. So that's one investment.

“Another investment the fund has made is in a company called Tilabras,” said Gorell Barnes, “which is the largest sustainable tilapia farm in Brazil. And tilapia is a very interesting fish because it's a vegan fish that eats plants. And, arguably, it is the most sustainable and efficient form of protein that you can create. And it's an opportunity to create affordable, sustainable protein for a huge growing population. So, we like that very much.”

“The fund has made investments in bivalves in a clam hatchery and farm in Venice, and Amsterdam. And it has invested in a data and digital platform for tracking the plastics supply chain for large businesses. And the fund will be making investments in seaweed, algae, and insects.

And all of the innovations that are coming into the space in both food and blue foods,” he reflects.

Gorell Barnes welcomes space to spend time with his family. “I like fly fishing,” he says, “that's what got me into the ocean space and led to my love of fish and oceans.”

“I play lots of tennis and do lots of exercise. I like running very much. I also like spending time thinking about how we can protect and restore the ocean,” he muses.

“I like being in nature outside, reading and looking at art as well as spending time meeting interesting people and learning about different countries. Hopefully, we can all come together to solve the biggest crisis we face which is protecting and restoring the ocean,” says the passionate marine conservationist.



SyAqua Nauplii

All Photos Provided By Ocean14capital

NAVIGATING THE BLUE ECONOMY: A GLOBAL COMPARISON

The blue economy focuses on sustainably utilizing the ocean's resources to drive economic growth and improve the overall quality of life. In 2019, SDG 14 received the lowest amount of funding among the 17 goals, totalling US\$1.92 billion. However, as the United Nations Decade of Ocean Science for Sustainable Development (2021-2030) commences, investors are beginning to recognize the purpose and potential of the blue economy.

Considering that assets were valued at US\$24 trillion in 2015 and the annual value of goods and services generated from ocean-related economic activities was estimated at \$2.5 trillion, the investment opportunity is not complex. Nonetheless, the challenge lies in finding ways to achieve both sustainable impact and significant returns on investment.

The push for an economy centered around the ocean began in 2018 with the launch of PROBLUE by the World Bank.



Growth Of Blue Economy // Esri

PROBLUE is a multi-donor trust fund designed to assist countries in adopting a blue economy approach. Since its inception, PROBLUE has supported over 100 activities in 70 countries, with partners contributing over US\$200 million.

The Middle East region has vast coastal areas and a strategic location that holds tremendous potential for the development of a vibrant blue economy. Oxagon, the world's largest floating city, and the biggest blue ammonia plant being developed in Qatar - are some of the blue-economy projects emerging in the Middle East.

This year, King Abdullah University of Science and Technology (KAUST) and the Marine Technology Society (MTS) have jointly announced the establishment of the Red Sea Section, marking the first MTS Section in the Middle East.

Red Sea Section is headquartered at KAUST, and its primary objective of the section is to foster collaboration among stakeholders in the field of marine science and technology, both local and international.

Recognizing the importance of the blue economy, the United Nations has declared the current decade as the Decade of Ocean Science. This initiative aims to encourage the development of new technologies that facilitate sustainable ocean exploration and environmental monitoring. Saudi Arabia, responding to this call to action and has made a commitment to ocean science research,

emphasizing the preservation of its rich biodiversity and the cultivation of new ocean-related industries.

Dr. Lloyd Smith, the director of the KAUST Coastal and Marine Resources Core Lab, expressed his optimism about the newly formed Red Sea Section, stating, "Marine technology in the Kingdom is on par with any other region in the world and is constantly evolving. Moreover, investments in marine research have attracted a growing number of global partners. By establishing the Red Sea Section, we gain access to MTS' comprehensive professional development programs, which will enable KAUST to train individuals in the Kingdom to meet the rising demand in this specialized field."

Justin Manley, the president of the Marine Technology Society, also expressed his opinion on the significance of KAUST. While speaking to the media, he stated, "MTS quickly recognized the importance of KAUST in the context of marine technology. The Red Sea Section will act as a gateway for leading academic and industry organizations to collaborate with Saudi Arabia, enabling the efficient utilization of marine resources, facilitating the testing and development of new marine technologies, and nurturing local talent."

Global Blue Economy Developments

This year, a network of 60 Partners from 25 countries, alongside the European Commission, convened in Rome for a significant gathering. It was to discuss and showcase their planned activities and aims to embark on an unprecedented effort to pool research and innovation investments. It seeks to align national programs at a pan-European scale, all in pursuit of transforming the blue economy.

The primary objective of this Partnership is to catalyse a major step towards the transformation of the blue economy. It will actively seek engagement by launching, implementing, and monitoring six co-funded calls for research and innovation proposals over seven years. It is expected to reach an impressive €450 million during this period. The partnership aims to implement contributions, including research infrastructures, thematic

programs, and streamlining other funding sources.

In 2020, two investment funds focused on sustainable ocean management were launched. Credit Suisse, Rockefeller Asset Management, and The Ocean Foundation launched the Credit Suisse Rockefeller Ocean Engagement Fund, which raised US\$780 million. Meanwhile, Mirova launched the Althelia Sustainable Ocean Fund, which closed at U\$132 million and had investors such as the European Investment Bank, Axa Investment Managers, IADB, FMO, and Caprock Group.

Fulfilling Blue Economy Developments In the Blue Sector

The Ministry of Energy and Infrastructure (MOEI) in the United Arab Emirates (UAE) recently engaged in a meeting with the Ministry of Transport in Egypt.



Oxagon // Arabianbusiness

This discussion took place during the Arab Academy for Science, Technology and Maritime Transport's General Assembly, providing an opportunity to explore potential collaborations in the maritime sector.

During the meeting, both parties focused on planned development projects that aim to stimulate growth in the maritime industry. These projects also seek to create investment prospects in scientific research and technology, particularly in the enhancement of ports and logistics services.

UAE, a significant player in the maritime industry, boasts an impressive portfolio, featuring more than 20 leading seaports and the world's largest oil export terminals. DP World, another significant entity based in the UAE, is a leading smart trade enabler that offers innovative solutions to revolutionize the global supply chain.

On the other hand, Egypt possesses a coastline that stretches 3,000 kilometres along the Red Sea and the Mediterranean Sea. This extensive coastal stretch encompasses abundant petroleum and gas resources and hosts several coastal cities.

UAE's expertise and experience in the maritime industry and Egypt's strategic geographical location and rich resources hold great potential. It can facilitate the advancement of maritime infrastructure, foster trade and economic growth, and enhance the efficiency and effectiveness of ports and logistics services in the region.

"The UAE's Blue Economy Strategy is based on several pillars, including innovation, creativity, research and development, as well as an effective system of links with academic institutions, universities and research centres that can keep pace with the scientific and technological developments, adapt them to local need," MOEI's Undersecretary for Infrastructure and Transport Affairs, Hassan Al Mansouri said.

Al Mansouri further underscored the robust relationship between the UAE and Egypt stressing that the country looks forward to strengthening ties and cooperation with Egypt in all key areas, with a deep focus on the maritime sector to encourage joint investments and develop existing investments.

Egypt's Ministry of Transport has announced a comprehensive development plan to boost the country's maritime transport capabilities to compete with its top international counterparts, as part of its strategy to transform into a leading hub for global trade and logistics.

Blue Economy Office Opens in UAE

Under the directives of H.H. Sheikh Saud bin Rashid Al Mu'alla, Supreme Council Member and Ruler of Umm Al Quwain, the Emirate of Umm Al Quwain has inaugurated the Sustainable Blue Economy Office.



Marine Environment // Breef.org

This office is a pivotal component in the implementation of the emirate's Sustainable Blue Economy Strategy 2031, which was launched during the World Government Summit 2022 focusing on sustainable economic development, preservation and rehabilitation of the maritime environment, and optimal utilization of natural resources, the Sustainable Blue Economy Office will oversee the execution of eight transformative projects over the next decade.

Comprised of three primary committees, the Office is led by the Higher Committee headed by Sheikh Majid bin Saud Al Mualla, Chairman of the Department of Tourism and Archaeology.

Additionally, there is the Executive Committee led by Sheikh Sager bin Saud Al Mualla,

Chairman of the Smart Government Department, and the Advisory Committee encompassing various teams dedicated to different areas, such as environment and urban planning, economic incentives and business environment improvement, foreign investment and private sector attraction, media and marketing, and performance indicators monitoring.

Sheikh Majid Al Mualla, as the head of the Sustainable Blue Economy Strategy Higher Committee, expressed that the establishment of the Sustainable Blue Economy Office aligns with the vision of the Ruler of Umm Al Quwain.

The aim is to position the emirate as a leading model and investment destination in the blue economy sectors within the region by 2031. Furthermore, the goal is to increase the blue economy's contribution to the emirate's GDP by at least 40 percent.



Blue Economy // Gulfjournal

It emphasizes the Office's focus on implementing transformative projects outlined in the Strategy. Moreover, it aims to foster opportunities for private sector investment in priority sectors that support the strategy's objectives in the environmental, tourism, and economic domains.

The Sustainable Blue Economy Office will formulate a comprehensive roadmap encompassing legislative frameworks, bylaws, policies, and the requirements for the emirate's physical and digital infrastructure.

Such measures will enable the successful implementation of the Strategy's eight transformative projects.

A sustainable blue economy can be achieved through global partnerships and collaborative efforts. The Middle East's efforts to achieve this goal reflect such partnerships. The world will be coming to the United Arab Emirates, and it is committed offers immense potential for the sustainable, environmentally friendly development of its people.

WATER FOR THE MIDDLE EAST COULD BE PROVIDED BY DESALINATION, SPARING AQUATIC LIFE IN THE PROCESS

Water-stressed" countries are home to more than 2 billion people. This category includes countries and regions where annual freshwater withdrawals exceed 25% of total available resources.

Desalination is increasingly being utilised to manage water scarcity worldwide. Now, some 16,000 desalination units worldwide generate 35 trillion litres of freshwater every year. And to the north of the Red Sea, in Jordan, plans are underway for a massive desalination plant on the Gulf of Aqaba, tripling the country's annual desalination capacity from 4 billion to 350 billion litres.

But desalination tends to be energy intensive and produces saline effluent called brine. Returning brine to the ocean can be harmful to marine life. The Red Sea, the Arabian Gulf, and the Mediterranean Sea may be getting saltier as a result of desalination, according to studies.



Solar Powered Desalination Plant // Inside Arabia

When assessing whether current and future desalination programmes threaten marine life, through an increase in salinity levels across the Red Sea and the Gulf of Aqaba, it was found that the increase will likely be unnoticeable and lesser than natural seasonal changes.

An Essential Marine Environment

At its southern end, the Red Sea narrows into a shallow strait that leads to the Indian Ocean. The Red Sea is the only route to the Indian Ocean from the north, where it branches off into the Gulf of Aqaba.

Salinity is controlled by evaporation and the inward and outward flow of water from the Indian Ocean, as neither body of water receives any freshwater supply. The salinity and density of the Red Sea are increased as water that flows into the sea from the south evaporates and cools as it travels north. This saltier water is heavier, so it sinks near the Red Sea's northern end and returns to the Indian Ocean as a deeper layer of water moving southward.

The natural increase in salinity from the point where water enters the Red Sea to its highest point at the northern end of the Gulf of Aqaba is approximately 10%, from about 36.8 to 40.6 practical salinity units. (PSU). A solution of one gramme of salt per thousand grammes of water is one PSU. The local marine ecosystem has adapted to the higher salinity found there.

Sanganeb and Dungonab Bay Marine National Parks and Mukkawar Island Marine National Park are just a few of the many Unesco World

Heritage Sites that can be found in the northern Red Sea. Coral reefs, seagrass beds, mudflats, mangroves, and beaches can all be found within our national parks. The scientific and environmental value of these areas is high since they are home to many different kinds of marine life, including the critically endangered dugong.

Most marine life can adapt to slightly different salinities, but they won't survive long-term shifts. *Stylophora pistillata*, a type of Red Sea coral, has had its photosynthesis and respiration rates reduced by as much as 50%, according to studies, when salinity levels were increased from 38 PSU to 40 PSU. If the salinity is maintained at this level for an extended period, most coral colonies will perish.

Adding Salt To The Ocean

"Our worst-case scenario entailed strong economic growth, increasing access to clean water, and decreasing desalination costs in the Middle East. By 2050, the Red Sea coast could desalinate about 10 trillion litres of water, while the Gulf of Aqaba could desalinate more than 2.5 trillion litres. In a less dire scenario, the population grows slowly and people consume less water at home. By 2050, the Red Sea and the Gulf of Aqaba could desalinate about 2 trillion litres of water and more than 560 billion litres, respectively," stated Jonathan Chenoweth, Senior Lecturer at the Centre for Environment and Sustainability, University of Surrey.

In a less dire scenario, the population grows slowly and people consume less water at home. By 2050, the Red Sea and the Gulf of Aqaba could desalinate about 2 trillion litres of water and more than 560 billion liters, respectively.

In no case did the Red Sea's salinity rise by more than 0.1 percent. Compared to the seasonal change in salinity that occurs naturally, this rise would be negligible.

However, the Gulf of Aqaba is more compact and cut off from the rest of the Indian Ocean. Therefore, the natural range of salinity in the northern Gulf is between 40.2 and 40.75 parts per thousand. We calculated that under the high development scenario, salinity in the Gulf's northernmost regions could rise by 0.5%, from about 40.6 PSU to 40.8 PSU. However, even with this increase, natural variability still has a limited effect on salinity.

The medium growth scenario, on the other hand, would result in a shift that is smaller than the fluctuation that occurs due to the seasons naturally.

Resolving The Middle East's Water Crisis

Increasing desalination rates might not threaten local marine life if they are managed properly. This is crucial since desalination is expected to experience rapid expansion in the Middle East.

To accommodate 9 million people and water-intensive sectors like aquaculture, Saudi Arabia plans to build a whole new metropolis in the country's northwest by 2045. This city will be called Neom. Desalination plants will draw water from the Red Sea and the Gulf of Aqaba for the city's needs.

Increased desalination rates are not likely to significantly impact regional saline levels beyond the immediate neighbourhood of individual desalination plants. However, good plant design and rigorous environmental laws will be important to prevent environmental damage.





Sanganeb Bay Marine National Parks // Pinterest

Brine from plants is discharged into the Red Sea through outfalls, where it is diluted quickly by mixing with the deeper water there. The brine can subsequently be diluted even further by being carried by ocean currents to the Indian Ocean. The global need for desalination systems is rising. If done right, it might be a powerful tool for combating water scarcity without endangering sensitive marine habitats.



Desalination plant in MENA region // Saudi Gazette

A HEALTHY AND SUSTAINED OCEAN SYSTEM CRITICAL FOR OCEAN HEALTH: DAVID SUGGETT

According to the UN, nearly 40 percent of the world's population lives near a coast; 3 billion are dependent on the ocean for their livelihood; and 80 percent of global trade is achieved by the ocean.

The oceans are the source of food security and poverty eradication. However, they are under severe threat because of human activities: pollution, ocean warming, and acidification, unsustainable fisheries, and deoxygenation are a few of the many causes. They can be detrimental to the planet and have long-term effects on the oceans and people.

Stopping exploitation and conserving marine life is termed the "Blue Economy." The World Bank terms it "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem."

The Middle East promises to focus on the blue economy by introducing several projects.



David Suggett - Chief Scientist at KAUST

NEOM, a megacity, promises a "blue economy," which will encourage sustainable use of marine resources.

Saudi Arabia's flagship project, OXAGON, a city that is part of Neom, will be the largest floating structure in the world and will use 100 percent clean energy. In 2022, Israel introduced the National Centre for Innovation and Blue Economy in Haifa, which aims to promote technological innovation and entrepreneurship concerning maritime life.

In an interview with David Suggett, Chief Scientist at KAUST Reefscape Restoration Initiative, on asking about a rise in the blue economy in the Middle East, he stated, "There's been a lot of momentum, certainly in industries and economies connected to water and marine systems.

Especially here, the growth of the blue economy is being catalysed by immense ecosystem service values that sustain coastal development and tourism. For maritime industries, transitioning towards transportation that reduces impacts to ecosystem [DS1] service value provision – such as power through renewable energies – will be essential to evolve the blue economy." "The blue economy is the driver of innovative and sustainable industrial growth," Suggett added.

Tourism Industry's Benefit From Greener Practices

Tourism, aquaculture, shipping, marine tourism, and marine nature conservation might benefit from adopting greener practices.



David Suggett surveying Opal Reef

Expanding on this, David Suggett replied, "Tourism is a good focal point in terms of adopting greener and more sustainable practices. One example would be Australia, where we worked closely with tourism to reposition the industry to develop more sustainable practices supporting reef conservation. One way we did that was by incorporating what we call "stewardship" practices, which is to directly manage and safeguard the resources that underpin their businesses and livelihoods."

"So, the tourism operators on the Great Barrier Reef became more responsible for conserving or actively restoring coral reefs there. It was a really important step for us in terms of creating social change and in fact a more resilient industry that is less reliant on just tourism" continued Suggett.

"Whenever you have tourism, you have movement of people, creating a huge energy demand. So, finding solutions about enabling movement while at the same time educating travellers to use more renewable energies is important," Suggett said.

Moreover, David Suggett also mentioned how tourists' perception of their impact is a critical driver of change to the tourism industry's evolution, ensuring a low (or zero) net carbon footprint. "So tourists understand they're having a small impact in terms of their visitation whilst investing into sustainable tourism operations giving back to the reef" stated Suggett.

Suggett further explained how the Gulf Cooperation Council (GCC) is now starting to reposition the industry as tourism operations grow. "We need to have a very large marine tourism economy so that we can adopt new, more sustainable tourism models as part of the development from the outset, establishing a more sustainable legacy for the industry."

KAUST Reefscape Restoration Initiative and Developments

The KAUST Reefscape Restoration Initiative is a large-scale coral reef restoration programme in the Red Sea in Saudi Arabia. This initiative began in 2021 and was funded by King Abdullah University of Science and Technology (KAUST) in partnership with NEOM. It integrates innovative technologies, pioneering coral propagation and planting, as well as ecosystem monitoring approaches to accelerate solutions for reef ecosystems. The first reefscape restoration site is located at Shushah Island, an area that supports wide and diverse coral reefs. The goal of this programme is to restore, conserve, protect, and enhance the coral reef ecosystem at a scale never previously seen worldwide.

On the current developments of this programme, David Suggett replied, "Throughout the region, there's huge interest in restoring coral reefs, primarily because of past deteriorations in local reef health. But importantly for restoration, there are still many incredibly healthy reefs that can be strategically used to help rebuild the less healthy areas."



David Suggett surveying Opal Reef

"The challenge is the need to mitigate the impacts of further degradation and ensure that reef areas are either preserved or rebuilt. The KAUST programme uses the acronym KRRI for KAUST Reefscape Restoration Initiative," said Suggett.

"The remit of the project is to deliver restoration at a scale that's never been achieved before. The footprint of our project is 100x the size of most current reef restoration efforts worldwide. This requires innovation in approach but also entirely new regional infrastructure be developed and built. "explained Suggett.

"For more context, reef restoration, as an idea, is still relatively young. It's been undertaken by local communities, almost as a gardening approach, for decades.

But it's only recently started to organise itself globally into a more industry-facing exercise that can operate at the scales that reefs exist on, which are many hectares. To achieve this unprecedented scale, we must rethink the entire model of coral (or reef) restoration, and that means taking a much more industrialised approach to how you grow coral and how you return them to the reef. The actual goal of the KRRI is to restore the 100-hectare area, whilst creating new tools, technologies and approaches that will be needed to transform efforts elsewhere" continued Suggett.

"Currently, most reef restoration is conducted on a single hectare. Our restoration region is two orders of magnitude beyond that. We do this through several practices. The first is in water coral nurseries where you can fragment and propagate coral colonies – much like a plant – under natural reef conditions.

But they also sexually reproduce, which makes them pretty unique in the animal kingdom because it means that we can also exploit the sexual reproduction process to grow coral in greater abundance than you can achieve just by fragmenting them," clarified Suggett.

Moreover, Suggett also stated that one of the major goals of the project is to supplement the in-water nurseries with the world's largest land-based coral nursery. A giant aquarium system that can grow hundreds of thousands of corals at the same time under very controlled conditions, particularly exploiting the sexual reproduction phase of coral propagation. This can showcase the world and the global community of coral reef practitioners - innovative tools, and new methods to do things bigger and better.

Suggett further explained another part of the project, which is to create a full digital twin of the underwater reefscape. "We are capturing everything down to the millimetre scale at sites using stereo camera technology. We use 3D reconstructed imagery of the reef to then not only plan the restoration activity but also manage it long-term. It also means that anyone around the world can access that digital twin and have a visual experience of the reef both in its present condition and as a more fully flourishing reef over time."

"Through this project, we can ultimately deploy the facilities and technologies to restore other reefs, not only in the region but also worldwide. For land-based and coral nursery operations, it can potentially operate as a new hub to produce coral for the entire region," continued Suggett.

Obstacles In Embedding Sustainable Solutions In The System

"The biggest obstacle coral restoration has experienced to date has been a funding trap to be able to achieve scale. To innovate at new scales, sufficient capital is needed to develop transformative approaches and demonstrate what can be achieved. Most restoration activities to date have been limited by short term (small scale) funding opportunity. Reef restoration now has blended finance vehicles to overcome this, including the Saudi-KAUST funded incubator CORDAP (Coral Research & Development Accelerator Platform). We are now overcoming huge technical bottlenecks that have stalled restoration potential; for example, propagating coral quickly and efficiently. And we've already started to grow coral at scales never seen before in this region using new structures, new facilities, and new designs," stated Suggett.

"The other challenge we have is replanting coral back on the reef. Returning coral back to the reef and getting it to cement quickly can be achieved using a physical attachment method or a chemical attachment method. We have new R&D initiatives that we operate in partnership with the Faculties at KAUST, as well as overseas collaborations including other restoration programmes worldwide. Our goal is to ensure restoration is cost-effective and efficient in terms of its deployment ability," said Suggett.



"Perhaps the most significant obstacle we have with reef restoration is simply the fact that we work underwater. Terrestrial restoration and planting trees are by comparison arguably straightforward. However, working in the water is a challenge because you have a limited amount of time. Hence, we are exploring robotics and an optimised workforce to maximise in water operations. Again, coral restoration historically has been more confined to coral gardening and much smaller-scale ventures through such fundamental obstacles," clarifies Suggett.

Investment In The Blue Economy A Boon To Ocean Health

Several important tourism initiatives and existing assets, according to a recently published report, rely heavily on ocean health. Investment in the Blue Economy Initiative may also help the region's maritime trade and logistics.

Sharing his thoughts on this, David Suggett stated, "It is a critical relationship between the ecosystem, health, and an industry. Any industry is ultimately built around the natural assets that it has. In the case of the maritime industry, reef assets might be the biodiversity you have or their geological structures in the water."

"So ensuring that you have a healthy and sustained ocean system is critical. It is also to ensure industries are positioned to be sustainable with the right relationship with the marine environment. This is why we focus on tourism as a good example of how that can work well but also work terribly. We are trying to bridge some of these barriers by reframing or innovating how we manage systems sustainably," said Suggett.

"We know that under the uncertainties of climate change projections and aggressive



David Suggett surveying Opal Reef

anthropogenic impacts, we need additional means to protect our assets and resources. Hence, many global communities reliant on marine resources are turning to reef restoration," explained Suggett.

"The problem at the moment is that many restoration activities and projects are conceived without really understanding the connection of those ecological assets to social requirements. So we are conceiving a new paradigm shift that is building a model of how people are connected to the reefs.

This can be commerce, tourism, or another industry. Identifying all of these connections enables you to understand how changing one

aspect of the system can impact – positively or negatively – other aspects of the system.

This can be either the reef ecology, the human stakeholder, or indeed the economic flow between ecosystem and human states," stated Suggett.

Suggett said a new portfolio of funding resources is currently available to better manage, develop, and conserve our ocean assets. But it is also important to adapt to financing and changing industries or commerce.

Apart from finding innovative reef restoration solutions, David Suggett pursues an active lifestyle by spending time in the gym and outside of the water.

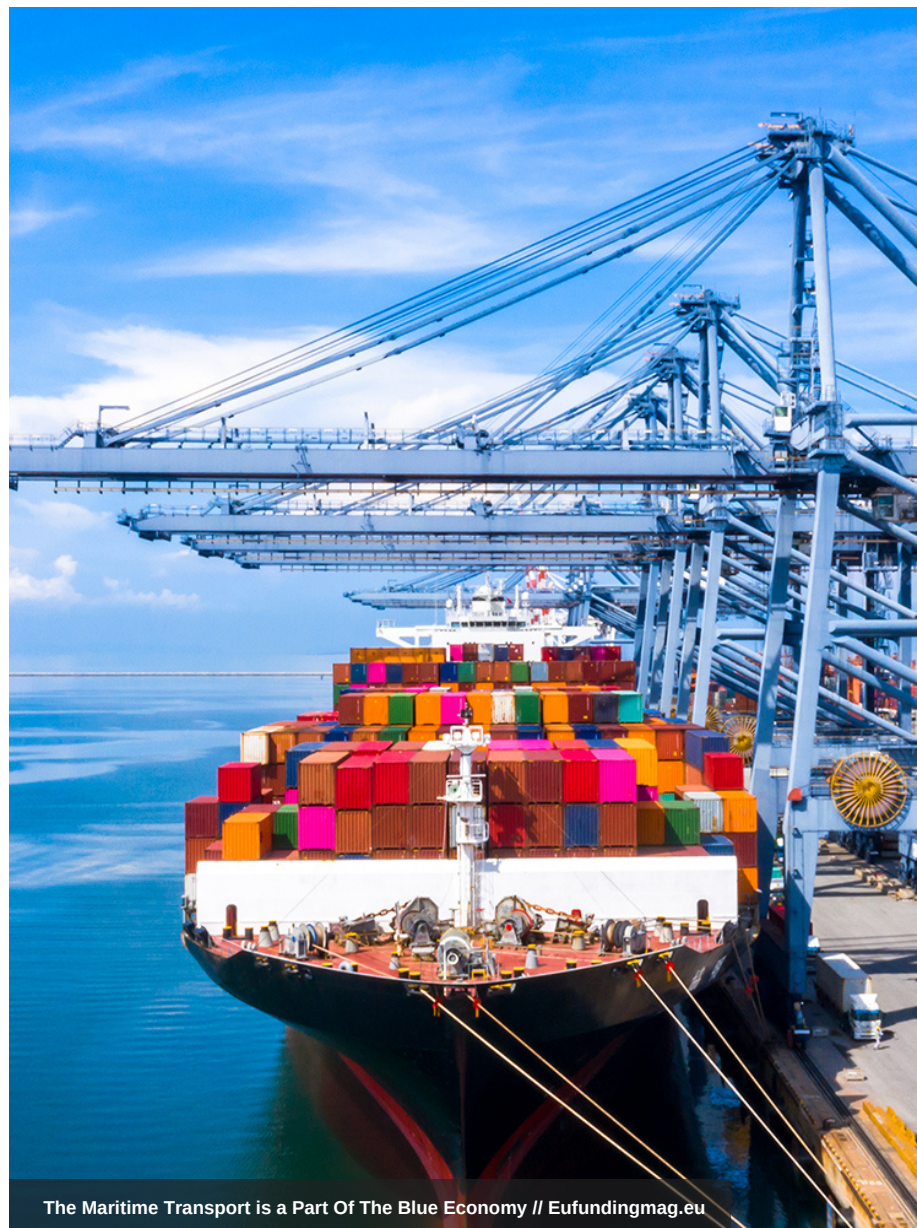
All Photos are Provided By David Suggett

UNLOCKING THE GULF'S BLUE WEALTH: OPPORTUNITIES ABOUND

The blue economy helps in the diversification of the economy and helps move away from oil. It is also called as 'ocean economy.' According to the World Bank, the blue economy is "the sustainable use of maritime resources for economic growth, jobs, and improved livelihoods while preserving the marine ecosystem's health." It says that a blue economy will improve livelihoods and jobs, and ocean ecosystem health.

The objective is to achieve a harmonious relationship between preservation and resource extraction while developing economies that rely on the ocean.

The Middle East, with its vast coastal areas and strategic location, holds tremendous potential for the development of a vibrant blue economy. The Mediterranean basin is the world's largest enclosed sea connecting Europe, Africa, Asia, and the Middle East. It serves as a key



The Maritime Transport is a Part Of The Blue Economy // Eufundingmag.eu

economic hub for trade, transport, and tourism.

According to the United Nations Environment Programme, the basin is also one of the regions sensitive to global warming. This is why switching to a blue economy becomes critical. More importantly, sustainability is the future and will diversify the economy not limiting it to technology.

Israel unveiled the National Center for Innovation and Blue Economy in Haifa, which aims to aim to promote technological innovation and entrepreneurship related to the maritime space.

The projects are in the fields such as aquaculture, shipping, marine tourism, and marine nature conservation, the Environmental Protection Ministry and the Haifa Municipality said in a joint statement.

Additionally, Mohammed Baharoon, director general at b'huth - The Dubai Public Policy Research Centre, while speaking to the media, commented that the United Arab Emirates and Oman are also working hard on exploring these areas. He added that the investments are low, but it is an area of growth.

He continued that the blue economy plays a key role in future developments, especially for the GCC region because they "are based in the Arabian Peninsula which is surrounded by four seas. Their economic ties with countries in the Indo-Pacific Region are huge."

Unexplored Potential For The Middle East

While the region has relied on oil and gas industries, investing in the blue economy and sustainable technologies will diversify its economy and open new avenues for sustainable growth, job creation, and environmental stewardship.

The blue economy presents a wealth of opportunities, Egypt's reserves now total 30, which is 13.5 percent of the Republic's total area. The country has a total of 53 seaports, with 15 being commercial and 38 being specialized. The area of coral reefs in the Red Sea region is 3412 km. More than 90 percent of incoming tourism to Egypt is attributed to beach tourism. In 2020, Egypt's fish production amounted to 63 billion pounds.

The Suez Canal covers 25 percent of the world's trade, with an estimated value of over 1 trillion US dollars annually. Additionally, 30 percent of global container traffic passes through the canal, with 50 ships carrying between US \$3-9 billion in goods making the trip between the Port of Suez and Port Said each day.

The Suez Canal transports an estimated 7-10 percent of the world's oil and 8 percent of liquefied natural gas daily, as well as one million barrels of oil.

Offshore wind farms have the potential to be established in various locations worldwide. Coasts along the Gulf of Suez and Aqaba in Egypt, Jordan, north-west Saudi Arabia, the southeast coast of Oman, northern Libya, and southern Tunisia have an annual wind speed greater than 5m/s at 80 meters above sea level.

Egypt is a regional leader in building wind farms, with the largest wind farm in the country being a 545-MW facility in Zafarana. Cairo is planning to expand its wind energy capacity through two memoranda of understanding. One is with Saudi Arabia's renewable energy developer ACWA to construct a 10-GW wind farm, and the other is with the UAE's Masdar to build a second 10-GW onshore wind farm.

These would be the second-largest wind farms globally, behind China's Gansu project, which

has a projected capacity of 20 GW. The Masdar onshore wind farm is expected to generate about 48,000 GWh of clean energy annually, offsetting some 23.8 million tons of CO2 emissions, which is about 9 percent of the country's total carbon emissions.

The global Container Port Performance Index (CPPI) indicates that four of the five best-performing ports in the world are in the Middle East region. These are King Abdullah Port in Saudi Arabia, Port Salalah in Oman, Hamad Port in Qatar, Khalifa Port in Abu Dhabi, and the largest port in the Mediterranean, the Moroccan port of Tanger-Med.

Between 80 percent and 90 percent of international trade involves maritime transportation, including container carriers and oil and chemical tankers. These types of vessels





represent 20 percent of the global fleet but contribute 85 percent of the net greenhouse gas (GHG) emissions associated with the shipping sector. Therefore, policymakers and industry leaders are increasingly concerned about adapting ports and maritime shipping to climate change impacts.

This concern is particularly relevant considering recent regulations by the International Maritime Organization (IMO) that aim to reduce CO₂ emissions from ships by 50 percent by 2050. Other key developments that aim to reduce maritime carbon emissions and environmental impacts include the 2021 Clydebank Declaration.

This declaration aims to establish six zero-emission green corridors of entirely

decarbonized maritime routes between two or more ports. The Dhaka-Glasgow Declaration also called for the IMO to implement a mandatory levy on international shipping to accelerate efforts on climate change mitigation.

The Gulf Cooperation Council ([GCC](#)) is set to benefit from the blue economy, which contains interconnected sectors that have the potential to achieve growth and support economic development.

The UN estimates that the ocean economy has an annual turnover of between US\$3 and US\$6 trillion, covering employment, ecosystem services provided by the ocean and cultural services. Fisheries and aquaculture contribute US\$100 billion annually and about 260 million jobs to the world economy.

According to Anis Khayati, an economics professor at the University of Bahrain, developing the blue economy does not require difficult innovations or scarce knowledge.

It is noteworthy to understand, that most sectors of the blue economy are linked to available technologies and methods of production, which can push the blue economy growth process and achieve sustainable development.

These areas include producing renewable energies, extracting mineral wealth in deep waters, oil and gas production, shipping and port activities, fishing, aquaculture, coastal and marine tourism, and action against ocean nutrient pollution.

Strengthening The Blue Economy In the Middle East

The Gulf Cooperation Countries (GCC) are introducing ambitious green projects, including mega tree plantations, establishing large solar plants, and building futuristic cities. In terms of blue projects, Saudi Arabia plans to build a new floating city called Oxagon, claiming to be the world's largest floating structure, in the southwestern area of Neom.

Half of Oxagon will float on the Red Sea with an average depth of 500 meters. Saudi Arabia also has its Red Sea project, an ambitious regenerative tourism plan, the Coral Bloom development, and Amaala, a luxury tourism destination under development on the northwestern Red Sea coastline.

The United Arab Emirates (UAE) has set an ambitious target to plant 100 million mangroves by 2030, signalling its commitment to environmental conservation and sustainability.

The country has been strengthening its maritime capabilities by forging partnerships with neighbouring countries. The UAE boasts 12 commercial trading ports with 310 berths, facilitating a substantial cargo tonnage of 80 million.

In a significant development, Qatar has recently announced its plans to construct the world's largest blue ammonia plant. The project, spearheaded by QatarEnergy, is projected to reach completion by 2026, with an estimated cost of US\$1 billion.

The plant aims to produce 1.2 million tons of blue ammonia annually. Blue ammonia serves as a valuable fuel source for various applications, including industrial heating, heavy road transport, and shipping thereby protecting marine life.

In 2022, Mariam bint Mohammed Almhairi, the UAE's Minister of Climate Change and Environment, emphasized the importance of a just transition to clean energy sources. She acknowledged that while oil and gas will continue to play a role in the energy mix for the foreseeable future, there is a growing recognition of the need to embrace cleaner alternatives.

Conclusively, the blue economy can provide an opportunity to grow and create a sustainable future if governments and industries focus on developing the right technologies to support aquaculture and improve desalination, transportation, and tourism.

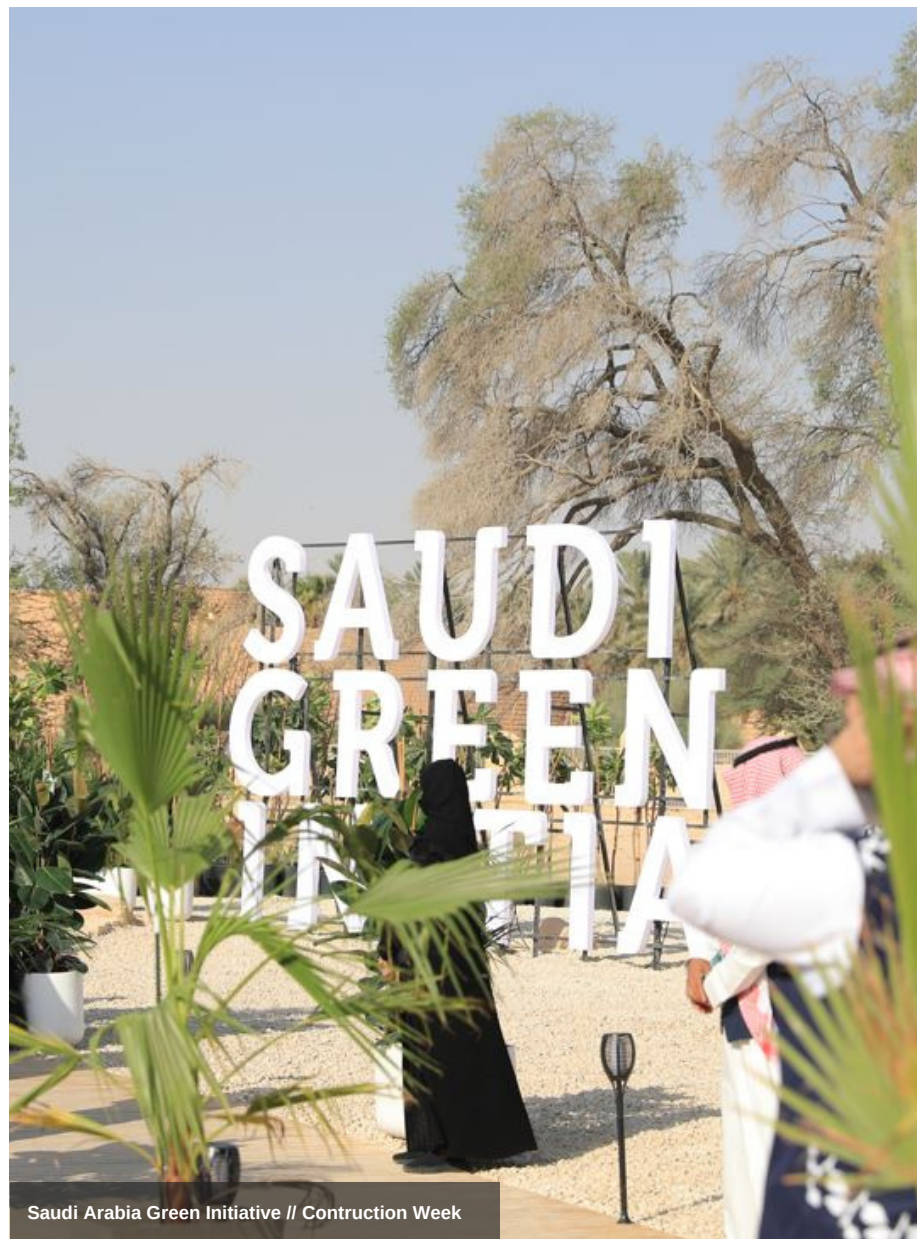
THE RED SEA PROJECT'S APPROACH TO ENVIRONMENTAL RESPONSIBILITY

Plans presently being executed across the Middle East, particularly in Saudi Arabia, are difficult to compare when it comes to large-scale, sustainable, and futuristic building projects. Many promising projects have been announced as part of the Saudi Vision 2030 and the Saudi Green Initiative, and several are already ongoing. Each of these is tailored to assist the Kingdom of Saudi Arabia in weaning itself off of its reliance on petroleum and natural gas such as the Red Sea Project.

The Saudi Green Initiative

Saudi Arabia hopes to protect the next generation's interests inside and outside the country through the efforts of many governmental agencies, private organizations, and international leaders through two separate green projects.

People can see the need to combat climate change throughout the



Saudi Arabia Green Initiative // Construction Week

the Middle East and Africa. Rising temperatures and extreme weather events already have an effect on the quality of life and economic prospects, from increased desertification and dust storms that influence air quality to dwindling freshwater supplies. Saudi Arabia is pleased to play a pivotal role in leading international collaborations for a more sustainable global future, and the country is at the forefront of far-reaching, tailored action.

"We are ushering in a new green era for the region; in which we are collectively leading and reaping its fruits, in our joint belief that the effects of climate change are not limited to the natural environment only, but also to the economy and security of our nations" stated HRH Mohammed Bin Salman, Crown Prince And Prime Minister Of Saudi Arabia.

The Saudi Green Initiative was established to help the region rely more heavily on renewable energy sources, reduce its carbon footprint, and safeguard its natural resources. It's a conscious effort to reduce the region's dependence on oil and gas for economic and energy purposes.

The initiative's eight goals include things like rehabilitating 40 million acres of property and planting 10 billion trees by 2060. Most of the goals are geared towards improving the business and the environment by that year.

His Royal Highness the Crown Prince unveiled the first project under the initiative, marking the beginning of the first wave of investments that will total more than SAR 700 billion.



Red Sea Project // Zam Zam

Largest Ecotourism Initiative Ever Undertaken

As part of the Saudi Vision 2030 plan, the Red Sea Project is a massive tourism and infrastructure development initiative in the kingdom. The Saudi Crown Prince announced the initiative in July 2017, and its goal is to provide visitors to the Red Sea coast with high-end, environmentally conscious tourism options.

The Red Sea Project is a large-scale urban redevelopment initiative located between the Saudi Arabian cities of Al Wajh and Umluj on the country's western shore. There is a world-class airport, along with a coastal town, a nursery for plants, a wilderness area, artificial islands, and more.

A focus on sustainability will inform the design of every location. All 17 of the United Nations' Sustainable Development Goals will be reflected in the Red Sea Project. To accomplish this, we will implement several important initiatives, such as eliminating the use of single-use plastics, powering all attractions solely with renewable energy, and not sending any trash to landfills.

Once it's finished, it will be sustainable because of how well the number of visitors is controlled. Using a sophisticated destination management system to curb visitor numbers, tourism's negative effects on the natural world can be mitigated, if not eradicated entirely. By 2040, the site hopes to have achieved a net conservation gain of 30%.

Red Sea Global's planned destination will feature more than 90 islands spread across more than 28,000 square kilometres of untouched land and sea and will be a model of sustainable development and regenerative tourism. Keeping sustainability in mind, the underlying infrastructure prioritises the use of green energy sources and the recycling and reuse of water.

There are gorges in the mountains, extinct volcanoes, and historic landmarks to explore. Buildings for lodging, living, recreation, and amusement are all part of the Red Sea Project's plans.

The Red Sea is a window to Saudi Arabia's wealth and is opening up numerous commercial, cultural, and social prospects for the country.

Destination And Sustainability Woven Together

The Red Sea Development Company has tapped into the booming luxury travel industry, the increasing popularity of Saudi Arabia as a tourist location, and the growing interest in environmentally responsible practices.

The business is based on preserving and sharing cultural traditions, and it implements innovative strategies for sustainable growth to promote tourism in Saudi Arabia. The company's ultimate goal is to reverse some of the harm that has already been done by the ecological and climate crisis and go beyond sustainability in doing so.

John Pagano, Group CEO at The Red Sea Development Company and AMAALA, describes what he terms "a regenerative development approach" as the first visitors prepare to arrive in the area by the end of the year. Putting forth minimal environmental impact is at the heart of sustainability.

It is static, in contrast to regeneration's active pursuit of improvement. We delayed beginning our plans and building until we could incorporate the experts' input. We began to formulate ideas for the product we would create. And we worked with the Red Sea's top experts in research and understanding, the King Abdullah University of Science and Technology.

Through their collaboration, they were able to create the largest maritime spatial planning simulation ever conducted, covering an area of about 2.5 million square metres and including a 90-island archipelago. Following the assignment of conservation values, developers iterated on various concepts for the positioning of buildings and transportation corridors.

According to Pagano, the goals are lofty but not impossible to reach. We decided to aim for a 30% increase in net conservation worth rather than doing nothing at all. What should we do? More wetlands and coral reefs are being established. Our reefs coral appears to be uniquely adapted to the warmer waters and greater salinity of the Red Sea.

As part of the revitalization process, it has been necessary to make some difficult choices about where to construct new buildings and to commit to using only green energy sources. Pagano specifically points out Waqqadi Island, "White sandy beaches and clear, turquoise seas characterise this island perfectly. But we learned that the severely endangered hawksbill sea turtles preferred this island as a nesting ground.



Saudi Arabia Green Initiative // NDTV

“The island's development could hasten the demise of the species there. The talk didn't last long. To show our appreciation for the turtles' pioneering spirit, I have given each member of my staff and each visitor a small turtle pin to wear on their collar,” he said.

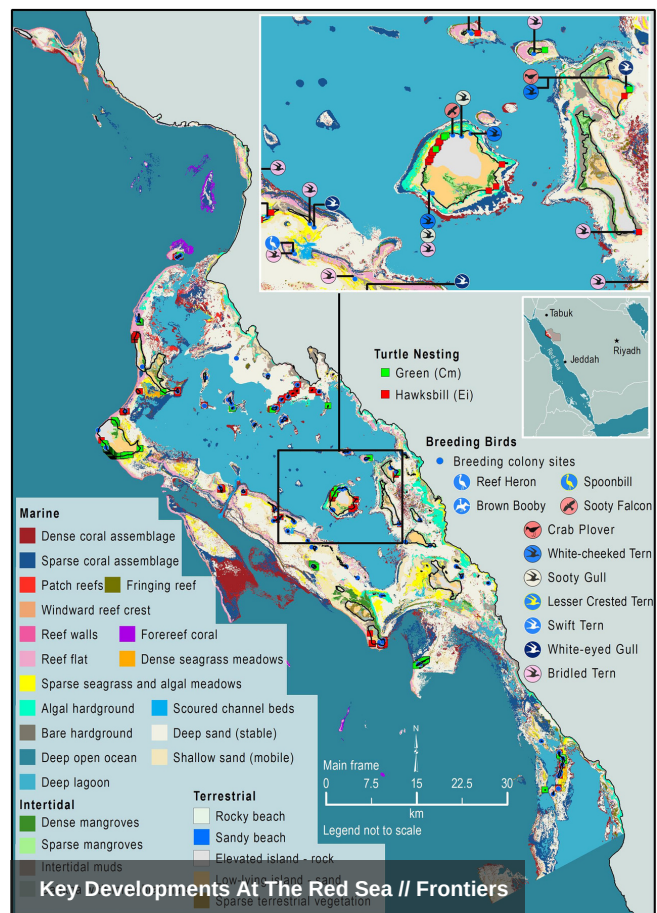
About 75 percent of the region's 90 islands will remain undeveloped, and several will be set aside as protected regions overseen by rangers but open to visitors only under strict conditions. Pagano argues, “By our example, the rest of the world can see that excessive growth can be counterproductive. We're putting limits on our progress so that we can preserve and improve things, and maybe others will follow our example.”

With over 10% of the global GDP and employing nearly 1 in 4 people before the pandemic, the tourist and hospitality industry plays a significant part in Saudi Arabia's vision 2030 to diversify the economy. Religious travel to Mecca and Medina accounts for the vast majority of Saudi Arabia's 3.4% GDP contribution from tourism. The Red Sea is being used as a showcase for the kingdom's shift towards resort development and tourism; it has the potential to increase that number by as much as 1 percent and to directly create 60,000 jobs, with another 60,000 jobs dependent on the plan for both The Red Sea project and AMAALA. Pagano argues that sustainability can also play a role in this context,” we aim to achieve day one carbon neutrality as part of our regeneration.

All of our transportation methods are eco-friendly. To further prove our dedication to sustainability, we're also researching options like hydrogen seaplanes and electric-powered aircraft with vertical takeoff and landing.

“Saudi Arabia, with its previously inaccessible culture, promises to be fascinating. The natural setting here is untouched. I believe it will go over well to celebrate it and to naturally protect and enhance it,” he concluded.

It's safe to say that Saudis are among the friendliest and most welcoming people on the planet. A greater understanding of Saudi Arabia and its people can be gained through tourism, which acts as a cultural bridge.



TRANSITIONING TOWARDS SUSTAINABLE MOBILITY FUEL TECHNOLOGIES

The future of sustainable mobility looks promising. Especially considering the automotive industry is currently experiencing a mobility revolution due to social trends and technological advancements, This has created a new automotive ecosystem and new players in the industry.

Transitioning from a linear to a circular model necessitates a fast transition towards renewable feedstocks and energy supplies by the petrochemical and energy sectors. Many projects are driven towards net zero emissions and moving away from oil and gas into the use of renewable energy resources as fuels.

In an interview with thirtytonetzero, Dr. Udo Huenger, Vice President of Market Area Middle East at BASF, stated, "Our transition to a zero-energy state will be driven by three primary considerations. Changes include switching to renewable energy sources, creating innovative methods to reduce carbon dioxide emissions,



and enhancing existing methods to be more efficient. In this respect, the greatest impact will be felt in scope 1 and 2 emissions at first, and afterwards in all three scopes of emissions." BASF plans to achieve net zero emissions in the petrochemical industry by 2030.

Although there are plenty of opportunities available in the market, relevant progress and trends need to take place to make disruptive and widespread changes in the Middle East. By pushing such efforts, it will not only diversify the economy and create new sources of prosperity but also promote sustainability in the Middle East by striving to become global leaders in climate-related technologies.

Here are the five key trends necessary for sustainable mobility:

1. Sustainable Vehicles

The Middle East region is witnessing a surge in the adoption of electric and autonomous vehicles. The United Arab Emirates, Qatar, and Saudi Arabia have introduced favourable policies and incentives, such as tax exemptions, subsidies, and investments, to encourage the widespread adoption of EVs. Additionally, private companies are investing in charging stations and fast-charging networks, enabling EV owners to recharge their vehicles conveniently.

In 2018, Masdar, in cooperation with the Department of Transport (DOT), launched the Hafilat Industry battery electric bus (BEB). The bus has been tested and evaluated for two years for its performance and durability in summer weather conditions.

In August 2020, Sharjah Airport became the first carbon-neutral airport in the Gulf Cooperation Council (GCC). Masdar City prioritises pedestrians first, and a sustainable transport network is being explored, including driverless vehicles and fast-charging stations. Dubai has launched a trial of autonomous buses, while Abu Dhabi has launched a driverless taxi service.

Additionally, the latest addition to Dubai's police force is the supercars in the line of duty created by local outfit Micropolis Robotics. Known as the M01 and the M02, the two cars are described as the world's most hi-tech police vehicles.

They are self-driving patrol cars that use AI, machine learning, and 360-degree surveillance technology to investigate suspected criminal activity or road accidents. If the cars detect anything, the patrols can communicate directly with police command centres to request backup. They also have drones installed to chase suspected criminals.

2. Greener And More Sustainable Airlines

Air travel has a significant impact on the environment, and aviation companies worldwide are investing in cutting-edge innovations to help minimise this impact.

Etihad Airways received the Environmental Sustainability Innovation of the Year award from the Centre of Aviation (CAPA) for its progress towards net-zero targets and the UN Sustainable Development Goals (SDGs).

Additionally, the Abu Dhabi-based airline expects to cut single-use plastic waste and achieve a 20 percent reduction in passenger fleet emissions by 2025.

Qatar Airways is also making significant progress towards lowering its carbon emissions through waste reduction and water conservation initiatives. The airline is working to drive sustainability through quieter, more efficient engines.

At the Arabian Travel Market, during one of the panel discussions by key aviation industry leaders, many agreed that the use of sustainable aviation fuel (SAF) can help meet the industry's long-term sustainability goals.

This year, Chinese company EHang has partnered with Monarch Aircraft to bring electric vertical takeoff and landing (eVTOL) vehicles, drones, and necessary operation facilities to the Middle East. The EHang 216 is an eVTOL vehicle capable of carrying up to two people in fully autonomous flight mode.

Abu Dhabi is set to be the first centre for the development of sustainable electric aircraft and drones, as well as an autonomously managed air mobility command and control centre.

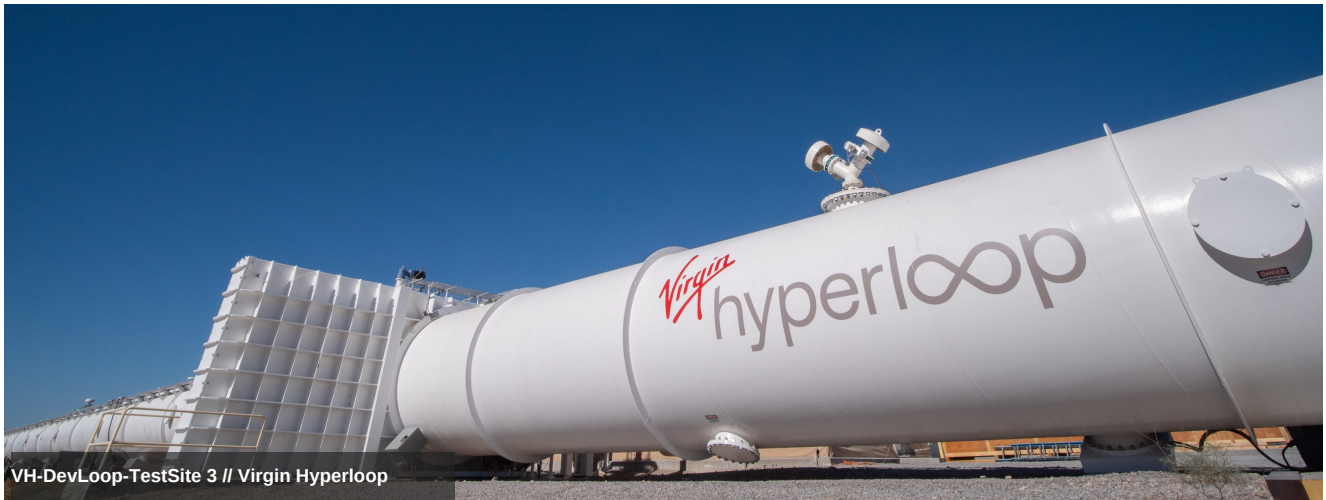
3. Sustainable Fuels

Green fuels are types of fuel derived from biomass. Biomass includes all kinds of organic matter, such as plant or animal waste. Also known as biofuels, they're more eco-friendly since they're sustainable and naturally replenished. While conventional fuels require a long geological process to form, green fuels can be generated in a matter of days.

This year, according to a press release, Emirates Airlines operated its test flight powered by 100 percent sustainable aviation fuel.



Green Hydrogen // PSU Connects



Although sustainable aviation fuel is used in many flights, only 50 percent of it is combined with conventional fuels.

In 2022, Masdar, one of the world's leading renewable energy companies, collaborated on an agreement with TotalEnergies and Siemens Energy to produce sustainable aviation fuel (SAF).

On TotalEnergies' website, Francois Good, Senior Vice President, Refining and Petrochemicals Africa, Middle East, and Asia at TotalEnergies, said, "We are very pleased to partner with Masdar and Siemens Energy to meet the challenge of decarbonizing air transport through sustainable aviation fuel from green hydrogen. In this project, TotalEnergies brings its expertise in renewable energy as well as SAF manufacturing and marketing advanced sustainable fuel production with the aim of acting directly on the carbon intensity of the energy products used by our customers.

This is in line with our strategy of building a multi-energy company with the ambition to get to net zero by 2050 together with society."

Dubai's Roads and Transport Authority (RTA) has launched a bike-sharing service, while Abu Dhabi has built several cycling tracks throughout the city. These initiatives aim to promote sustainable mobility while providing residents with an alternative mode of transport.

4. Aerial Transport

Aerial transportation is attracting significant attention in the Middle East, which could lead to the region's transformation.

Falcon Aviation Services, based in Abu Dhabi, has plans to purchase 35 Eve electric vertical take-off and landing (eVTOL) aircraft. The goal is to offer tourist flights to Dubai by 2026.

Meanwhile, Saudia, Saudi Arabia's national airline, has signed a memorandum of understanding with Lilium, a German company. The agreement could result in Saudi Arabia receiving up to 100 eVTOL jets. Saudia is considering developing a network of business-

class services throughout the country, including point-to-point flights and services that connect with its main hubs.

Abdul Latif Jameel, an automotive distribution, auto parts manufacturing, and financial services business, is also planning to be a part of e-aviation. The company has invested in the Californian start-up Joby Aviation, which is developing an eVTOL five-seater taxi. It can fly at 200mph and cover 150 miles on a single charge, and it aims to commercialise its services by 2024.

"Air taxi service is still in the early stages of commercialization, but it has the potential to completely transform the future of mobility. Improving daily transportation in line with environmental sustainability is a mission we share with all our business partners," said Hassan Jameel, Deputy President and Vice Chairman of Abdul Latif Jameel.

In 2022, Abu Dhabi Airports signed a memorandum of understanding with French engineering and operations company Groupe ADP to explore the potential of Advanced Air Mobility (AAM) in Abu Dhabi, which will use electric vertical take-off and landing (eVTOL) aircraft to move people and cargo.

Israeli start-up AIR is going beyond and building an eVTOL designed for mass use. AIR's eVTOL is still in its testing phase; however, it has achieved a key milestone by completing the aircraft's maiden unmanned flight. Later, it will have someone on board.

AIR's CEO and co-founder, Rani Plaut, believes that the company's eVTOL will be used for short commutes above city traffic or leisure trips, but it will have to clear regulatory hurdles before making it commercially available.

This year, the UAE Regulations Lab at the General Secretariat of the Cabinet issued a temporary licence for electric cargo aircraft as a sustainable and eco-friendly transportation mode in the UAE. It comes in collaboration with United Parcel Service (UPS), an American multinational shipping and receiving and supply chain management company.

The licence provides a strong legislative structure to operate a new generation of cargo aircraft that use clean energy. As per the licence, UPS will be able to start its cargo operations with a new sustainable aircraft that confirms the specifications and standards adopted internationally.

Alternative Solutions

In the future, more advanced and relevant technologies could be part of the lives of the region's residents, and these are already part of current discussions. Virgin Hyperloop, a transportation technology company, partnered with the Middle East's Roads and Transport Authority (RTA) to develop a hyperloop system in the region.

The partnership between Virgin Hyperloop and the RTA focused on developing a hyperloop route connecting Dubai and Abu Dhabi, which will connect the two cities in 12 minutes.

It is a high-speed transportation concept that uses magnetic levitation and low-pressure tubes to transport pods or capsules at high speeds, reducing travel times compared to conventional transportation methods.

It has projects and investments in and from Saudi Arabia and the UAE. In 2020, it signed an agreement with the Saudi Transport Ministry to study the use of its technology. Later partnered with the Mohamed bin Zayed University of Artificial Intelligence in the Emirates. The two will collaborate on transport-related AI research. The Saudi Crown Prince hailed it as a "catalyst" for technological change when he unveiled the Vision 2030 hyperloop pod in 2018.

Virgin Hyperloop's Chairman, Sultan Ahmed bin Sulayem, said the hyperloop "will be a disruption in the way people travel" during a visit to the company's development site.

Sustainable mobility is crucial for a liveable and safe environment in the fast-growing Middle East region. Collaboration with public transport authorities, governments, and citizens is key to its success.



AIR One First Flight In Northern Israel // Aviation Today

**ROLLS-ROYCE'S YURI JONGKIND
DISCUSSES A RANGE OF GAME-
CHANGING' TECHNOLOGIES SET TO
ENABLE A PATHWAY TO NET ZERO
FLIGHT AND ADVANCED AIR MOBILITY**

In a historic moment for Rolls-Royce, the aero-engine manufacturer has tested a brand-new engine architecture, called UltraFan, which opens up innovative pathways for the aviation industry's target of Net Zero flight.

Rolls-Royce's Business development Director, Yuri Jongkind, said: "UltraFan is the largest in the world demonstrator aero engine today. It is completely new technology that is focused on improving fuel efficiency. It aims to be 25 per cent more fuel-efficient which results in 40 per cent less pollutants (NoX), and 35 per cent less noise. UltraFan is ready to run on 100% Sustainable Aviation Fuel (SAF) from day one of service.

"The aviation sector itself accounts for about 2 per cent of the total emissions globally. It's considered a hard-to-abate sector so the transition to net zero is either technologically or financially difficult. And that's where SAF is playing a key role.



Yuri Jongkind - Business Development Director for Africa, Middle East and Turkey at Rolls Royce

“SAF from vegetable or waste oil (HVO) is a great fuel. However, it is not available in the volumes we would like to see and it's even more difficult to scale. So, in the longer term, I expect that we will produce SAF with what they call PtL, or power-to-liquid process, which is basically a synthetic hydrogen fuel. This is the type of aviation fuel that is able to scale and really get us towards net-zero.

“Today, there's hardly any synthetic SAF available. What we need are really stimulating policies to drive the initial investment to build at-scale production capacity and to accelerate economies-of-scale, driving the costs of SAF down.

“SAF capacity is likely to double over the next few years, but that's not enough to bring aviation to net-zero. A further significant ramp-up is required up to and beyond 2030. To make sure technology is an enabler, all Rolls-Royce aviation engines currently in production will be compatible with 100% SAF this year.

“To produce synthetic SAF with clean power in large volumes, Rolls-Royce has pioneered Small Modular Reactors, or SMRs. These are small nuclear power plants capable of delivering the clean energy that the PtL process requires, thus offering industry a net-zero production solution,” Jongkind said.

“Today, there's a massive opportunity [for the aviation industry] with a big wave of investments being made in integrated innovations, such as SMRs and related enabling technologies.

We see a huge uptake and capital flowing into sustainable solutions. That's an opportunity which needs to be supported by the regulations and the stimulus policies I mentioned, along with technology partnerships.

“I think for airframers, some of the biggest companies we work with today, they are looking into both understanding what scalability of SAF and other technologies to power aviation means, and what the societal pick-up rate can be. Rolls-Royce is making efforts in both technologies as well as public acceptance.

“Today, the aviation sector's biggest risk is the risk of not acting and not transitioning. In our view, this could lead to reputational exposure for the whole sector. Those costs might be passed on to end consumers leading to a reduction of access to global travel for an increasing world-wide population,” said the aero-industry leader.

Returning to what UltraFan means and the benefits that the test bed process offers, Rolls-Royce says it has made substantial improvements in four areas towards improving engine efficiency and reducing emissions. Key improvements are made in the fan blades, the gearbox, the combustion system, and the core design of the turbine.



Jongkind said: “We applied innovative materials for the fan blades. High -tech, carbon composites with a titanium leading edge. That’s the edge which cuts into the air and needs to be more resilient and more resistant.

“By doing this, having a carbon composite together with titanium, we reduced the weight and consequentially improved the fuel consumption. This engine has been extensively tested so these new materials and designs can be deployed to applications across the industry,” he said.

Rolls-Royce is pioneering the electrification of flight

Next to UltraFan technology, Rolls-Royce develops a range of technologies for the fast-

emerging Advanced Air Mobility, or “AAM” sector.

This electrically powered aviation market is set to accelerate the global transition for sustainable, on-demand passenger and air cargo transport. AAM improves accessibility to remote locations and [offers] more efficient metropolitan transportation options (alleviating urban traffic congestion), the AAM market supports the next generation of environmentally friendly, efficient air transportation.

Jongkind said: “Electrically powered aviation allows a fast and cost-effective way to travel. The market is likely to be split between passenger and cargo transport, the latter estimated to be 60 per cent by 2035.

“Cargo is extremely important for the initial

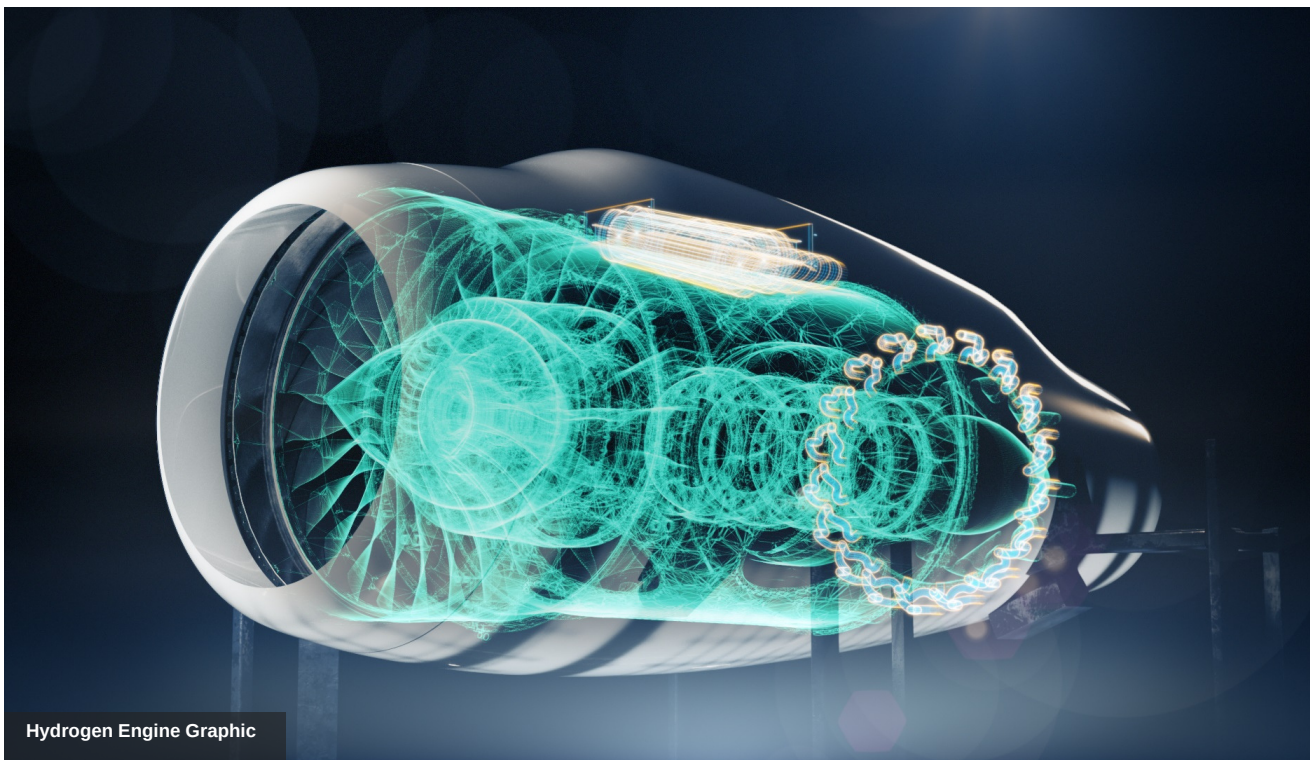
take-up rate and future market share. Rolls-Royce not only provides power and propulsion systems to AAM aircraft, but also to ground-based infrastructure, so called Vertiports, to charge these aircraft.

“The current range of eVTOLs (electric vertical take-off and landing vehicles) is anticipated to around 50 kilometres suitable for urban use-cases, but we will see this scaling up steadily over the next few years. After 2026, AAM will also see regional travel, increasing the distances which people can be flown by electrically powered aircraft. The first eVTOL aircraft are set to be certified next year, but the real take-off for certification is from 2026 onwards.

“Meanwhile, one of the main challenges is public acceptance. We want to draw the attention to electrically powered flight and improve the perception of AAM and its safety, using efforts such as the our world-record-breaking fastest electric flight – the Rolls-Royce Spirit of Innovation.

For electrically powered flight to become accepted as a regular mode of air travel, Rolls-Royce supports awareness and education on aspects of technology which enhance its safety. One example is that electric motors tend to have far fewer rotating parts and the engines are less complex compared to the traditional turbines and turboprops used in aviation. So, some of the safety aspects that we have to deal with in traditional engines will become much simpler in design,” said Jongkind.

Meanwhile Rolls-Royce is committed to achieving net zero emissions across its operations by 2030 and to lead the aviation industry’s net zero targets by 2050. The innovations delivered by UltraFan and its work on electrically powered flight are critical features in this strategy.



Hydrogen Engine Graphic

All photos provided by Rolls-Royce International Ltd

SIEMENS' CEO FRANCO ATASSI ON THE FUTURE OF MOBILITY AND ENERGY IN THE MIDDLE EAST

The need to establish an infrastructure that is resilient and sustainable, linking the physical and digital worlds, is now more pressing than ever before. The GCC nations boast an impressively urbanised landscape, with over 85% of inhabitants residing in cities - a figure set to soar to 90% by 2050. With data and analytics driving decision-making, asset owners and governments can work together to maximize the socio-economic benefits of "smart cities" and enhance the quality of life for their residents. Therefore, within this context, their zeal for creating smart cities from scratch is unparalleled.

Over the next few decades, sustainable mobility solutions, particularly the proliferation of electric vehicles (EV), will play a key role within the smart city ecosystem, affecting the social and political aspects of climate change mitigation, as well as turning the country towards a renewable energy-based economy.



Franco Atassi - CEO At Siemens



Her Excellency Mariam Almheiri, UAE Minister of Climate Change and Environment, visiting Siemens Experience Center in Expo City Dubai

Franco Atassi, CEO of Siemens Smart Infrastructure in the Middle East, weighs in on the evolution of cutting-edge smart mobility solutions in the region, particularly electric vehicles and the convergence of energy and mobility to align with the transition towards cleaner, resilient and sustainable urban landscapes in the Middle East.

Q: Siemens has been tasked with building EV charging corridors in the UAE. How far this project has gone? What are the spotlights of the project?

A: The partnership between Siemens and the UAE Ministry of Energy and Infrastructure is making significant progress. Under our agreement, we're developing a nationwide network of ultra-fast EV charging stations.

We are in the process of installing Siemens Sicharge 160 kW ultra-fast chargers at various strategic points along highways throughout the country, with the capacity to scale power up to 300 kW. These chargers are cloud-connected, providing a cutting-edge digital interface that enables remote monitoring and efficient management. This is just the first step in a broader vision of a digitally connected, sustainable transportation infrastructure, making this project a spotlight in our ongoing commitment to helping our customers in the UAE in their sustainability and digital transformation journeys.

Q: The Ministry of Energy and Infrastructure, Audi Middle East, and Siemens have banded together to bestow a monumental push

towards the widespread usage of electric cars, alongside invigorating the development of EV charging infrastructure across federal roads. An impressive 10 advanced fast-charging stations will be placed by Siemens along highways in Ajman, Ras Al Khaimah, Fujairah, and Umm Al Quwain, all cloud-connected and remotely controllable for the convenience of operators. Is Siemens open to signing more EV deals with car makers in UAE? Can you elaborate on this development?

A: Siemens is certainly open to further collaborations and agreements with automakers in the UAE and across the region, especially those who have electric vehicles in their portfolio, or the nascent companies that will produce EVs. In the UAE, we have partnerships with Audi, Stellantis, and Al Futtaim, to name a few. We have shown a strong track record of successful global collaborations, including those with the Cellforce Group and Porsche, to develop advanced battery technologies and other crucial eMobility solutions. Our overall strategy is to continue fostering relationships that align with our goals of promoting sustainability and accelerating digital transformation. We firmly believe that such partnerships are key to driving innovative solutions for the challenges of tomorrow.

Q: Rather than just investing in roads and public transit systems, governments need to consider all aspects of smart mobility, including the user experience, transportation modes currently in use, more advanced solutions still in

development, data and technology, infrastructure, and governance and regulation. Do you agree with this?

A: Absolutely, smart mobility is not just about transport infrastructure. It encapsulates a wider perspective. It's about leveraging technology, data, and innovative solutions to make transport more efficient, sustainable, and user centric. Every aspect of the transportation ecosystem, including user experience, transportation modes, the energy mix, data analytics, infrastructure, and governance, needs to be optimized. This holistic approach is essential for creating a sustainable, resilient, and efficient transportation system that can meet the challenges of urbanization and climate change and enhance the quality of life for all.

Q: Although still in the early stages of development, smart mobility has already changed the way people, goods, and services move. Please tell us more?

A: The advent of smart mobility has indeed revolutionized the transport sector. Through the integration of digital technologies, such as AI and IoT, with traditional transportation, we've seen a shift towards more efficient, flexible, and sustainable modes of movement. Real-time data analytics has enabled predictive maintenance, traffic management, and route optimization, and this has been most pronounced in the speed and efficiency of

deliveries of all kinds of goods. Additionally, emerging concepts like shared mobility and, in the future, autonomous vehicles, will reshape our commuting habits and reduce our carbon footprint. With the rise of electric vehicles, we're not just moving people and goods but doing so in a way that's less harmful to our planet. These advancements underline how smart mobility is shaping the future of transportation.

Q: EV batteries are still one of the most expensive components in an EV vehicle.

How do you see this changing over the next few years?

A: The high cost of EV batteries remains a barrier to widespread EV adoption and is also a major constraint for auto manufacturers. However, I am optimistic about the future. Technological advancements, increased production scales, and more efficient supply

chains have driven down costs in the past, and we expect in the long term this will drive down costs. This means that electric vehicles will become more affordable, which will inevitably spur adoption rates. The development of new battery technologies, and the potential of new economic models that leverage the dual role that cars have as energy storage when they aren't in use, hold promise for even more efficient and cost-effective electric vehicles in the future.

Q: What are your thoughts with respect to the challenges we currently face due to the region's 1) Risk of grid overload and 2) High-carbon grid profile which negates the effectiveness of EVs?

A: These are valid concerns. Grid overload and a high-carbon grid profile can indeed diminish



the effectiveness of electric vehicles. That's why at Siemens, we're focused on creating smart grid solutions that not only accommodate the increased electricity demand from EVs but do so in a sustainable manner. Advanced grid management systems can balance loads effectively to prevent overload.

Furthermore, technology in smart grids can improve the share of renewable energy. This would ensure that the electricity used to charge EVs is generated in an environmentally friendly manner, which is crucial for a truly green transport solution.

Q: How did you get involved in the mobility industry? What excites you about the industry?

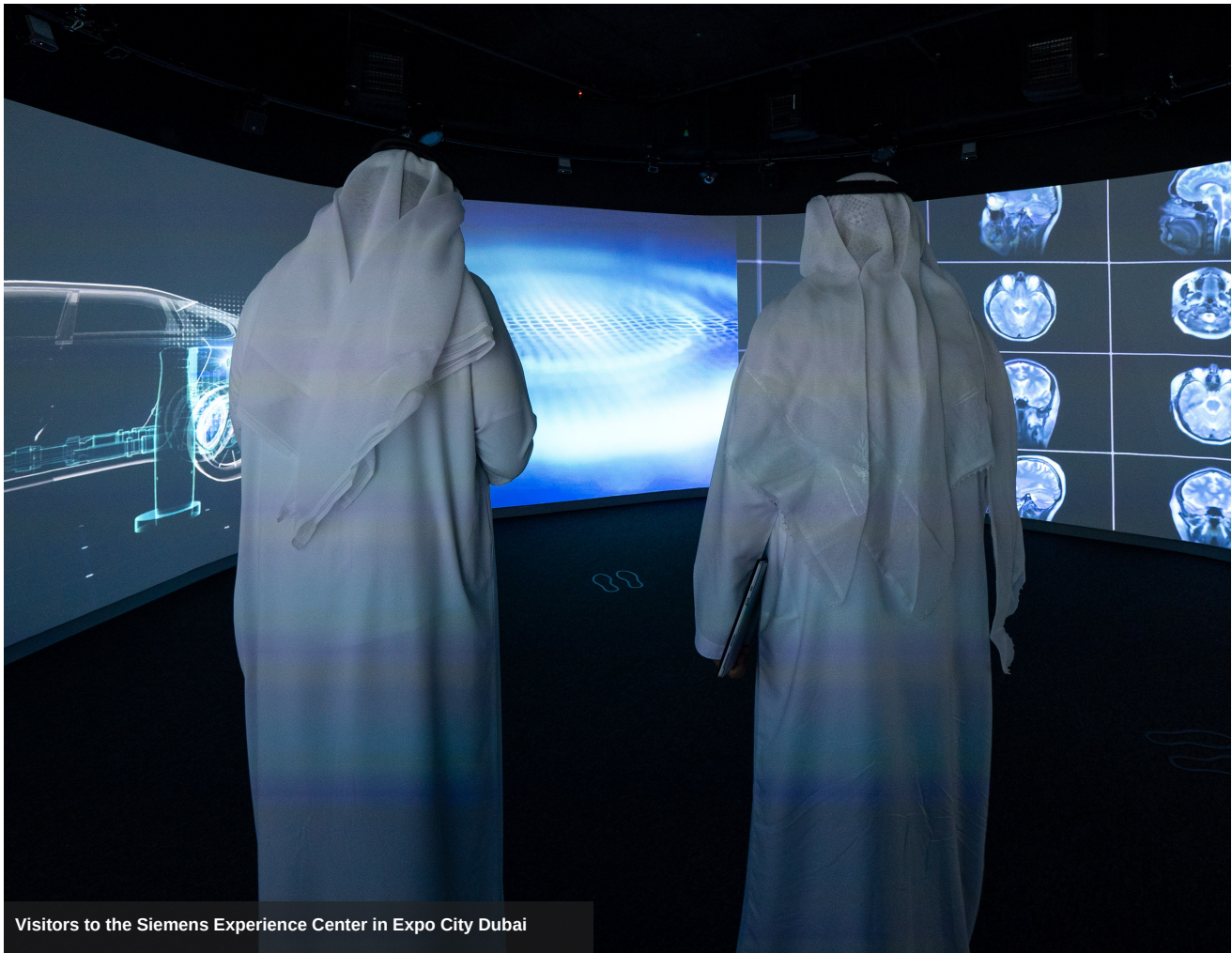
A: My involvement in the industry stemmed from my passion for technological innovation

and the positive impact it can have on society. I've worked at Siemens for almost three decades, delivering technology that transforms industry, infrastructure, and transportation. Witnessing the rapid evolution of technology and its transformative potential is nothing short of exhilarating. From the advancements in EVs to the strides in digital connectivity and sustainable infrastructure, it's clear that we're redefining the future of mobility. It's a privilege to contribute and play a part in shaping a greener, more efficient, and more connected world.

Q: Where does sustainability feature in your life both professionally and personally?

A: Sustainability is a crucial component of both my professional life at Siemens and my personal lifestyle.





Visitors to the Siemens Experience Center in Expo City Dubai

In my role at Siemens, sustainability is deeply ingrained in our mission, shaping our products, services, and overall strategy. On a personal level, I strive to lead a sustainable lifestyle and minimize my carbon footprint where I can. It's a struggle, especially with the need for air conditioning in our climate as well as travel obligations, but it's also important to remain conscience of what is required to live and work responsibly, and what can be done differently. This is a balance I strive for, and I learn a great deal about how to be more sustainable from younger colleagues and my adult children who are helping lead the change.

All photos provided by Siemens in the Middle East

Q: What would you like to do in your free time?

A: In my free time, I'm genuinely passionate about staying abreast of emerging technologies and trends that are shaping the future of my industry. I've been doing this work for decades, and passion is what motivates me. This keeps me excited about my work and continuously fuels my drive to contribute to the industry. Beyond my professional interests, I love spending time outdoors, preferably on my bike, and seeing the natural splendor around us. This balance of work, lifelong learning, and enjoyment of nature keeps me grounded and focused.

HOW SUSTAINABLE TRANSPORT HAS PLAYED A PART IN TRANSFORMING QATAR

Doha, the site of the 2022 Smart Cities Expo, was recently hosted by the State of Qatar. Digital technology and its connection to smart and sustainable mobility were just one of many themes at the event. These recurring ideas highlight the importance of rethinking conventional forms of transport in light of the advantages offered by digital technology for achieving sustainability objectives. The State of Qatar, for instance, has committed to cutting its greenhouse gas emissions by 25% by 2030. While this is an aggressive target, it is one that is within reach if countries like Qatar adopt a comprehensive framework that results in a qualitative shift in the approach to managing mobility and civil organisation.

A comprehensive five-point framework can help cities make the transition to intelligent and sustainable mobility systems:

To begin, cities need to prioritise public transport, with the option of entirely electric fleets. Having spent US\$36 billion on the high-quality,



Transition From Gas Powered To Electric Vehicles // Charlotte.axios

fully automated Doha metro system, the State of Qatar supplies this mode of transportation. The government has set a goal of having all public transport in the country be emission-free by the year 2030.

Second, it is important for municipalities to facilitate the transition from gas-powered to electric vehicles. Alternatives are being used in Qatar, with electric buses being used on the Golden Metro line. Mowasalat, the public transport operator in Qatar, has recently introduced bus charging stations as part of a comprehensive strategy for electric vehicles that necessitates incentives for private automobile owners to adopt electric vehicles provided by the Ministry of Transport. The adoption of EVs will be aided by a memorandum of understanding inked between the ministry and Al-Fardan for cars, which will provide free charging stations around the country.

Transportation Master Plan For 2050

The purpose of this Plan is to provide a road map for investing in land transportation infrastructure by outlining the frameworks and future orientations for developing the transportation networks across the country in a way that ensures their integration with land uses, urban development, population growth, and future transportation demand.

This Plan is based on the principle of sustainability because of the profound effect it can have on both economic and environmental growth by achieving a balance between the needs for economic development and those for environmental protection, and by helping to slow the rate at which the planet's temperature rises through the implementation of long-term initiatives that promote the shift to



Mowasalat, the public transport operator in Qatar // Welcome Qatar

environmentally friendly modes of transportation.

Implementing transportation demand management policies and forming public-private partnerships to invest in and contribute to building and operating the country's transportation systems are also key components of the Plan, which together help ensure the land transportation sector is financially sustainable.

Increased revenues and the benefits of reduced vehicle operating costs, energy and fuel consumption, trip times, carbon emissions, and road accidents will yield substantial economic returns from implementing the plan.

Data Collection: Inventories And Surveys

The Inventories and Surveys Project is a vital part of the ongoing work to revise the Transport Master Plan for Qatar 2050 (TMPQ), which in turn helps to revise the Qatar Strategic Transport Model, establish the criteria for transport planning and traffic analysis, and determine the standards to be used.

The Project also includes setting up The Transportation Data Management System (TDMS), which is a geographic database backed by a web-based platform and an intuitive interface for accessing, visualising, analysing, and extracting information from these databases.

Both public agencies and private consultancies can use the TDMS to conduct transport research.

Qatar Activity-Based Model (QABM)

Decision-makers in the State of Qatar will benefit from using the Qatar Activity-Based Model (QABM), a dependable national transportation planning tool.

Taking into account shared activities and trips made by members of the same family, QABM represents a revolutionary step forward in transportation modelling and planning thanks to its ability to simulate the activities of a population based on demographic and socioeconomic characteristics.

In order to make QABM more accessible, the Ministry of Transport built a web-based platform with an interactive users interface that allows users to visualise the model's components and gain access to the model's key inputs, data, and maps without having to use the model themselves or purchase a commercial licence.

The Transportation Master Plan for Qatar 2050 (TMPQ) lays out a comprehensive strategy for the country's transportation system for the next three decades, from planning to implementation.

There are five volumes of the TMPQ and accompanying manuals and guidelines for carrying out the various aspects of the plan. In the long run, this all-encompassing plan will put Qatar at the forefront of the world's most sustainable nations in terms of providing innovative and environmentally friendly transport solutions that boost the economy and improve the quality of life for citizens and residents without sacrificing Qatar's unique cultural character.



TK Elevator helped build Qatar's Doha Oasis residential, Commercial and Mall Complex // Nepmiddleeast

TK Elevators Are Eco-Friendly And Convenient

TK Elevator helped build Qatar's Doha Oasis residential, commercial and mall complex. The company offers quick, safe, and comfortable indoor mobility with over 170 transport systems. Rapid urbanisation challenges Doha Oasis. These include maximising space, energy, and transportation capacity. Two TWIN lift systems—the only lifts with two cabins functioning independently in one shaft—meet these standards. They save energy and move passengers faster. TWIN lifts 40% more people than ordinary lifts. TWIN uses 50% less area due to fewer shafts. This adds commercial space and gives architects more architectural freedom.

"With our solutions specially adapted to Doha Oasis, we offer all passengers a smooth, safe and comfortable mobility experience, and operators the best possible building utilisation," explains TK Elevator CEO Peter Walker.

TK Elevator represents German engineering expertise, quality, innovation, and efficiency. Doha Oasis shows our advanced technologies' commercial, planning, and user experience potential."

QIB Signs Sustainable Mobility Partnership With Qatari Startup "Loop"

Doha, Qatar: Qatar Islamic Bank (QIB) and Loop Transportation, a Qatari startup, partnered to promote sustainable transportation and encourage people to utilise eco-friendly alternatives to cars.

Beginning in November, the agreement follows QIB's sustainability standards for urban mobility and encourages people to limit their carbon footprint to combat climate change. QIB-branded e-scooters will be positioned at commuter-friendly locations like Doha, Lusail, Al Waab, Al Aziziya, Al Sudan, and metro stations.

"We are pleased to be partnering with Loop Mobility to encourage the public to use more environmentally friendly means of transport," stated QIB's Chief Strategy & Digital Officer, Dinos Constantinides. E-scooters are economical, eco-friendly and efficient in cooler temperatures. We have always promoted sustainability in Qatar, and we hope this stimulates more use of e-scooters to reduce emissions and safeguard the environment. This relationship supports our sustainability initiatives and Qatar's startup ecosystem development."

Ibrahim Mohd A H Al Mohannadi, Loop's owner, said: "We thank QIB for this opportunity and we are proud to partner with the Bank as part of our mission to empower the community to have more freedom and access to eco-friendly and sustainable transportation options. E-scooters are helping us move towards sustainable urban mobility and advance communities as we expand across the region. As we lead the market towards sustainable micro-mobility, we remain committed to climate action. With this new relationship, we intend to engage the wider population and give a more ecologically responsible and convenient alternative to effortlessly move around the city."



GLIMPSE OF MIDDLE EAST'S URBAN MOBILITY LANDSCAPE OF TOMORROW

When imagining the future of smart cities, workspaces, and homes, it is important to think about technology and how it can help create a smarter, more resilient, stable, and sustainable society.

The Middle East has involved and developing projects to achieve this goal using AI, the Internet of Things (IoT), and aerial transportation in the future and to make it more sustainable at the same time.

Currently, the region is prioritising its projects through high-speed rail and city metro lines, which has a positive impact on the economy. And this new development has opened new avenues for market and operations allowing people to travel quickly from one hotspot to another.

Elaborating further on the developments, Hasan Haider, Managing Partner at +VC, stated, "E-commerce should flourish, with transportation rates and times significantly decreasing compared to st.





the current system of trucks and air travel, leading to a more economically integrated region. Startups working in e-commerce, logistics, and delivery will benefit immensely from this network, and we may see a new segment of D2C startups emerge to take advantage of this logistical improvement."

The Etihad Rail project in the UAE is developed to become a part of the GCC railway network for passenger travel, the rail network is now 100 percent complete. The rail network will cover about 1,200 kilometres across the UAE, connecting the seven emirates to the five neighbouring Gulf nations.

It was launched in 2009, the network is currently focusing on freight and had its first stage operational in 2016, spanning 264 kilometres. Stage two, which is over 600 kilometres of additional track laid from Chuweifat at the border with Saudi Arabia to Fujairah on the east coast.

Gravitating Towards More Sustainable Solutions

Dubai could soon be a new paradise for cycling lovers, as the city has planned to go bike friendly.

The bike-friendly initiative is part of the Dubai Vision 2021 project, aimed to make Dubai the most pleasant city in terms of work, life, and travel. The total cost of this project is US\$108 million. Dubai's Road Transport Authority also lifted bans on e-scooters and e-bikes so that riders will be allowed to complete an online safety test and receive a permit without a driving licence.

According to Fast Company Middle East, the global e-scooter market was estimated at US\$33.18 billion in 2022. Currently, it predicts an annual growth rate of 9.9 percent from 2023 to 2030.

On another front, the tyre industry is also expected to evolve and reinvent itself. Tyre manufacturers will focus on telematic solutions, data sharing, and connected vehicles to improve connectivity, road safety, and sustainability.

Furthermore, the industry will adopt technologies such as IoT and artificial intelligence that can collect data for optimised performance and safety. The implementation of 5G technology is expected to have a positive impact on the tyre market and will support connected cars, autonomous driving, and sharing.

A technology-driven mobility system is at the core of a seamless transport experience. To overcome current and future obstacles to efficient mobility, new solutions must be applied to build data-enabled, sustainable urban transport infrastructure.

Several governments and industries are investing to increase eco-friendly mobility solutions to address current problems in traffic, reduce CO2 emissions, and provide efficient mobility in the region.

The UAE has introduced over 3,000 public electric vehicle charging stations, which is one of the highest numbers of electric vehicle charging points globally. Jordan has more than 40,000 EVs on its roads due to its high cost of fuel and zero tax on EV imports.

Qatar has joined sustainable mobility by introducing the largest e-bus depot in the world, i.e., nearly 1,000 e-buses. Oman has committed to having 79 percent of cars on its roads be electric by 2035.

Industries and governments need to invest in smarter and newer technologies to meet the needs of a growing population in the Middle East.

It is predicted that by 2050, 80 percent of the world's population will live in urban areas. Hence, the need for a smart city market will double to almost US\$873.7 billion by 2026, according to the UAE Ministry of Economy.



Tesla Roadster InsideEvs // motor.1

Moreover, green technologies like solar panels and batteries are necessary for smart mobility, which requires real-time traffic monitoring, mapping data, navigation, and understanding data to create better services that are stable, safe, and effective.

Reimagining The Current Mobility Infrastructure

Last year, Dubai ranked first in urban mobility readiness in the MENA region. The study, conducted by the Oliver Wyman Forum and the University of California, Berkeley Institute of Transportation Studies (ITS), calculated 60 cities globally.

It is based on 57 quantitative and qualitative key performance indicators (KPIs) measuring social impact, infrastructure, market attractiveness, system efficiency, and innovation. Each city was ranked based on 100, where Dubai surpassed the global average of 54 percent, ranking 58 percent. The Middle East's average was 47 percent.

The report stated that the preference for cars across the Middle East is the reason for its low score because of the underutilization of public transit.

According to Strategy&, around 91 percent of the travel in the GCC is done using private cars, encouraging a shift towards greener transport modes and a rethinking of urban design. For years, there has been a lack of investment and incentives for active travel infrastructure and sustainable modes of transportation.

However, public transport is gaining traction in the region, with initiatives such as Riyadh's newly inaugurated metro, Dubai's automated driverless metro line, and Cairo's metro line, monorail, and BRT system.

Active travel is also becoming more mainstream, with Doha launching the largest bike-sharing network, Alexandria and Cairo launching bike-sharing systems last year, and Dubai having the longest cycling track in the world.

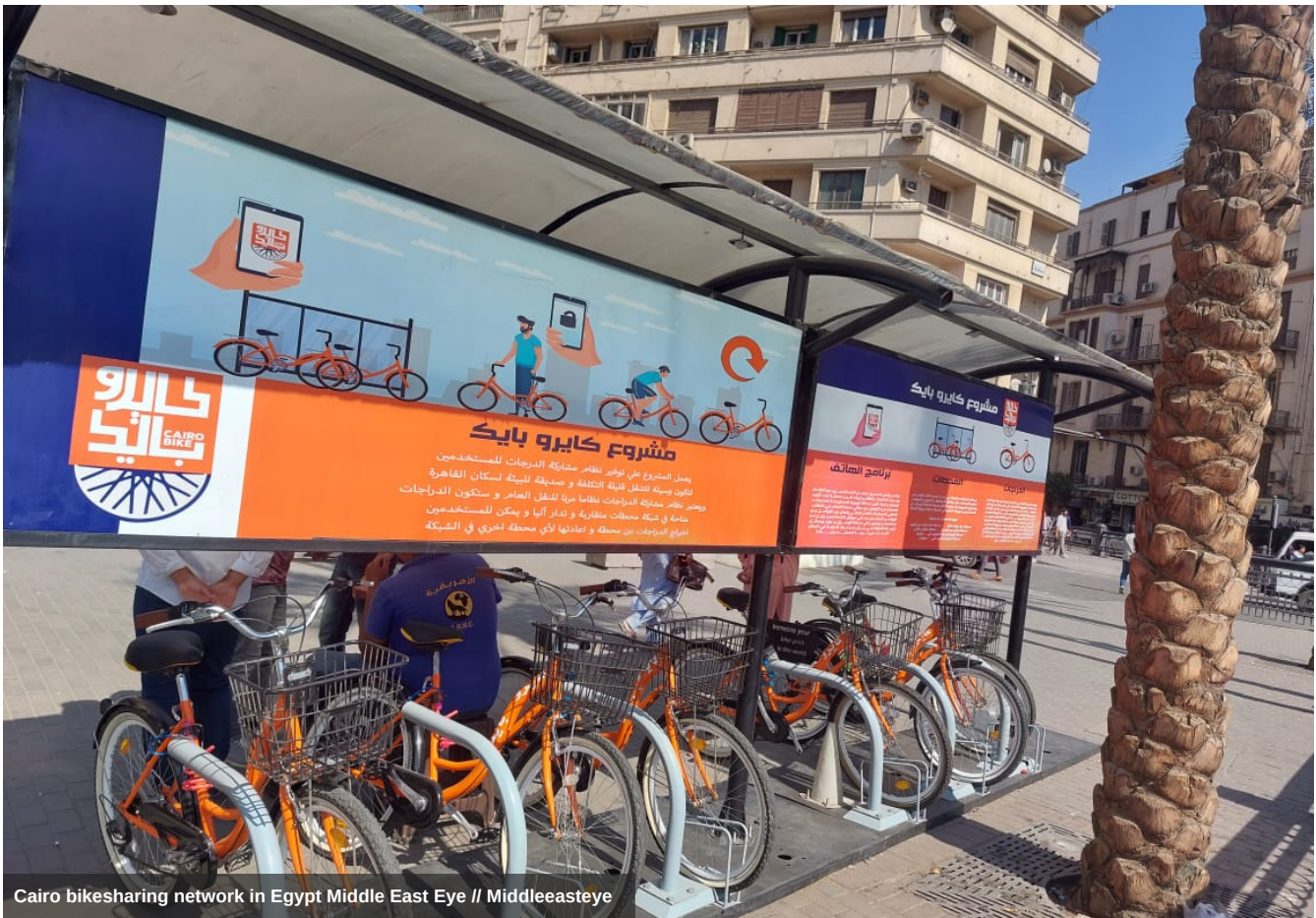
Campaigns that inform and educate the public about sustainable modes of transport and their impact on the environment are also crucial. Public-private partnerships need to open up the market for the private sector to come in and invest. This will move the market at a much faster speed, resulting in better service, more options, competitive prices, and more convenience for end-users.

Industries Embracing Sustainable Choices

The Arab Gulf states are increasingly focusing on electric vehicle (EV) adoption as they strive to achieve net-zero targets and transition from fossil fuels to renewable energy sources.

The UAE, which will host the UN Climate Change Conference, COP28, in November, is also investing in manufacturing plans for EVs. Dubai also targets 25% of mobility journeys to be autonomous.

Ekar, the region's first mobility company and self-drive super app added 10 Teslas to its fleet available for rent in Dubai and five additional Teslas in Abu Dhabi's Masdar City.



Cairo bikesharing network in Egypt Middle East Eye // Middleeasteye

According to Arab News, Saudi Arabia's investments in EV production are predicted to reach US\$50 billion in the next decade. It is expected that at least 30 percent of the vehicles on the road will be electric in the next seven years.

NEOM, a megacity project in Saudi Arabia, aims for 100 percent electric and shared mobility and regional dominance in autonomous vehicles. Major metro projects in the region will be driverless.

BMW Group is planning to accelerate hydrogen-powered vehicles in the Middle East. Supporting this, Dr Hamid Haqparwar, Managing Director, of BMW Group Middle East, commented, "I am convinced that hydrogen, one of the most efficient options for storing and transporting renewable energy, will play a major role as a fuel in this region of the world."

He added, "We will be piloting the second generation of our hydrogen fuel cell drive train in a small series of the BMW iX5 Hydrogen in due course. In addition to the transition to renewable energies in production and the supply chain, we will also significantly reduce our resource consumption as we pave the way for a stronger circular economy."

Recently, Chinese company EHang has partnered with Monarch Aircraft to bring electric vertical takeoff and landing (eVTOL) vehicles, drones, and necessary operation facilities to the Middle East. Abu Dhabi will be the first centre for the development of sustainable electric aircraft and drones, as well as an autonomously managed air mobility command and control centre. The partnership aligns with the Abu Dhabi Industrial Strategy's initiatives to transition towards a smart, circular, and sustainable economy.

The EHang 216 is an eVTOL vehicle capable of carrying up to two people in fully autonomous flight mode.

The Middle East is realising the importance of sustainable mobility in the region's development. Industries and governments' collaborative efforts will improve the region's sustainability performance, making cities safer, cleaner, healthier, and economically relevant for their residents and future generations.



EYES IN THE SKY: MIDDLE EAST'S DRONE INDUSTRY POTENTIAL UNLEASHED

With the Middle East's drone market on the cusp of immense growth, drone manufacturers are gearing up to fiercely contend to seize this opportunity. Many have launched new drones to lure multi-sector customers as the region is brimming with potential. DJI, for one, unveiled their DJI M30 Series and DJI Zenmuse H20N in August 2022 through The Drone Centre.

With the explosion of "smart devices" and the increased automation of physical tasks, IT's remit is growing to extend beyond laptops and phones. CIOs must now consider how to onboard, manage, maintain, and secure such business-critical physical assets as smart factory equipment, and inspection drones. The physical tech stack now requires the highest levels of system uptime and resilience and a fresh approach to device governance and oversight. However, reports suggest that only 6 percent of the population in the region currently lives under smart governance. Governments including those of the GCC have plenty of work to do.



Scott Henderson- General Manager At The Drone Centre



Two pilots deploying the drone in a construction site

In this exclusive interview with Scott Henderson, the General Manager at The Drone Centre, we explore the growth opportunities in the region for the Drone industry while looking at its greatest challenges and the solutions.

Join us for an inimitable conversation with Scott Henderson – The Drone Centre's General Manager – as we delve into the prospering prospects that the Drone industry holds in the region, while simultaneously assessing its most arduous trials and their possible remedies.

Q: How do you see the inside future of the UAV industry in the Middle East region?

A: I see the UAV industry in the Middle East as a part of innovation. And I would say innovation serves as a bedrock for numerous government initiatives. Governments in the Middle East here are fuelling the adoption of drones as a prominent technological concept.

They have acknowledged that there's immense potential for drones. This is leading to concerted efforts to foster development, and also for better seamless integration with current standards. Governments are actually proactively implementing regulations now that encourage the use of drones as a sustainable way forward. I think the future is bright.

Q: The Drone Company has a sister company, FEDS Drone-powered Solutions, which who provide multiple services such as drone survey mapping, construction, monitoring, drone inspection, drone filming, etc. Among all these, which are the most popular services and why?

A: FEDS, has been at the forefront of drone surveying, and inspections. So, this has been driven by the region's economic development. And in the last eight years, drones have revolutionised data analysis, there's been cost savings for servers and service companies. Countries like the UAE and Saudi are currently

experiencing a period of rapid growth again. So, there's a lot of investment currently taking place. And because construction is picking up once again, companies are looking for more efficient, more cost-effective ways of analyzing their construction process. Drones have actually become an indispensable tool for progress monitoring, and also to ensure that efficient and safe construction process continues.

Q: When it comes to drones, over the next 10 years, what's the most viable energy storage system that you expect to see?

A: Right now, we're looking at the precipice of drone battery technology. Just like smartphones these days, where you see evolution, not revolution. with batteries, we were at that pinnacle. So, we're getting the most out of lithium polymer technology right now. So, there are a few developments in battery technology. And these have been on the horizon.

Now for four or five years, I've been having discussions with manufacturers on how we can improve that technology. One example is solid-state batteries. They're not to be confused with the solid-state drive in your computer. This is an emerging technology. And it gives advantages over traditional say lithium polymer batteries or even lithium-ion batteries. And what they do is they use solid electrolytes, instead of a liquid or gel. And this improves safety. It also increases the energy density inside of this battery, and it improves the cycle life, so you get more uses out of this.

Secondly, there are hydrogen fuel cells. So, this converts hydrogen gas into electricity, and you would see a massive improvement in flight time over batteries.

They have been explored, but not the solution. right now, they're not a cost-effective solution. It's. They're quite expensive to manufacture, bulky and large. You can imagine a fuel cell to be a big tank as well.

Finally, there are supercapacitors and I've seen this technology being developed in the last few years like an ultracapacitor. But these offer high power, very high density and also quick charging capabilities. They will allow a user to charge in 15 minutes instead of 45 minutes, for example.

But right now, it's bringing those scalable, cost-effective solutions to market. They are all in the concept stage as lithium polymer once was. So, we are now trying to realise and utilise this technology and bring that price down as well.

Q: Compared to the world, where does the Middle East stand in terms of market size, scale and usage, operation pattern, etc, in the drone sector?

A: My experience in Europe, the United States, and in this region shows that traditionally, the Middle East has been three to four years behind the rest of the world. However, it's becoming a very significant player in the drone sector and has a huge opportunity now because it's accelerating and growing, and people are starting to realize the potential of an emerging market.

So, I would say we need to look at the market size. The Middle East is a hub for the rest of the world. And it's experiencing this unprecedented rate of growth, and it's becoming fully established.



Drone takes off to conduct asset inspection mission

So, in the drone sector, if you look at the oil and gas sector, infrastructure, and public safety security, the UAE and Saudi Arabia, they've been at the forefront of drone adoption. And we have been at the forefront of identifying these sectors for growth. So now we're starting to realize the full potential of that.

If you look at skills and usage, the Middle East is invested in developing the necessary skills for drone operations. There are universities and organizations offering drone-related courses now and certification programs, and it's becoming part of the education curriculum.

We've been working with Dubai civil aviation, Dubai feature foundations in Dubai, and Silicon Oasis, which are pushing an agenda for geofencing drone flights, which means we are

working with regulations to create regular drone flight paths so that drone delivery can take place.

The UAE wants to be the first in the world to offer the largest drone delivery system for a country. And this is great because this is showing that we are accelerating ahead of the curve of other regions. I think it's making remarkable strides in the drone sector. So, with the growing market size and its efforts and skill development, there are innovations and use cases for this investment as well. The government is 100% behind this. So are we.

Q: In the drone industry, what are the biggest challenges and how can we overcome them?

A: If we're looking at the biggest challenges, you're going to have to break them down.

If we're looking at, say regulatory framework, one of the primary challenges is establishing a clear and comprehensive regulation. We have to strike a balance between safety and enabling innovation. For example, regulations should address issues such as flight restrictions, privacy concerns, licensing requirements, and also a concept such as beyond visual line of sight (BVLOS).

This is one of the main directives on the agenda for drone use cases. What happens if I want to use a drone, and I don't have pilots

there? What happens if I have a fleet of drones for my oil and gas pipeline and I want an instant response, but I don't want the pilot there? I want to control it remotely. To find these solutions, we are collaborating between industry stakeholders, manufacturers, governments, the civil aviation, and this is crucial.

If we communicate, and we have an understanding of where the future use cases of drones are going to be with regular dialogue, we're going to improve the regulatory framework and that's currently taking place. For example, in the UAE there



are conversations on how we can manage it better with a framework such as in America, where there is the part 107 framework, in the UK they used to have permission for commercial operation before that then changed into the COC to GBC regulation. So, there is an evolution, and in this region, we are a bit behind. But I think it's going to accelerate and maybe overtake public acceptance and perception.

You know, there's so widespread public acceptance that drones are essential for successful integration into society. But also, there are concerns regarding security, privacy, maybe noise pollution, and also misuse of drones. So, our job here is to educate the public, educate businesses on the benefits of drones and their safety features, and that can alleviate those concerns.

And finally, we could talk about airspace management. How do you manage drones, for example, in Dubai, where it's such a busy airspace? So, I was part of a UTM program in the UK. And we worked with Manchester Airport in delivering a commercial drone operation simultaneously with manned aircraft, and it was a massive success. But I don't think there have been enough steps to improve that. So we'd like to see more of it.

Q: What are the top three commonly held misconceptions about UAVs as a viable sustainable means of transport and how would you clear them up?

A: I would say that safety concerns are number one. So, if you look at drones, as a means of transport, many people believe that they're prone to accidents, maybe they pose a risk to people, and maybe they pose a risk to the property, and their infrastructure on the ground.

It is important to emphasize that safety is a top priority for a lot of the manufacturers that we work with. And also, for us as an operator, UAV drones bounced between both references, and they offer a host of redundancy systems. Now, people may not be aware of this. For example, some of the latest drone technology we sell, have dual batteries. If one fails, you have a backup that has inertial measurement units, and these are measured at the altitude, and the bearing of the barometric sensors. There are two of them if one fails.

And as a backup, even if a blade fails, or if it snapped, or if the motor fails, the aircraft will operate on three units that will rotate, so it won't drop from the sky. So, these safety systems are there to guarantee a better, safer environment for users and also for those in the area region of those drones.

Additionally, strict regulations and licensing requirements for operators also help maintain safety standards. And also, simply regulatory frameworks are not prepared to accommodate UAVs. Currently, we are working on improving regulatory frameworks in the region.

We are working with Syrah for example, at the moment on a drone number plate system for all users in this region which helps in identifying drones based on that number plates. The electronic number plate will secure the safety of this region because if we know who's operating that drone, we know who's responsible for that drone, and then that prevents misuse of those drones as well. So, we're part of the action in the UAE for example.



Scott delivering a presentation at World Utilities Congress

Q: Could you tell us more about the Drone Number Plate System project?

A: Well it's not as simple as car number plates I can tell you that much. These are less 'visible' means of identification but instead transmit their position, the position of the control point or where the drone was launched from.

It is a challenge to want to maintain a fair and reasonable system for drone operators because there is an ongoing use case. And you see so much online video content, where you see drones flying freely in airspace. Then there are new disruptive innovations coming into the picture like driverless cars etc on the ground, and also drone helicopters and drone taxis. So how are we going to better regulate when they are here and they're not going anywhere? They're going to be part of our future. So, regulation needs to catch up.

Quite often we're having these discussions. We see technology now drawn in the box with solutions that we have. And we're developing with some of the biggest stakeholders in this region. We're now pushing the technology. Now legislation needs to catch up because it's now an integral part of the construction and surveying ecosystem.

People think drone technology is rocket science, it's not that easy. I can give you a drone and you could operate it very easily. Because they have so many safety features. They have collision avoidance sensors due to which you can't fly into an object and you will fly in wind, rain, and sandstorm, and they will maintain their altitude. If you lose a transmission, they will return back to you. And they will avoid obstacles as coming back. So now we're in a stage where they're really developing and very safe. It's now how can we best understand them.

Q: And in what ways are the countries in the Middle East encouraging or supporting environment-friendly modes of transport, like drones?

A: If you look at UAE's economic vision for 2030, it endeavours to achieve a comprehensive transformation of the Emirates. They want to foster global integration and lasting benefits for us. It's central to their vision and part of its sustainability and its diversification of capability.

For example, if you look at sustainable urban planning, maybe the integration of renewable energy. If you look at the Mohammed bin Rashid Al Maktoum Solar Park, that's the largest single-sector solar park in the world. And real research and development is

becoming a big part of what the government wants to do. They want to invest in sustainability and in new technologies.

Much of their content is about reducing our carbon footprint, and drones have a lower carbon footprint than traditional methods of inspections. So, a very small carbon footprint is a very disruptive technology. And that's why we feel that they're important to the future.

If you look at other solutions, like the Dubai flying cars that were introduced at the GiTex 2022, to reduce that carbon footprint to face global warming.

Q: Please tell us a bit about your background and what you got interested in and then get involved in futuristic industries such as UAV.

A: I've been in the drone industry now nearly for 10 years. And I've seen it from Toy technology up rather than military technology down. So, I had those golden years of remote-control helicopters, Flight Control stabilization systems, or back in the day we used to have nitrous helicopters, unstabilized Gimbels, using gears and cogs and they were terrible. They were expensive.

They were prone to failure too. I've seen the innovation and improvement in technology to now when anyone could pick up a drone and use them. So, for 10 years, I have been there since the inauguration of drone technology. And it's been a romantic journey. I love the industry and I'm very passionate about the industry. We've got a passionate team here.

I'm so proud to say I work in the drone industry. Whenever I'm socializing and meeting new people tell them what I do, it seems to encapsulate their imagination.

All Photos Provided By The Drone Centre

Q: What do you consider as your key contribution to sustainability within the environment? And what would you like to do in your free time?

A: Sustainability is very much part of what we do as a business. So, FEDS, which we abbreviate as F-funirm, Employees excellence, D is for Diversity, and S is for Sustainability. So, we want to be sustainable in everything we do. We don't want to use paper. We want to turn off the lights when we leave the office and turn off the air conditioning when you're not in there. And we carry that to us on the field too, we closely monitor our usage of cars for example, and try to be as efficient as possible. We carry out initiatives in the office, this month we're actually doing a clothes donation drive!

In my free time, I am a bit of a car fan. I like modifying cars and so on. I used to be on a job as a drone pilot with 10 years in the industry, but this is something I like to do to my own cars and I love driving. I wish to become maybe a race car driver someday.



ADVANCING GCC MOBILITY THROUGH ITS

When it comes to smart mobility in the Middle East, a new study finds that Saudi Arabia and the United Arab Emirates are at the forefront.

To help ensure the success of their smart city projects, the members of the Gulf Cooperation Council have commissioned a report titled "Smart Mobility in the GCC: Fast Track to the Future," which was just published by Strategy& (Middle East), a member firm of the PricewaterhouseCoopers (PwC) network.

The paper suggests that the GCC may benefit from a more sustainable and efficient transport network if it adopted smart-mobility services based on cutting-edge digital technologies.

According to Mark Haddad, principal of Strategy & (Middle East), urbanisation in Saudi Arabia's major cities is causing standard issues such as increasing demand for transport services, traffic congestion, and severe environmental repercussions.



Masdar City Launches Autonomous Shuttle

To meet these difficulties head-on, the Kingdom is using cutting-edge smart mobility technologies to manage its daily transport services and meet the requirements of its inhabitants.

Riyadh has spent millions on an adaptive signalling initiative powered by AI, which has had a dramatic effect on the city's ability to control traffic on a daily basis.

Authorities in the Neom megacity have lately declared their intention to create a land mobility ecosystem that is the most user-friendly, environmentally friendly, and technologically advanced in the world.

Putting the Kingdom at the centre of the smart-mobility revolution, Haddad said that "Neom will also prioritise active, autonomous, electric, shared, and smart mobility options."

Changing The Face Of Transport In The UAE

In 2014, Dubai launched its Smart Dubai initiative, which aims to improve the city's economy, environment, people, mobility, housing, and administration. By the year 2030, the emirate plans to completely transform urban traffic by switching over 25 percent of its transport systems to autonomous systems.

Revenues of AED22 billion (US\$6 billion) per year are forecasted as a result of the strategy's efforts to reduce transport costs, carbon emissions, and accidents while simultaneously increasing the productivity of people now wasting time in traffic.

If transport expenses are reduced by the predicted 44 percent, the emirate might save as much as AED900 million (about US\$245 million) annually while also reducing pollution by 12 percent.

The Roads and Transport Authority (RTA) of Dubai and the Museum of the Future will collaborate in 2022 to display cutting-edge mobility alternatives, such as personal jet packs and autonomous vehicles.

Masdar City in Abu Dhabi has an eco-friendly autonomous shuttle service. To investigate the potential of advanced air mobility, which makes use of electric vertical take-off and landing planes to transport people and goods, Abu Dhabi Airports has signed a memorandum of understanding with the French company Groupe ADP.

According to a survey by the McKinsey Global Institute (MGI), the two leading smart cities in the Middle East are Dubai and Abu Dhabi.

Saudi NEOM

Plans to build the world's most user-centric, ecologically friendly, and technologically advanced land mobility ecosystem are in the works at Saudi Arabia's NEOM smart megacity project.

NEOM's goal is to promote active, autonomous, electric, shared, and smart mobility solutions in addition to creating a new paradigm for urban sustainability run on 100 percent renewable energy.



Dubai Metro // bayut

On-demand urban passenger mobility will be provided via shared autonomous and electric shuttles, urban air mobility, and a high-speed underground transit system. NEOM's goal is to be the world's first zero-carbon region, which is why it has no automobiles and few traditional roadways.

The project also intends to install a smart water distribution network, which, according to NEOM, will reduce water loss to below 3 percent, as opposed to the 30 to 60 percent seen in cities all over the world due to ageing infrastructure prone to leaks that go unnoticed.

In other parts of the kingdom, intelligent mobility is also progressing. Both a multibillion-dollar public transit project featuring driverless trains and an AI-based adaptive signalling technology are currently under construction in the Saudi city of Riyadh.

Saudi Arabia, As A Kingdom, Is Undergoing Fast Change

The smart-mobility ecosystem in the Kingdom, according to Haddad, is developing quickly.

Smarter traffic-management systems improved public transportation, and, most crucially, the investigation of potential new modes of transportation are all receiving increased funding.

Haddad points to the Kingdom's interest in the hyperloop, the most talked-about new mode of public transportation, as proof of this shift.

"The Kingdom has already engaged in strategic partnerships with hyperloop technology players," he said, citing Virgin Hyperloop's partnership with the Economic Cities Authority of Saudi Arabia as an example.

The consortium plans to study and create a hyperloop manufacturing factory and a research and development centre, with the longest test and certification track in mind (35 km).

Haddad explained that the aim is to make Saudi Arabia a go-to example for the rest of the GCC on the topic of mobility in the future.

According to the report *Smart Mobility in the GCC: Fast Track to the Future*, there will be widespread benefits from implementing smart mobility across the GCC.

There will be fewer deaths and injuries on the roads if we automate vehicle operations and equip vehicles with improved safety technology.

Smart mobility's ability to move vehicles and people more efficiently across existing route networks also means less traffic congestion.

According to the paper, "it can also provide people with alternative options such as shared rides, scooters, bicycles, or mass transit," which can cut down on journey times.

By giving passengers and transit agencies access to greener transportation options, smart mobility has the potential to reduce the transportation sector's negative impact on the environment.

The paper also predicts a more efficient workforce as a result of the reinvention of mobility, which would allow some households to relocate closer to urban areas and get rid of their own vehicles, thereby expanding their access to better job opportunities.

According to the paper, "others that choose to move farther away from urban centres can do so" because "travel times decrease" and "commuters can be productive while travelling" thanks to autonomous vehicles and other transit options.

The report features, among other things, Dubai's plan to implement smart vehicles by 2030, with the goal of shifting 25% of all trips to driverless choices.

Egypt's Smarter Solutions

Egypt, which now has a population of over 109 million people and is expected to continue increasing at this rate, aims to construct 15 new fourth-generation cities over the next few years to meet the needs of its rising population, attract investment and new jobs, and relieve urban congestion.

To keep up with the difficulties of climate change, the urban projects known as "fourth-generation cities" have integrated cutting-edge infrastructure and ICT.

The new capital being built near Cairo will contain an estimated 6.5 million people and is being designed as a "smart city," complete with infrastructure to monitor traffic and buildings that automatically determine the most efficient methods to conserve energy.

The environmental pressures increase as the population and the amount of goods consumed increase. Smart financiers are waking up to the fact that smart technologies are going to be essential for the cities of the future to battle global warming and make increasingly crowded metropolitan areas more liveable.

FALCONVIZ'S DR LUCA PASSONE: A BIRD'S EYE VIEW ON UAV DEMAND IN THE MIDDLE EAST

During the forecast period of 2022-2027, the drones market in MEA is projected to soar with a CAGR of over 8%, according to Mordor Intelligence. The region's construction industry boasts more than 70,000 major active projects, serving as a driving force behind technological advancements in the industry. The collaboration between drone manufacturers and solutions companies plays a significant role in this innovation. To meet the specialized needs of the construction, infrastructure management, and security and surveillance sectors in the Middle East, drone service providers are diversifying and customizing their solution portfolios for added revenue. The drones industry in Israel and South Africa is gaining momentum thanks to cutting-edge technological developments, like the hybrid propulsion systems equipped in Vertical Take-off and Landing (VTOL) drones, ultimately leading to extended loitering time.



Luca Pssone - General Manager at Falconviz



FalconViz, a visionary company specializing in data collection, processing, and visualization, pioneers drone-based services. Built on groundbreaking research emanating from King Abdullah University of Science & Technology (KAUST), FalconViz expertly harnesses its global and domestic UAV-related patents in hardware, software, and design. Consequently, it has garnered an impressive client list, including Saudi Aramco and KAUST, among others, reigniting the fire of innovation.

The T2NZ team engages in a one-of-a-kind conversation with Dr. Luca Passone, Co-founder and General Manager of FalconViz, delving into the thriving UAV industry and its consistently growing demand across various sectors in the region.

Q: Please describe your expectations for the Middle Eastern unmanned aerial vehicle market.

A: This is a very difficult question to answer as the political situation across the Middle Eastern countries varies dramatically when comparing for example Saudi Arabia, Emirates, and Qatar to countries like Iraq, Syria and Yemen. In Saudi Arabia, our main market, the use has exploded in recent years, especially for services that are geared towards surveying, mapping and documentation. However, the heavy regulations and restrictions mean that recreational use is still very limited.

Q: Globally, the UAV market is thriving with state-of-the-art facilities and cutting-edge technology what is the status here in the Middle East?

A: We have observed an increasing demand from clients to leverage the capabilities of drones. When we initially began a decade ago, the production of georeferenced ortho maps and high-resolution elevation models at

centimetre-level accuracy already represented a significant advancement for clients accustomed to traditional surveying methods.

However, in the present day, this has become merely the starting point for providing data to support endeavours such as Building Information Models (BIM), Construction Progress Monitoring, and Cultural Heritage Conservation. Additionally, Artificial Intelligence algorithms are now capable of identifying specific features like palm trees, mangroves, and animals, while automatically generating inspection reports for solar farms, among other applications. More recently, with the rise of the metaverse, we have noticed a growing desire from clients to integrate their assets into virtual worlds, facilitating interaction through VR headsets.

Q: Using unmanned aerial vehicles (UAVs) and other relevant technology, FalconViz offers comprehensive digital asset and process digitalization services. Please tell us more.

A: At FalconViz, we specialize in transforming physical assets into digital counterparts, as exemplified by our tagline: Your World, Digitized. Our approach involves employing various acquisition technologies, including drones, lidar, and mobile mapping, to gather data on the physical asset. Subsequently, we process this data to generate a virtual 3D representation of the asset. Leveraging our extensive expertise and, when necessary, proprietary software, we package the 3D model in formats that enable clients to derive maximum value. These formats may include a web application, a PDF report, or even a one a remarkable transformation.



Luca Passone with Drone

comprehensive virtual world experience in Virtual Reality.

Q: The goal of FalconViz's digital documentation is to make global mapping more precise, faster, and more comprehensive. What other applications do you envisage being able to develop over the next few years?

A: In our early days, even covering a 1km² area posed significant challenges. Collecting and processing the required data was a complex endeavour, as drones lacked autonomous flight capabilities, and camera integrations, while the software itself demanded the expertise of skilled scientists just to install. However, the landscape has undergone a remarkable transformation.

Similar to the ubiquity of computers, drones have become increasingly prevalent, with nearly everyone either owning one or knowing someone who does. The future holds tremendous potential for autonomy, although progress is contingent upon regulations keeping pace. Once regulatory hurdles are overcome, we can anticipate the widespread adoption of drones in various domains. Security, construction monitoring, asset management, precision aquaculture, and numerous other sectors will benefit greatly, as drones can operate without the need for an on-site operator. Instead, they can be centrally managed, delivering real-time data to key decision-makers.

Q: The Middle East seems to be getting more interested in UAVs. Anywhere, really, but especially in manufacturing, transportation, and the logistics of online retail. What do you think?

A: In my opinion, the utilization of drones in logistics is likely to be limited to specialised applications for the next 5 to 10 years. It is evident that strict limitations on maximum payload are necessary for densely populated areas, as it is reasonable to assume that people would be reluctant to have someone's wardrobe flying above their heads while they are taking their kids to school. Companies like Zipline have successfully identified specific niches, such as delivering life-saving medicines to remote regions in Rwanda where conventional road transportation is impractical and the areas between distribution centers and final destinations are largely uninhabited. However, challenges related to regulations, security (ensuring deliveries are not stolen), and infrastructure remain crucial areas of research in order to establish a feasible and satisfactory experience in urban or densely populated areas.

We can still anticipate drone installations in specialized locations, such as rural areas or upscale hotels situated in locations where tasks like transporting food from the kitchen to a remote villa would be impractical using traditional means.

Q: When it comes to drones, and given the current limitations, over the next 10 years, what's the most viable energy storage system, for UAVs, that you expect to see?

A: One of the significant challenges with batteries is their energy density. For instance, current-generation Li-Ion batteries have approximately 100 times less storage density compared to the fuel used in cars. In the case of drones, specific requirements regarding weight, size, discharge rate, and wide operating temperatures pose strict limitations.

This is particularly relevant in places like Saudi Arabia and the Middle East, where extreme temperature ranges are a concern. Unlike electric cars that can accommodate heating or cooling systems for batteries, drones face space and weight constraints.

Although electric motors offer superior efficiency compared to internal combustion engines, we have not yet reached the point where batteries surpass the capabilities of traditional fuels. Consequently, hybrid drones with internal combustion engines are often employed in scenarios where uptime is critical. These drones primarily rely on fuel as the main power source, with a small battery backup to sustain flight during emergency landings.

However, the use of hybrid drones presents challenges. They are more complex and require greater maintenance, making them less accessible to a wide range of pilots. Research indicates that significant advancements in drone battery technology within the price range of US\$5,000 to US\$30,000 are unlikely in the near

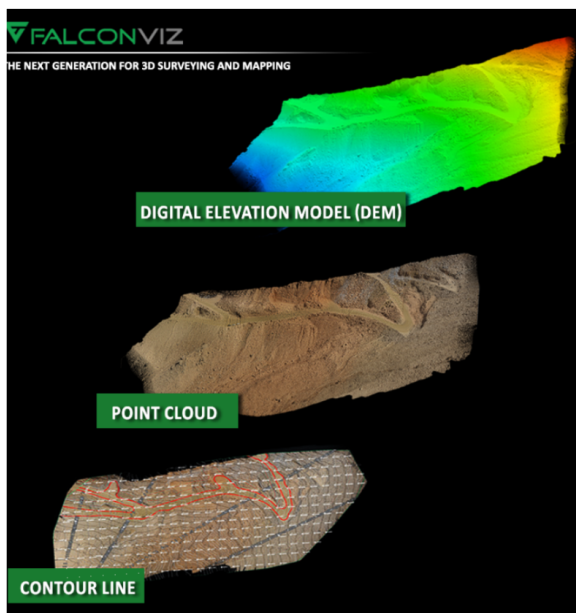
future. Emerging technologies often necessitate intricate support systems to manage the batteries, which can outweigh their benefits.

In my opinion, small consumer drones will continue to utilize Li-Ion cells, while professional drones will increasingly adopt simplified hybrid systems.

A final note to consider is their lifetime, often quoted in charge cycles, which will have an important effect on the environmental impact of disposing of the large volume of batteries.

Q: In the drone industry, what are the biggest challenges? How can we find solutions to them?

A: Currently, one of the major challenges in the drone industry revolves around regulations. As drones compete for airspace with manned aircraft, finding efficient ways to surpass the legal altitude limit of 120 meters while ensuring the safety of all parties involved becomes crucial. This becomes particularly problematic as projects expand in scale and size, making the existing altitude restriction increasingly restrictive.



Left: DEM-Point Cloud-Contour Line
Top Right: Cultural Heritage Documentation

LP Merged Photos

Furthermore, as you rightly pointed out, energy storage is a significant consideration. The ideal scenario would involve drones that can fly throughout the day, carry substantial payloads, and still maintain a relatively lightweight design to operate effectively in various environments. Advancements in energy storage technology would be a game-changer for operators. Fortunately, other technological innovations are already contributing to lowering barriers to entry, such as collision avoidance systems, ADS-B receivers, and several other features that will continue to evolve in the coming years.

Another aspect that requires attention is fostering more serious competition in the professional drone market. Presently, the industry is dominated by one or two companies that hold a majority of the market share. This dominance makes it challenging to find viable alternatives when their products do not align with specific project requirements. Encouraging a more diverse and competitive landscape would provide operators with a wider range of options and foster innovation.

In summary, addressing regulatory limitations, advancing energy storage capabilities, and promoting healthy competition in the professional drone sector are key factors that can drive the industry forward and enable the realisation of more ambitious projects.

Q: FalconViz develops customised software to meet the specific requirements of each individual client. Its tailored software boosts effectiveness and output while decreasing anxiety and irritation. May I inquire as to the nature of this customization?

A: FalconViz specializes in customizing software to meet the specific requirements of each individual client. The nature of this customization can vary based on the client's needs and goals.

- **User Interface (UI) Customization:** FalconViz can tailor the software's user interface to match the client's brand identity and preferences. This includes customizing colors, fonts, layouts, and overall visual design elements.
- **Feature Customization:** FalconViz can modify or add new features to the software based on the client's specific requirements. This ensures that the software includes all the necessary functionalities and workflows needed to enhance effectiveness and productivity.
- **Integration Customization:** FalconViz can integrate the software with other existing systems or platforms used by the client. This allows for seamless data exchange and workflow automation, reducing manual efforts and increasing output.
- **Workflow Customization:** FalconViz can analyze the client's business processes and customize the software to align with their unique workflows. This streamlines operations, reduces anxiety caused by manual tasks, and increases overall efficiency.
- **Data Customization:** FalconViz can design the software to handle and process data in a way that meets the client's specific requirements. This can involve data storage, organization, reporting, and analysis tailored to the client's needs.

- **Access and Security Customization:** FalconViz can implement access controls, user roles, and security measures based on the client's security requirements. This ensures that the software protects sensitive information and mitigates any potential security risks.

These are just a few examples of the customization options FalconViz may offer. The exact nature of customization would be determined through discussions and consultations with the client to understand their unique requirements.

Q: FalconViz renders services to various government agencies and departments. Please elaborate.

A: FalconViz offers a comprehensive digital solution to government clients,

providing them with an innovative approach to visualize and manage assets while linking them to GIS and surveying data. This results in the development of a complete and innovative solution for the clients, allowing them to freely and interactively visualize, manage, and analyze asset data.

Q: What sparked your curiosity and led you to explore and pioneer in the cutting-edge arenas of unmanned aerial vehicles (UAVs)?

A: It all began nearly 15 years ago with a simple GoPro attached to a kite, capturing photos of a friend's birthday celebration at the beach. Although only a few photos turned out well, this experience sparked my curiosity, leading me to explore the world of model aircraft. During that time, electronic flight controllers were still in their early stages, requiring extensive tuning and experimentation to achieve optimal results.

However, it was all done purely for the joy of the experience.



Everything changed when I had the opportunity to collaborate with Dr Neil Smith on creating a 3D model of the University Mosque. The quality of the model surpassed our expectations, capturing intricate details with remarkable accuracy. This achievement caught the attention of the vice mayor of Jeddah, who recognized the potential of this technology in documenting and preserving the historical city center for its UNESCO heritage site designation.

Recognizing the significance of this breakthrough, Dr Shalaby joined our team to contribute to the business development aspect of our venture. We secured funding from the University, enabling us to further refine and expand our idea. Together, we embarked on a journey to harness the power of digital modelling and preservation, inspired by the transformative impact it could have on cultural heritage and beyond.

Q: Please share with our readers some of your key efforts towards advancing sustainability, both in your professional and personal domains.

A: As the onset of the COVID pandemic emerged, FalconViz swiftly implemented proactive measures to facilitate remote work for all employees. Recognizing the importance of employee well-being and productivity, we later devised policies that enabled seamless work-from-home arrangements. Furthermore, we extended this flexibility to international employees who demonstrated exceptional commitment to our organization, offering them the privilege to work from their home countries for shorter durations (subject to specific criteria).

All Photos Provided By Falconviz

In addition to fostering remote work, we implemented office rotation strategies to further optimize commuting patterns. By reducing the need for daily commutes, we not only enhanced employee productivity but also contributed to a significant reduction in kilometers travelled. This initiative has proven beneficial for our workforce, providing them with a better work-life balance while minimizing unnecessary travel.

At FalconViz, we firmly believe that creating a supportive work environment, both in terms of remote work flexibility and reduced commuting, is vital for the well-being and productivity of our employees. By proactively implementing these policies, we have successfully adapted to the challenges posed by the pandemic and continue to prioritize the needs of our team members.

Q: How do you spend your leisure hours?

A: Since becoming a father, my free time has become quite limited. However, whenever I do get a chance, you might catch me racing across the sandy dunes on my motorbike. Lately, I've been actively participating in different competitions, including completing the Baja Qatar race in March and securing first place in the BMW-organized Saudi national competition, which got me a spot in the Middle Eastern GS Trophy qualifier. It's an exhilarating experience that keeps my adventurous spirit alive.

In addition to my outdoor pursuits, I also have a fondness for computer games. I enjoy spending time playing them with friends from around the world on a custom-built, liquid-cooled PC that I assembled myself. It's a passion that allows me to unwind when I am too tired after a long day and keeps my reflexes up to scratch.

While my responsibilities as a father keep me busy, I cherish the moments I can dedicate to my family, especially when travelling together and making memories. More than any motorbike race, they provide me with the opportunity to embrace my adventurous side and find moments of relaxation and enjoyment amidst a busy life.

CONTINENTAL'S MOSTAFA FAROUK SHEDS LIGHT ON SUSTAINABLE FUTURE OF MOBILITY IN THE MIDDLE EAST

Tyres have always been a reliable circular solution providing the three R's - reduce, reuse, and recycle. However, in the age of the Circular Economy, the novel application of circularity and resource productivity in tyre production now determines their sustainability and effectiveness. Leaders in the global tyre industry, consistently strive to break barriers and exceed expectations by providing sustainable and high-performance tyres. These industry giants invest in collaborative efforts and prioritise sustainability to create a brighter, cleaner future for generations to come.

Continental Tyres hope to ignite the sustainable mobility revolution by emphasising the importance of users' conduct and introducing state-of-the-art connected and intelligent tires, along with pioneering digital solutions, contributing impactfully to SDGs.

In an exclusive interview with Thirty To Net Zero Magazine, Mostafa Farouk,



Mostafa Farouk - Head of Marketing at Continental Middle East

the Head of Marketing at Continental Middle East expounds on the implementation of sophisticated tyre technologies and Continental's steadfast commitment to eco-friendly mobility, these companies pave the way for a greener tomorrow.

Q: Can you describe your hopes for sustainable transport in the Middle East?

A: I believe that sustainability is the responsibility of everyone living on this planet, and it all starts with awareness, in the middle east some years ago the awareness of sustainability topics almost did not exist, now there is an improvement but I hope that everyone realizes that the simple day to day activities can have an impact on the overall sustainability, accordingly, I really hope that all the ecosystem around transportation in the middle east starts to be educated about

possible measures and possible impacts, this doesn't need to be major measures or huge investments but it will all start with simple actions that will create a snowball effect over the time.

Q: What are the major challenges in embedding sustainable solutions in the transport domain?

A: Again, lack of awareness of possible horrendous impacts on our future and the future of the next generations is still delaying efforts for investing in sustainable solutions. Still, many sustainability solutions are just luxury and marketing tools, sustainability solutions usually come with a cost for investment and here a very important question arises, how much everyone from individuals, the private sector, manufacturers, and governmental bodies are willing to invest.



Q: How Middle Eastern government is helping or supporting green transport through various policies and announcements?

A: Last year we saw the COP 2022 held in Egypt and for 2023 be held in Dubai, and in UAE it was announced that 2023 is the year of sustainability so we see increased attention to the topic of sustainability and climate change and for transportation, we see initiatives all over ME countries but, I will focus more on the activities in UAE

- UAE wants 42,000 Evs on its roads by 2030
- Dubai has a commitment since 2016 that 10% of new vehicles bought by selected government bodies will be electric or hybrid cars, as a part of its green mobility initiatives 2023. a fresh directive has been issued to increase the annual government procurement target for Evs and Hybrid vehicles to 20% starting from 2025 with a future increase to 30% starting from 2030. Dubai's clean energy strategy 2050 aims towards having 75% vehicle electrification.
- Dubai's Roads and Transport Authority (RTA) has endorsed a five-year sustainability plan for 2021-2025 aligned with its rejuvenated strategic goals and objectives aimed at supporting sustainability. Such projects are based on the environmental, societal and economic drivers of sustainability.
- Dubai Road and Transport Authority has revealed a plan to have net-zero emission public transport by 2050.

The RTA said in addition to the public transport project, it also aims to minimise its carbon footprint in its buildings and waste-management plants.

Q: At IAA Mobility 2021, Conti unveiled the GreenConcept type, a prototype of the tyre of the future. Please explain how this can transform the future of the mobility industry.

A: Continental has a vision for 2030 that includes several pillars, and one of the most important pillars is sustainability, we have a clear vision to be the most progressive tire company in terms of environmental and social responsibility and we have a clear strategy covering the four phases of the value chain

- Material resourcing
- Operations
- Use phase
- End of life
- 2030 we have clear targets.
- 60% sustainable materials in flagship products
- 0% landfilling of Continental-controlled tires worldwide.
- 20% waste reduction; 95% waste recycling rate.
- 20% energy and water** reduction***

And by 2050:

- 100% sustainable materials
- 100% carbon-neutral & responsible supply chain.
- 100% renewing and recycling of our tires.

These targets are not just dreams we already started the journey.

Pyrolysis Process

Obtaining Recovered Carbon Black (rCB)



Today:

- We are the winner of the German Sustainability awards.
- Continental Tire makes major advancements in utilizing dandelions as an alternative source of natural rubber.
- First tires produced and tested from dandelion-derived rubber.
- We have just got one step closer to the goal of making tires from 100% recycled or sustainable materials. In 2022, we started to use reprocessed polyethylene terephthalate (PET) in the construction of Continental tire carcasses, completely replacing the use of conventional virgin PET.
- What does this mean for you? Essentially, you can reduce your carbon footprint before even driving a single kilometre! And this is just the first exciting step.

With the Conti Green Concept, Continental's Tire division is merging current and future technologies to make sustainable passenger and light truck tires. Development engineers and material experts at Continental have consistently implemented the innovative tire concept on three levels of impact: An especially high proportion of traceable, renewable and recycled materials, an innovative, resource-efficient lightweight technology and an extension of the service life with a renewable tread.

Q: Continental's low-rolling-resistance truck tires can greatly lessen the negative impact of truck transportation on the environment. What other detail can you give us?

A: Rolling resistance can be defined as the amount of energy a tire uses over a defined distance. It is one of five forces – along with gravity, aerodynamics, inertia and mechanical

friction – that must be overcome for a vehicle to move forward. There are a number of factors that affect rolling resistance: the design, bead, belt, sidewall, tread and inflation pressure of the tire itself, the load and distribution of the vehicle, the road conditions, and the weather.

Rolling resistance accounts for up to 30% of a vehicle's fuel consumption and CO2 emissions. Improving rolling resistance without compromising handling, grip and mileage is a delicate balancing act. Thanks to improvements in technology and production processes, however, reconciling these conflicting targets is possible.

Q: Multiple variables, including policy, infrastructure, technology, and driver behavior, contribute to sustainable mobility. How may this be improved to create a more secure system of transportation?

A: We believe that it all starts with awareness and creating a sense of urgency, and this is the responsibility of both public and private sectors to start putting the topic of sustainability as a crucial topic on every business agenda and start education starting

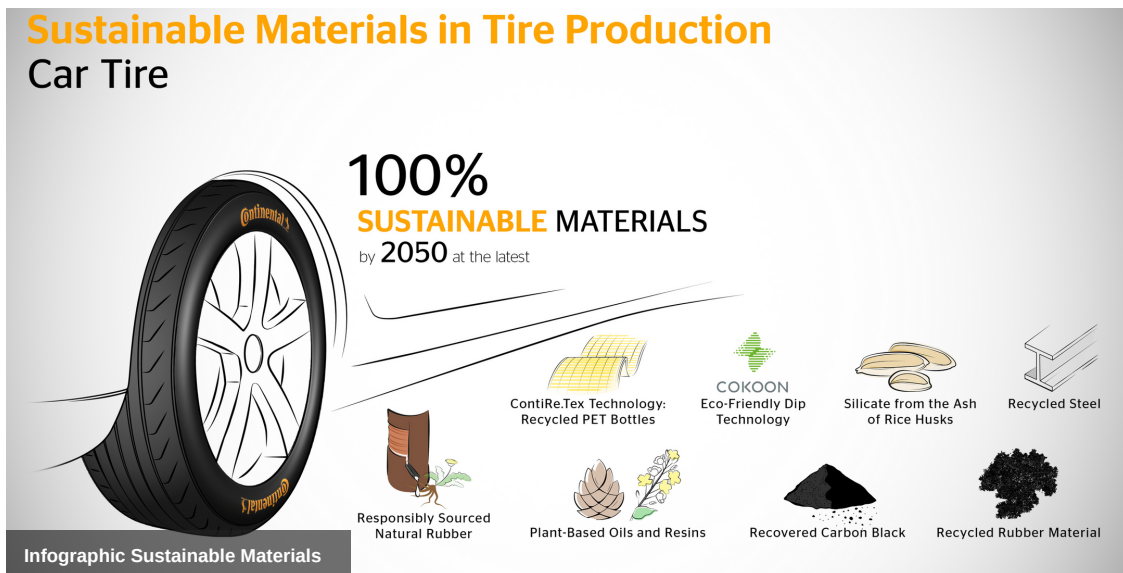
from the top to down and cascade all the knowledge and awareness to the public, this itself will eventually lead to a serious and constructive discussion about possible measures and possible impacts that can be reflected later on regulations and legislations that considers sustainability in transportation.

Q: Since the region is moving towards EVs, can you give us a rough view of the current percentage of EV and fossil fuel vehicles running in the Middle East?

A: I can't tell what the current exact share is, but it is obviously still very small yet growing fast. There are many studies and forecasts regarding the growth of this sector which will depend on

- Regulations
- Public chargers' infrastructure
- Customer readiness and willingness

There are still many valid uncertainties from customers regarding how the EV is feasible economically and functionally, which puts on the shoulder of both EV manufacturers and governments the responsibility for clarifying those uncertainties.



All photos provided By Continental Middle East

INFRASTRUCTURE AND SMART MOBILITY SOLUTIONS MIDDLE EAST

Digital technologies enhance the socio-economic potential of “smart cities” and improve the daily lives of its residents. Giga Smart City Projects such as NEOM, Amaala, Red Sea Project, Qiddiya are moving beyond focusing on infrastructure, smart railways, and electric vehicles, but also on sustainable tourism and entertainment. They will stimulate the economy to move away from oil.

Smart mobility requires real-time, mapping data, and navigation for monitoring on-road movement and understanding data to create better services and experiences for people that are stable, safe, and effective.

The Middle East is now surpassing its existing infrastructure and rethinking and reshaping itself to develop new mobility systems. Companies are investing billions of dollars in digital technologies to understand customer experiences. Since the COVID-19 pandemic began, it has changed the way people interact and prefer smart technologies.



Neom Oxagon // Neom

It is estimated that by 2050, 80 percent of the world's population will live in urban areas, so the smart city market is forecast to double to nearly US\$873.7 billion by 2026, according to the UAE Ministry of Economy.

Green technologies such as solar panels, batteries, and artificial intelligence (AI) are also required. Companies that can connect mobility as a service to ecosystems can also benefit from this transformation.

Designs That Create Impact

As mentioned above, Saudi Arabia's focus on building mega cities of the future in NEOM such as The Line and Oxagon reinforced that humans must be at the centre of city designs. The city will have no cars, high-speed underground trains, or roads, thus emitting zero carbon. It also aims to introduce a water distribution network, which will cut water loss by under 3 percent.

It will disrupt the notion of how cities are built by running it entirely on renewable energy. Saudi Crown Prince Mohammed bin Salman has touted it as a "model for nature preservation and enhanced human livability."

Moreover, Saudi Arabia and the United Arab Emirates are diving into digital initiatives through the UAE Digital Government Strategy 2025. This programme aims to double the contribution to the country's GDP from 9.7 percent to 19.4 percent over the next ten years by converting to a digital economy. Riyadh City already plans to install an artificial intelligence-based signalling project that will have driverless trains.

Oman uses smart road technology to manage traffic in Muscat that improves traffic safety and reduces congestion during peak hours across the city.

The United Arab Emirates' Ministry of Energy and Infrastructure has partnered with Siemens technology for ultra-fast electric vehicle (EV) chargers, which will help reduce carbon emissions, boost the adoption of EVs, and make the transport system more connected, stable, and sustainable.

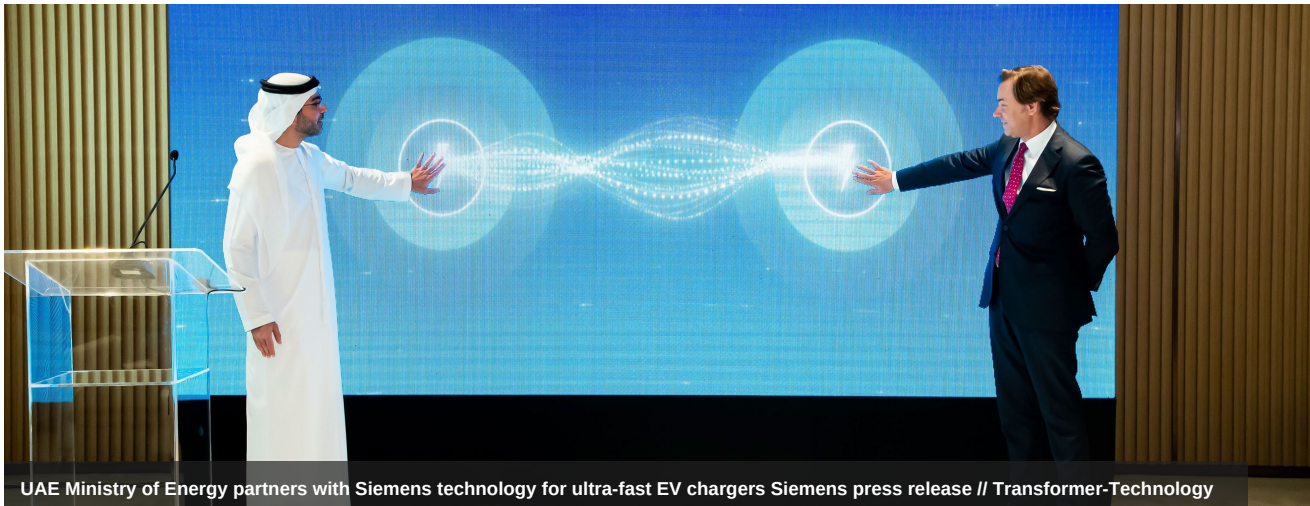
Building Mobility Solutions

The UAE Ministry of Energy and Infrastructure (MoEI) announced the launch of a new Smart Mobility think tank in the World Government Summit (WGS) 2023 in Dubai. It has signed a memorandum of understanding with Etihad Rail, Mohammed bin Rashid School of Government (MBRSG), the American Center for Mobility, and The Routing Company.

Its aim is to enhance the economy and attract global talents in the smart mobility sector. The experts in the field of the private sector and academia will find innovative solutions and develop policies for smart mobility.

The UAE aims to establish itself as a leader among nations in smart intermodal mobility by 2032.

Commenting on this development, Suhail bin Mohammed Al Mazrouei, Minister of Energy and Infrastructure said, "The transportation sector is one of the largest contributors to climate change, accounting for a quarter of all energy-related greenhouse gas emissions.



The new venture will help achieve the country's goals on sustainable development and climate action by reducing carbon emissions produced by the transport sector."

He added, "As our economies and populations grow, so does the demand for a sustainable, affordable, and effective transport system for people and goods. This demand can only be met by rethinking our transportation modes and shifting towards smart mobility. The Think Tank will help us do this by shaping an innovative transport ecosystem and tackling the challenges and opportunities in the mobility sector."

The UAE also plans to transform 25 percent of transportation to autonomous modes by 2030. It is expected to bring AED 22 billion in revenue every year by focusing on reducing carbon emissions, accidents, and the cost of transportation, and saving time for the population.

Abu Dhabi was evaluated on the parameters of infrastructure, digital services, perceptions of the residents, and government efforts in health and safety, mobility, opportunities for work and education, governance, and activities.

Additionally, Masdar City offers an environmentally friendly shuttle service that self-drives. Abu Dhabi airports also signed an MoU agreement with France's Groupe ADP to understand the opportunity of advanced air mobility, which will use electric vertical take-off and landing aircraft to transport cargo and people.

Egypt is also planning to build 15 new cities to meet the demands of the population, provide them with high-quality amenities, generate investments, and create job opportunities. The cities are expected to house 6.5 million people. It will monitor traffic, have buildings that automatically determine the best way to use resources, and consider climate impact.

AI As A Tool To Build Smart Infrastructure And Mobility

Smart buildings can be developed in the GCC countries, where a hot and arid climate overpowers daily life. With urban development, investment, and the right design strategies, AI can be trained to regulate temperature and humidity in buildings or infrastructure. It can monitor temperatures in real time according to internal and external conditions. It can also be modified to gather data to increase its efficiency, accuracy, and predictions as much as possible.

AI can process the data over hours, days, and years and optimise solutions according to areas that receive more solar than others improving performance and changes to its residents in real-time.

Moreover, AI can also monitor the air quality in buildings and adjust to provide great ventilation for occupants. It can also add air filtration systems and adjust temperature levels to ensure that the air is clean and healthy. This can even save energy costs by reducing usage during cold air temperatures and promoting comfort, health, wellness, and happiness.

Reliance on oil is another important factor, that Saudi Arabia aims to reduce. This vision has been implemented since 2016 and will be achieved by 2030. To support this, Saudi Arabia developed the National Strategy for Data and Artificial Intelligence, which integrates artificial intelligence techniques and data across all economic sectors.

The Saudi Authority for Data and Artificial Intelligence was established to monitor this national strategy's implementation and equip public and private employees with the right techniques and skills to use artificial intelligence by focusing on five key areas:

Transportation and Mobility: Establishing information systems and using AI to deliver the best technologies to the population using databases that help improve the customer experience.

Government: Linking public and administrative data to automate transactions and certify them through AI to achieve great results.

Healthcare: To help healthcare professionals better understand their patients by integrating artificial intelligence and other technologies in medical care, and research. Also aiming to include it in the pharmaceutical industry.

Education: The goal is to introduce methods of study for artificial intelligence and the role they play in sectors of the curriculum.

Energy: Increasing the efficiency of energy production, delivery, and capacity by optimising management and supply chains.

Sustainable growth, reducing human effort, simplifying processes, and resiliency are the focus of civic authorities, governments, and industries. However, integrating complex network systems can be difficult. This is why harnessing the power of data and artificial intelligence can drive higher efficiencies, reduce carbon, and optimise performance.

Smart cities are the future and a way to tackle urbanisation and consumption growth. It demands initiatives that will provide environmentally friendly solutions to meet the needs of people and lower carbon footprint providing a cleaner world and achieving Vision 2030 sooner.



Wash Basin and WC: RAK-VASET
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SMART E-COMMERCE AND LOGISTICS LEAD THE FUTURE MIDDLE EAST

Today, everything we experience is connected digitally. Lives have become easier, more sustainable, and more accessible through the easy exchange of information online. How is the Middle East leveraging this opportunity? Most importantly, it is uniquely located between Europe and Asia, so trade is convenient. Some countries in the region, such as Saudi Arabia and the UAE, are wealthy and have young people under the age of 25.

All this is possible thanks to e-commerce, which has helped businesses gain access to and construct a wider market presence using a distribution channel. However, it is not limited to purchasing but also the supply chain delivering these products or services.

According to a report by Kearney Middle East, the e-commerce sector in the GCC is forecast to reach a value of US\$50 billion by 2025. Moreover, the UAE is placed 11th as the best-performing country in the region, ranking higher than Hong Kong,



Hamad Port // Logistics Middle East

Switzerland, and the United States. This was calculated in the Logistics Performance Index by the World Bank.

Adel Belcaid, partner at Kearney Middle East, commented in the Saudi Gazette, "E-commerce continues its rapid growth in the region. In our last e-commerce outlook for the GCC in 2017, we forecasted growth of 35 percent CAGR, which was essentially more than a four-fold jump in value for the sector between 2015 and 2020. By the end of 2019, it was worth just short of US\$18 billion, with signs of maturing growth and intense market competition."

Belcaid continued, "However, COVID-19 caused an unforeseen push and gave a new, accelerated lease of life to the sector, in line with what we have seen in global markets. This is due to a rapid change in consumer behaviour, with unprecedented adoption of e-commerce by all population segments, spurred to a large extent by the new normal of social distancing, lock-downs, and reduced capacity in physical stores."

This clearly shows that with the pandemic, more people started shopping online, which accelerated the e-commerce industry's growth.

Monitoring Logistics By Developing Sustainable Methods And Reducing Economic Losses

According to a global tech firm, Technavio, the UAE's logistics market size is expected to grow by US\$11.87 billion by 2026. It also stated that the market's growth momentum will accelerate at a CAGR of 6.84 percent by that period.

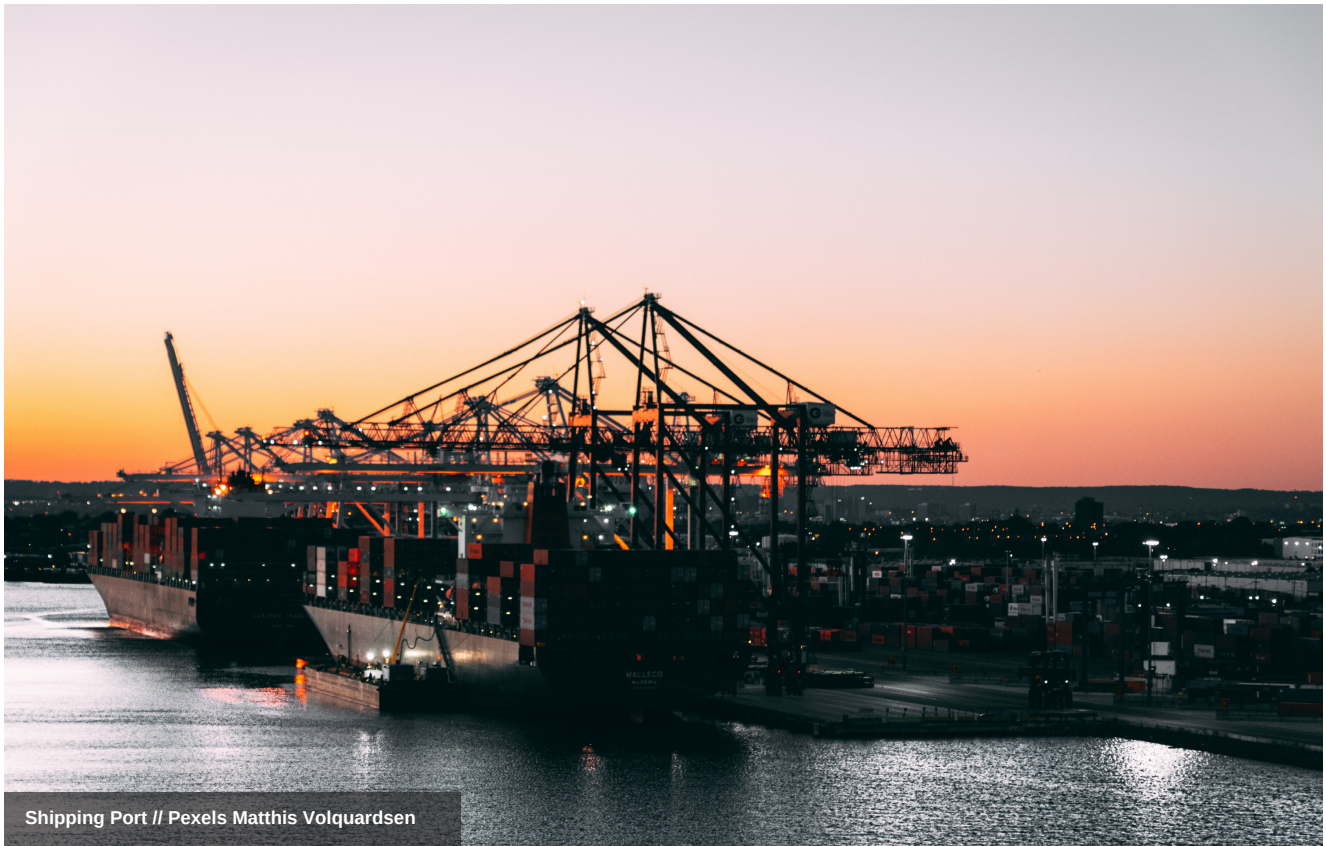
An excellent example is Dubai's interlinked connectivity to other countries; its airports and seaports make transporting profitable, easy, and efficient. It also benefits from logistical facilities, investments, and policies that facilitate trading.

Dubai's roads are connected to Jebel Ali Port and Dubai World Central, which covers Al Maktoum International Airport. Many industries leverage this connectivity to Jebel Ali Port to cater to the Middle East market.

Dubai will lead the shipping industry in the future. An initiative that is supporting this position for logistics is the World Logistics Passport (WLP), which is an inclusive freight loyalty programme under the Dubai Silk Road strategy. This will eliminate trade barriers and boost existing trade routes, thereby strengthening the global supply chain.

However, certain challenges remain as cargo and shipping containers get lost at sea. Hence, many companies are including technology and AI in managing their systems. Emirates Logistics uses blockchain and AI technology extensively, enhancing their efficiency, such as by applying technology in warehouse management. This enables the company to track the origin of their goods.

Considering this example, companies can support real-time tracking in the vehicle fleet management, container goods control, and asset management sectors. Newer technology, such as Internet of Things sensors, can provide details such as the position, sensing, and transmission of vehicles or containers over networks. It can also read geolocation and collect data on humidity, luminosity, carbon emissions, temperature, and vibration. Such information can be sent to the company's cloud servers for analysis.



Shipping Port // Pexels Matthis Volquardsen

Additionally, Emirates Logistics also employs sustainable energy sources to develop a sustainable and efficient business model. They have adopted electric trucks and installed solar panels in all the company's warehouses to power the warehouse and the electric trucks.

Saudi Arabia is also taking significant steps towards sustainable logistics through initiatives such as the Saudi Green Initiative and the Green Middle East Initiative.

It aims to reduce carbon emissions, conserve natural resources, and protect the environment by emphasizing green logistics procedures, such as electric and hybrid vehicles, green warehouses, and eco-friendly packaging. Industries involved in logistics are expected to follow the same pattern by investing in renewable energy sources, reducing fuel consumption, and implementing waste reduction measures.

A Shift In Digitization And E-Commerce

For the e-commerce industry to thrive, investments in software and infrastructure remain critical. Consumers have less patience with a slow or poorly functioning website. It is also equally important to have quick, reliable, and easy return delivery services.

PwC's Global Consumer Insights Survey 2023-Middle East stated that consumers faced longer than expected delivery times as the second most common issue. And a quarter of respondents cited the quality of purchased goods as another one of the common issues encountered.

The same report found that a higher percentage of consumers in the region plan to shop less in-store over the next six months compared to the previous survey. However, a majority of consumers are expecting to increase their online shopping, with many



Ehrhardt + Partner Group (EPG) expand Logistics Solutions Center (LSC) // EPG

preferring retailers that offer efficient delivery and click-and-collect services.

Interestingly, the use of mobile phones for daily and weekly online shopping remains high, compared to other devices like PCs, tablets, and smart home voice assistants. Moreover, there is a small but growing group of consumers who use VR for shopping. It also stated that nearly half, or 48 percent, of consumers from the region claim to have experienced rising prices for household goods.

Adding further, several companies are incorporating non-fungible tokens (NFTs) into their virtual shopping experience for customers. NFTs are stored on blockchains and serve as certificates of authenticity for digital copyrights in the virtual world.

Vorto Games, an online gaming company, introduced the 'play to earn' model, where gamers earn digital goods and cryptos. Millennials and younger millennials are the primary demographic group that engages with the metaverse.

According to Zawya, e-commerce revenue in the UAE is expected to grow annually at 8.57 percent between 2023 and 2027, and the predicted market value is US\$16.37 billion by 2027. In the GCC region, it is expected to grow at 10.95 percent annually between 2023 and 2027 to reach US\$49.78 billion annually by 2027, up from US\$32.85 billion in 2023.

To support the growth of e-commerce, Abu Dhabi Islamic Bank has partnered with Visa to provide biometric identity verification for e-commerce transactions. This is in response to the increased need for digital payment security as e-commerce expands.

According to Bain & Co., governments are finding solutions by investing in digital infrastructure to support this growth, such as Saudi Arabia's building 14 fully automated smart warehouses in Jeddah. The UAE is aiming to become a cashless society and is doubling down on its multi-billion-dollar e-commerce market.

The Middle East is taking bold steps towards economic diversification, recognising the importance of moving away from hydrocarbons and investing in new industries. Increasing digitization and the widespread adoption of emerging technologies will be at the heart of this shift.

The growth in e-commerce and the adoption of emerging technologies will transform the way businesses operate in the region, presenting opportunities for those looking to expand into this dynamic and growing market.

A product designed by Cosentino®

TOPS ON TOP

Cindy Crawford on Silestone Seaport



On Top

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NUCLEAR ENERGY: AN ANSWER TO GROWING ENERGY DEMANDS IN THE GCC

There is currently a growing interest in nuclear power, driven by both the urgent need to reduce dependence on fossil fuels due to the climate crisis and the recent geopolitical tensions arising from Russia's invasion of Ukraine.

Nuclear energy is a low-carbon, clean energy source. It is produced through fission, where uranium atoms are split to generate energy. The heat from this process is utilised to produce steam, which spins a turbine, generating electricity without the harmful by-products that come with fossil fuels.

Despite its ability to generate significant amounts of carbon-free power, nuclear energy is also able to produce more electricity on less land than any other clean-air source.

This year, Sama Bilbao y Leon, Director General of the World Nuclear Association, said at the 44th IAEE International Conference in Riyadh that nuclear energy offers "clean, abundant, and affordable round-the-clock energy and a high quality of life."



The King Abdullah City for Atomic and Renewable Energy (KA-CARE) // Gensler

It is cleaner, affordable, and equitable for everyone to access.

She continued, "As a low-carbon energy source, nuclear power can play a very important role in decarbonizing other difficult-to-access sectors," at the conference.

Where Do The Nations Stand In Nuclear Energy Development?

According to the International Energy Agency (IAEA), achieving net zero emissions would be more challenging and expensive without the presence of nuclear power.

Currently, nuclear power accounts for 10 percent of global electricity generation. The IAEA predicts that global investment in nuclear power will exceed US\$100 billion annually by 2030 and remain above US\$80 billion by 2050.

In the Middle East, the United Arab Emirates (UAE) has expressed its interest in producing

low-carbon hydrogen using electricity generated by its Baraka nuclear power plant. Meanwhile, countries like Jordan and Saudi Arabia are also considering their options for nuclear energy.

The Middle East Institute states the Gulf Cooperation Council (GCC) possesses a substantial amount of hydrocarbon reserves, with over 29 percent of the world's proven oil reserves and 21 percent of natural gas reserves.

However, due to rapid economic development and energy subsidisation, the GCC countries' energy exports have become undervalued, leading to high rates of domestic consumption. The Gulf nations have some of the world's highest per capita consumption and subsidy rates. In 2021, the International Energy Agency (IEA) estimated the GCC's fossil fuel subsidies at US\$76 billion, or their collective US\$1.7 trillion GDP.



Nuclear fusion technology is on its way to reality // Energyfairness



The GCC states rank highest globally in terms of fossil fuel subsidies per capita, resulting in record-high energy consumption rates per capita. Qatar has the world's highest fossil fuel consumption and subsidies per capita due to its small population relative to its massive liquified natural gas (LNG) production capacity.

Saudi Arabia and the United Arab Emirates are turning their attention to meeting the challenge of replacing fossil fuel consumption and have the most ambitious nuclear energy plans.

According to the World Nuclear Institute, in 2009, the Saudi government announced that it was considering nuclear power. A royal decree said, "The development of atomic energy is essential to meet the Kingdom's growing requirements for energy to generate electricity, produce desalinated water, and reduce reliance on depleting hydrocarbon resources."

The King Abdullah City for Atomic and Renewable Energy (KA-CARE) was set up in Riyadh to advance this agenda as an alternative to oil and to be the competent agency for treaties on nuclear energy signed by the kingdom. It is also responsible for supervising work related to nuclear energy and radioactive waste projects.

In February 2022, Saudi Arabia announced the establishment of the Nuclear Holding Company, which will act as the country's nuclear developer. While the UAE announced an investment of US\$163 billion by 2050 to achieve half of its energy from nuclear power and renewables.

Cost-Effective Benefits Of Nuclear Energy

Nuclear power plants use uranium as fuel, which is widely available and provides fuel cost stability. Although the initial costs of establishing a nuclear power plant can be high, uranium fuel costs are relatively stable compared to fossil fuels.

This stability can provide long-term cost predictability for electricity generation.

Once a nuclear power plant is operational, the cost of generating electricity can be competitive with other conventional energy sources, such as natural gas and coal, making nuclear energy cost competitive. The cost per unit of electricity produced can be lower compared to fossil fuel-based power plants, especially when considering volatile fuel prices.

In the Gulf Cooperation Council (GCC), the average actual cost of generating electricity is estimated to be around US\$0.11 per kilowatt-hour (kWh), while the average subsidised price stands at \$0.06 per kWh.

Saudi Arabia, being the largest generator, experiences the most substantial losses in electricity generation. In 2021 alone, the kingdom incurred nearly US\$14 billion in losses while providing subsidised electricity to its domestic economy, as reported by MEI.

On the other hand, Oman incurred the fewest losses, amounting to approximately US\$857 million in 2021, as its subsidised electricity price aligns more closely with the actual cost of production.

Kuwait relies heavily on imported natural gas and oil for its energy needs, making it vulnerable to price volatility and potential disruptions in fuel supply. By introducing nuclear power to diversify the energy mix, energy security can be enhanced by reducing dependence on external energy sources.

Nuclear power plants have a long lifespan, typically around 40 to 60 years, providing longevity and operational efficiency. Once operational, they can be a reliable source of electricity for decades. Advancements in nuclear technology, such as Generation IV reactors, aim to improve efficiency and reduce operational costs further.

The oil- and gas-producing countries of the Gulf region are currently experiencing significant financial gains amidst a global energy crisis.

Kuwait, for instance, foresees oil revenue reaching an impressive US\$16.7 billion in 2023. Meanwhile, Saudi Arabia projects government revenues of US\$298 billion for 2023, alongside a year-on-year GDP growth of 8.6 percent in the third quarter of 2022.

However, these countries understand that relying solely on high oil prices is not a sustainable long-term strategy. They need to prepare their political and economic systems for the impending global transition away from carbon-based energy sources, for which nuclear energy is the answer.

As of 2022, Israel boasts the highest population growth rate among member countries of the Organisation for Economic Co-operation and Development (OECD). And Israel depends on electricity; its network is not connected to the systems of neighbouring countries. Hence, it has been sufficient to meet the energy needs of a population that has grown by an average of 3 percent a year between 2010 and 2020.

It currently ranks third in population density within the OECD and is expected to become one of the most densely populated countries globally in a few years.

By 2040, the population is projected to reach 13 million, compared to 9 million in 2020. With the doubling of electricity demand and the significant increase in domestic energy consumption, Israel faces considerable challenges.

To address these challenges, the Israeli government is actively promoting various programmes aimed at meeting future electricity consumption forecasts, reducing pollution, and promoting the use of natural gas and renewable energy sources for power generation and transportation.

New Technology For Nuclear Energy

Electricity generation is the costliest domestic use of energy in the Gulf, despite only accounting for 12 percent of energy consumption. Electricity subsidies alone make up almost 40 percent of the value of energy subsidies in the GCC countries, highlighting the inefficiency of oil and gas use in the region.

Small modular reactors (SMRs) are a recent advancement in nuclear energy, offering a more cost-effective alternative to traditional, large-scale reactors. Until recently, large reactors required decades and billions of dollars to build. SMRs generate a fraction of the energy, at less than 300 MW, and are quicker and more affordable to construct.

One of the benefits of SMRs is their flexibility. They can be used for projects with lower energy needs, and multiple reactors can be added to projects with higher energy needs, like adding more cars to a freight train. This flexibility allows for a more tailored approach to energy generation.

Nuclear energy is the future of the Gulf region. The nations are actively seeking solutions to meet their future energy demands while reducing their environmental impact and ensuring long-term economic stability.



UAE AND FINLAND: BOLSTERING CLEAN NUCLEAR ENERGY IN THE MIX

As part of its efforts to mitigate climate change, the UAE has taken significant steps to curb the carbon footprint of its energy system through the establishment of a nuclear program, the first of its kind in the Arab world. The decision to pursue a civilian nuclear energy programme was made after thorough deliberation in 2007. Remarkably, construction of the first reactor began in 2012 and was fully integrated with the UAE grid in just eight short years, marking the first of four reactors to come.

The Barakah Nuclear Power Plant, comprising four reactors of South Korean design is touted to be a game-changer in the energy sector, delivering up to 5,600 megawatts to satisfy a quarter of the UAE's total electricity demand. With Nawah Energy Company at the helm, this groundbreaking project has made remarkable strides, with a completion rate of over 97% as of June 2022, since its inception in July 2012.



Dr. Petri Kotiluoto - Vice President, Nuclear energy at VTT

Q: In what ways do you think the Middle East will utilize nuclear power in future? And how is VTT hoping to expand in the Middle East?

A: It's very important to remember that Nuclear is also a part of the energy mix. The Middle East region has a hot and dry climate, with an arid and semi-arid environment. There is a great demand for electricity for cooling as well as for the industrial sector. Electricity is also used for the desalination of water. So, there are multiple applications in which nuclear energy can be used both today and also in the future.

We are interested in collaborating and expanding in the Middle East region. We have already established quite a bit of contact with several stakeholders. And we have a few ongoing projects, so we can build on that. We also just recently participated in the Utilities Congress in Abu Dhabi and developed contacts there. This is one of our strategic areas, at least in nuclear and we have recognized the United Arab Emirates, as one of the countries where we want to expand.

Q: Are there any major challenges in working in the Middle East?

A: I don't see any major challenges. I think the technological challenges in nuclear, are similar everywhere. For example, the Baraka Nuclear Power project is one of the success stories. It is on schedule and has had no major technical problems. Of course, we are here to help in case of any issues. Furthermore, the working culture and relationships have been working very well, so we collaborate well.

Q: Nuclear power, being considered the cleanest and most sustainable form of energy, how can this be widely utilized in the Middle East region to achieve its sustainable goals?

A: Of course, it can be more widely used, just by building more. To make nuclear energy fully sustainable, it's very important to consider the waste management issues by planning and conducting national programs for radioactive waste management and nuclear fuel disposal. In the UAE, the government has already initiated such programs and they have been proceeding well. Apart from the Baraka project, there are good plans to build low and intermediate-level waste repositories, as well as a repository for the final disposal of nuclear fuel.

Public acceptance and also sustainability are also very important. Different countries have different policies and different opinions about nuclear. In Finland, public acceptance is very high. We have built the first final deep geological repository for the disposal of spent nuclear fuel. This repository should have the operating license soon.

Q: Smaller modular reactors are being developed as a viable alternative to conventional methods of energy production have increased dramatically during the past two years. Can you elaborate on this?

A: Yes, so, we have our own project also to develop specific small modular reactor concept called LDR 50. And we are also looking other SMRs and their utilisation in Finland and



VTT Centre for Nuclear Safety. The building comprises of both office and laboratory space, Accommodating more than 150 of VTT's nuclear energy experts.

worldwide. In our own concept development, we are still in the early stages. We are now going into detailed technical designing and the safety analysis for our reactor concept. In parallel, there's also a commercial entity formed just recently to start the commercialisation of this concept as well.

Our concept is unique as we concentrate on low temperature, unlike other reactor technology where many look at high temperature for different industrial processes and combined heat process use.

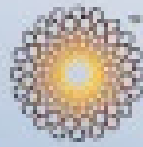
It is not easy to decarbonise the production of heat, used for district heating in Finland and elsewhere in Europe. It is easier to produce electricity.

All Photos Are Provided By VTT

The SMRs would be a good option for that. But then low-temperature reactors could also be employed in water desalination processes which could also be interest of to the Middle East region.

Q: What would you like to do in your free time?

A: Well, I very much appreciate Finnish nature, it's wonderful to go there. I received the canoe from my wife as a birthday present just a few years ago. We sometimes do day trips paddling around lakes and rivers and that's quite nice.



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NUCLEAR ENERGY IS SEEN AS A CLEAN AND SUSTAINABLE FUTURE OPTION BY THE GCC AND ISRAEL

Israel's diplomatic options expanded in August 2020 when the United Arab Emirates (UAE), Bahrain, and Israel signed the Abraham Accords. Not long after, both Morocco and Sudan recognised Israel's legitimacy on the political stage. Tense relations with Saudi Arabia also eased tensions.

The United Arab Emirates is an exceptional instance. Israel's diplomatic presence in Abu Dhabi was officially recognised in 2015, although its mandate was confined to helping the country join the International Renewable Energy Agency. The Trump administration's efforts, along with the two countries' acknowledgement of the benefits of working together, ultimately resulted in the establishment of full diplomatic relations. Many outsiders to the area have been taken aback by the United Arab Emirates and Israel's rapid and decisive political will to advance in just over two years.

For the past half-century or so, light water reactors (LWRs) have been the standard for nuclear power plants.



Renewable energy options // Opulous.co.uk

It runs on uranium fuel and is cooled by regular (or "light") tap water. Using less than one percent of the energy that could be recovered from uranium, LWRs are very wasteful in their use of natural resources.

According to Eugene Shwageraus, Professor of Nuclear Energy Systems Engineering at the University of Cambridge, "fast breeders" were developed in the 1970s "when the availability of uranium was feared to be a real concern." These reactors produce fuel more quickly than they use it. However, in order to design such a system, they had to stop using water to cool the reactors. They required intricate engineering since they were cooled by liquid metal, most commonly molten sodium. This adds complexity to the system, increasing the cost of fast breeders relative to light water-cooled reactors.

Fast breeders were never widely used because of the high initial investment required and also

because, as it turns out, uranium is quite easy to get by. About 450 civil and naval establishments throughout the world still use the LWR as the norm despite its energy inefficiency.

Here is where the creativity of the Israeli scientist comes into play. He and Todosow hope to create a cheap light water-cooled reactor that is as efficient as a fast breeder in removing energy from its fuel by adapting existing LWR technology.

In three years, Shwageraus says, "We'll choose from several ways to see which is optimal to combine safety, economics, and resource utilisation."

Working Together On Renewable, Sustainable Options

The desired outcome is a reactor that can maintain itself through a balance of fuel production and consumption.



With uranium and a mild water coolant, this is impossible. Thorium is preferable because its nuclear properties allow for extensive customization of reactor cores. Thorium reserves may have more energy than all other fossil and nuclear fuels put together, according to some estimates.

Shwageraus claims that there are at least three times as many thorium atoms as uranium atoms in the Earth's crust and that they are much easier to remove. It was discovered by a Swedish scientist in Norway in the 19th century and named after Thor, the Norse god of thunder, and is now found in abundance in India, the United States, Australia, and Turkey. Although its potential application in the generation of nuclear energy has been recognised for some time, it has not yet been realised.

Shwageraus freely confesses that he was taken aback to be awarded a grant from the BSF Energy Independence Partnership, given how competitive the funds were. Through this programme, American and Israeli researchers can pool their resources to develop clean energy technologies. In the first stage, six initiatives involving solar energy, biofuels, and clean, safe nuclear energy were given a total of \$1.2 million in funding supported by the Ministry of National Infrastructures.

How The UAE Is Leading The Way In Safe, Civilian Nuclear Power In The Middle East

The United Arab Emirates has become a regional leader in nuclear safety and security by adhering to global non-proliferation norms.

Government officials and non-proliferation specialists have hailed the United Arab Emirates' (UAE) nuclear cooperation with the United States as the "gold standard" for its dedication to these values.

According to Danny Sebright, president of the U.S.-UAE Business Council, "This is a pioneering attempt to use the latest technologies available on the world market to build and operate one of the most sophisticated, most advanced nuclear energy facilities anywhere in the world."

The United Arab Emirates (UAE) will benefit from the investment in nuclear energy by creating cleaner and more diverse energy sources for internal use and export. Almost all of the United Arab Emirates energy needs are currently met by fossil fuels, but the country's officials are making plans for long-term environmental and economic sustainability. By 2050, the United Arab Emirates plans to have 50% of its energy come from renewable sources, with nuclear accounting for 6% of the total. The United Arab Emirates hopes to cut its carbon dioxide output by 70% as well.

His Highness Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, spoke optimistically about this energy transformation in his keynote address to the 2015 World Government Summit in Dubai. "The big question is, are we going to feel sorry 50 years from now when we've loaded this last barrel of oil? If our investment today is successful, I believe that we will all rejoice.

In 2011, it was reported that the Iranian nuclear reactor at Bouchehr will be connected to the local power company, marking the beginning of a race for nuclear supremacy in the Middle East. In 2016, Saudi Arabia announced plans to



construct 16 nuclear power reactors by 2040, whereas the United Arab Emirates (UAE) already possesses 4 reactors, according to the most recent statistics published by the International Atomic Energy Agency (IAEA). With an output of 1,400 megawatts at the start of 2021, the reactor in the first Baraka station in Abu Dhabi became the largest single source of electric energy in the Emirates. Egypt, Turkey, and Jordan are just a few of the other Middle Eastern countries actively working to build nuclear power plants to meet their growing energy demands.

Energy security is a top priority for many of the region's oil producers. The monarchies of the Persian Gulf are beginning to investigate alternatives to oil as a method of reducing their reliance on fossil fuels, with Saudi Arabia and the United Arab Emirates at the forefront of this trend. Population expansion is the primary driver of increased energy demand in both

Jordan and Egypt. The security concerns in the Middle East in the face of Iran's military nuclear programme must not be lost amidst all these other worries. In light of the possible shifts in regional power dynamics, some countries consider nuclear weapons as a necessary defensive measure.

Setting A Benchmark

The ability to produce clean energy is the primary motivation for developing nuclear energy in the UAE's bordering countries. The Baraka nuclear power project was commissioned by the Emirates Nuclear Energy Corporation (ENEC) in 2009, with construction allocated to the Korea Electric Power Company for a total of US\$20 billion. It was the first nuclear power plant to be built in the Middle East at a time of relative calm, and its four reactors represent one of the world's largest recent investments in nuclear energy. The United Arab Emirates and the United States inked a bilateral nuclear cooperation pact that same year.

Because of its early adoption of international safety and security principles on non-proliferation, the federation has become a regional role model in nuclear matters. Its partnership with the United States is a "golden guarantee" in this regard.

The annual increase in electricity demand in the UAE ranges from 7 percent to 10 percent, reflecting the country's expanding industrial sector and populace. But right now, fossil fuels provide almost all of the nation's energy. As a result, Abu Dhabi has announced its first national energy policy, including plans to shift to sustainable energy sources for both domestic use and exports by the year 2050. Considering that the United Arab Emirates wants to cut its CO2 emissions by 70%, the remaining 44% will be made up of various renewable energy sources including solar power and wind turbines.

Despite its alliance with the United States, this Gulf state has also been looking to China for assistance.

On his first overseas trip after being re-elected as President of the People's Republic, Xi Jinping visited the federation in 2018. They made the announcement of their global strategic alliance at that time. In order to execute a model of sustainable development that includes industrial and financial cooperation, the nuclear agencies of the two countries signed a memorandum of understanding. The Chinese National Nuclear Corporation and businesses from the United Arab Emirates have signed a cooperation to work together on energy projects.

However, there are a number of obstacles that will make it impossible for such cooperation to flourish. At one point, Dubai was the hub of a smuggling operation headed by Pakistani nuclear scientist Abdul Oadeer Khan. Because of the United Arab Emirates federal system, coordinating the regulation of dual-use items



Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi // Egypt Today

among the many emirates can be challenging. In addition, the Houthis assaulted multiple Emirati sites when war broke out in Yemen in 2014, prompting the UAE to delay establishing any new nuclear construction sites for fear of being targeted as well. The United Arab Emirates (UAE) just inked a contract with South Korea to construct four nuclear units, while the United States (US), Russia (RU), and France (FR) are all competing for nuclear contracts, leaving less and less opportunity for China.

Gulf-Israel Bonding

There is some validity to this interpretation. To the Gulf states, Egypt has long represented what Washington will accept in terms of a formal relationship with Israel. Even though Egypt has autocratic politics and a dismal human rights record, after negotiating a peace treaty with Israel in 1978-1979, it moved into the U.S. strategic orbit and became the second-largest receiver of American economic aid and military assistance. However, the Gulf states acknowledge that Egypt's status as a peace partner to Israel has made it seem important in America's strategic regional foreign policy, despite the fact that the United States already has strong ties with and financial support from these countries.

Could a new alliance with Israel reverse the United States' declining strategic importance to the Gulf states and silence those who want to "rethink" ties with Saudi Arabia? According to the Saudi-UAE axis, this is the case, and they are placing their future hopes in a new regional security partnership with Israel.

What's more, Israel and the Gulf Axis have joined forces to influence U.S. policy in the Middle East. Particularly concerning and potentially hazardous was the Obama administration's pursuit of a nuclear agreement with Iran, which would have ended Iran's isolation. This alliance took a big stride forward in 2016 when the two sides worked together to resist Obama's agenda; in 2017, they used this foundation to begin cooperating with the new Trump administration.

The Trump administration's fundamental goal in the Middle East has been to strengthen the alliance between the Gulf states and Israel, and this strategy has been very successful. The result was practically unequivocal backing for both sides, the withdrawal from Obama's flagship nuclear accord, the Joint Comprehensive Plan of Action (JCPOA), and the implementation of a "maximum pressure" campaign against Iran.

The United Arab Emirates decision to establish diplomatic ties with Israel in September 2020 should be evaluated not only in light of the country's ties to the Trump administration but also in light of the possibility of a return to Democratic Party rule in the United States in the wake of the upcoming midterm elections. Despite the growing polarisation of U.S.-Gulf relations under the Trump administration, the increasingly negative view of Saudi-UAE policies within progressive Democratic circles, and the emphasis placed on the need to recalibrate U.S.-Saudi relations, both sides of the political aisle, including the Biden campaign, welcomed the normalisation agreements. Even though Joe Biden was elected president in November of 2020, the United States' relationship with the United Arab Emirates and Saudi Arabia did not drastically alter until many months into his administration.



Addressing Growing Power Demand

A 2015 report by Masdar and GE found that power demand was growing at a rate of seven to ten percent per year due to the expansion of the country's businesses and population. The United Arab Emirates (UAE) has spent billions on renewable energy development with the aim of having solar, wind and other technologies account for 44% of its energy mix by 2050.

Up to 25% of the United Arab Emirates energy needs may be met by the four civilian nuclear reactors operating at full capacity with almost negligible carbon emissions. Energy from one uranium pellet the size of an adult's fingernail is equivalent to 474 litres of oil, per ENEC.

Emirates Nuclear Energy Corporation (ENEC) is making significant investments in education courses to carry the sector into the future to satisfy the demand for new engineers, scientists

and mathematicians. Khalifa University, the Federal Authority for Nuclear Regulation, and Abu Dhabi Polytechnic are just a few of the top universities in the world that ENEC has partnered with through its Energy Pioneers Programme and the UAE Nuclear Energy Scholarship Programme to provide students with top-tier nuclear education.

In a statement to employees, ENEC CEO Mohamed Al Hammadi emphasised that the company's people are its "greatest asset." In preparation for plant operations, we are investing heavily in the education and growth of bright Emiratis.

KEPCO's cutting-edge APRI400 technology will be utilised in all four reactors, as this is what the U.S. Nuclear Regulatory Commission mandated for new plants in the wake of the Three Mile Island disaster. A cutting-edge simulator will be used to educate future operators.

The site selection for the plant was also given careful thought. The area has been completely safe from tsunamis and tectonic activity for over a hundred million years. "The Barakah site was selected after a 12-month-long analysis," explains Maryam Qasem, Head of Nuclear Fuel Fabrication at ENEC. The environmental considerations, seismic history, security, and distance from populous regions were all taken into account in the study.

Indices Of Collaboration

Israeli leaders have been quite open to regional collaboration, especially with its peace treaty partners Egypt and Jordan. However, even if there were a desire for cooperation among these three countries, it would be extremely challenging due to the current political environment in the region. The unofficial Israeli-Jordanian relationship is a good example of this, despite the more critical public tone. Cooperation in the nuclear sphere is taking place, albeit covertly. The main topic of conversation for officials from both nations is Jordan's proposed reactor in Aqaba, on the Red Sea near the Israeli-Jordanian border. The meetings' full scope is unknown, but Israel is helping out with site selection, nuclear safety and security issues, and giving seismic data from its Geophysical Institute.

Israel's National Infrastructures Minister Uzi Landau reportedly met with France's environment and energy Minister Jean-Louis Borloo in March to discuss potential nuclear cooperation between France, Israel, and Jordan. On the other hand, Jordan has distanced itself from this public conversation,

with Jordan Atomic Energy Commission Chairman Khaled Toukan saying that it is "too early to speak of regional cooperation with Israel before resolving the Palestinian issue and the Arab-Israeli conflict." However, this incident can be interpreted as a test balloon and a sign of Israeli willingness to engage in regional nuclear cooperation.

The SESAME (Synchrotron-light for Experimental Science and Applications in the Middle East) initiative in Jordan is further proof of the region's desire to cooperate in the nuclear area. When completed, SESAME will be the largest scientific research facility in the Middle East, with the stated mission of becoming "an international scientific and technological centre of excellence open to all qualified scientists from the Middle East and elsewhere." Germany donated a synchrotron radiation source that serves as the project's focal point. The subjects of molecular environmental science, micro-electromechanical devices, x-ray imaging, materials characterization, and clinical medicinal applications are just a few of the areas that will be active. Bahrain, Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, Turkey, and the Palestinian Authority are all current SESAME members.

Israel, with its extensive background in nuclear technology, has much to contribute to discussions about regional nuclear cooperation in the Middle East. As we've seen, it's already helping Jordan with Aqaba siting concerns. Help like this can be extended to more countries like Egypt. Building nuclear trust can also begin with information exchanges concerning topics like nuclear safety and security. Israel has a lot to contribute in the realm of education, especially as it is in the

process of establishing new nuclear engineering and physics schools to preserve its nuclear expertise. The Soreq Nuclear Research Center has upgraded its 50-year-old research reactor with a new particle accelerator. Weizmann Institute, the Israel Academy of Science, and the Hebrew University of Jerusalem are all partners in the accelerator's development. The barrier of language does not always exist. The Weizmann Institute, for instance, makes available to anyone interested in all necessary graduate courses taught in English.

Challenges Of The Game

Establishing a new sector is not without its difficulties, but according to Al Hammadi, ENEC has been helped along the way by strong administration. We have encountered several difficulties and setbacks along the road. The United Arab Emirates (UAE) careful planning and preparation for the program's debut helped us overcome these obstacles. The assistance of foreign legal counsel has also been crucial to ENEC's progress.

A board of internationally recognised nuclear experts meets twice a year in the United Arab Emirates to assess the program's compliance with global norms. Qasem says, "We are very proud of the industrial support that we have been getting, which is helping us to develop our own capabilities." "We've been comparing ourselves to international organisations in every way possible."

Al Hammadi, CEO of ENEC, is pleased with the role his company and the Barakah plant will play in enabling the UAE to meet its energy objectives. Also, "Nuclear energy has an important role to play in our nation's future," he writes. In a dynamic economy like ours, energy is the motor that keeps things moving forward. The United Arab Emirates (UAE) can diversify its energy portfolio and help ensure a secure and sustainable energy future by developing a safe, clean, dependable, and efficient source of electricity through nuclear power.



MODERN AND SUSTAINABLE HUMAN RESOURCES: MOHAMMED HIJAN

In the past, organisations were focused on more significant challenges like revenue, competition, and economic instability, with an evident lack of attention on human resources. However, with changing business models and industries, Human Resources (HR) has become the prime focus as organizations realize the importance of handling the workforce to influence growth and success.

Managing human resources is one of the most challenging types of departments an organization faces.

The work here does not apply to strict standards, fixed regulations, or numerical equations that receive no change or modification. The party with which the organization treats here is a human being who has a set of psychological and social emotions and behaviors, whose impact on work cannot be denied.



Mohammed Al Hijan - Chief Human Resources Officer at King Saud University

Therefore, the so-called eternal challenge arose between work and the social and psychological life of the employees. which encourages businesses to consider how best to create a strong and strict system to maintain the stability of the institution. At the same time preserve what they have of qualified and experienced employees. moreover, Many HR challenges can emerge with digital disruptions, workplace cultural shifts, economic changes, political climate changes, etc.

How Do You Attract, Train And Retain Incredible People?

Company culture is vital for 46% of employees; they want to work in a place where they feel valued and appreciated. Creating a positive work environment starts with solid leadership. Make sure your managers are trained to motivate and inspire their teams. In addition, foster a culture of collaboration and respect, where employees feel like they can openly share ideas and feedback. Other initiatives could be as follows:

- Show Appreciation
- Offer a competitive salary and benefits package.
- Offer opportunities for growth and development.
- Promote a healthy lifestyle.
- Encourage a work/life balance.
- Make sure your employees are engaged.
- Communicate openly and frequently.
- Address burnout

- Foster a sense of community.
- Tips to check your employee attaining and retention strategy performance.
- Simply offering a large salary isn't enough anymore. Job seekers want to work for inclusive organizations that offer great salaries and benefits, inclusive company cultures and ample career development opportunities. They also prioritize companies that align with their goals and values. Employers should keep this in mind as they think about which strategies they can use to not only attract the best workers but also keep them long-term.
- Although your recruitment and retention strategy will be unique to your business, here are 10 ways you can attract and retain skilled workers.
- 1. Write Good Job Descriptions.
- The first step to attracting skilled workers who match your needs is writing a good job description. A well-written job description can make a big difference in finding qualified candidates.
- Content: A job description is much more than a simple list of employee responsibilities; it is often one of the first impressions a job seeker has of your organization.
- Tone: The way you write your job descriptions should match your company and brand. For example, if you have a lighthearted, goofy company culture, consider using words that convey the silly nature of your workplace. However, steer clear of words such as "guru," "ninja" and "wizard."
- Format: Format your job descriptions in a way



Employee Engagement // bentley

that is easy to read. Use headers and bullet points when writing out details like requirements and responsibilities, as this will make the job description easier to scan. You will also want to include a clear call to action so that applicants know how to apply.

2. Be Intentional With Your Hiring Process.

According to a survey by BambooHR, 31% of workers leave a job within the first six months, and 68% of those depart within the first three months. A strategic recruitment and onboarding process can reduce these high turnover rates by helping new employees feel connected to their roles.

- Employee recruitment
- Employee interviews
- Employee onboarding

3. Offer Competitive Compensation. Although

it's not the only thing that matters to employees, a competitive salary is still top of mind when job seekers look for a new job. If you want to hire skilled workers, you must be prepared to pay them what they are worth. Start by reviewing the industry average for employee salaries. You can also use salary benchmarks based on location, role and experience.

Tip

A competitive compensation plan is not a “set it and forgets it” type of deal. To stay competitive with employee compensation, review your employees’ wages at least once a year for inflation-based and performance-based raises.

4. Build A Comprehensive Employee Benefits Package.

Although you are legally obligated to offer only a

few employee benefits (e.g., family and medical leave, health insurance, unemployment insurance, and workers' compensation, as well as FICA contributions that fund public benefits like Social Security and Medicare), creating a comprehensive benefits package is essential to attracting the best employees. Employee benefits are a great way to improve your employees' health, well-being, job satisfaction and productivity.

. Provide Employee Development Opportunities. A Work Institute survey found that a lack of career development opportunities is the biggest reason why employees quit their jobs. If you want to retain your most valued employees, you must provide them with a clear path to future development. Each employee should have their own career development plan that is unique to their strengths and interests.

Here are a few ways you can foster career development:

The most popular employee benefits fall into five categories: health and wellness, financial well-being, work-life balance, professional development, and diversity, equity and inclusion. Create a benefits package that offers some combination of these elements.

- Identify clear goals to work toward.
- Offer training courses.
- Create a mentorship program.
- Offer stretch assignments.
- Promote from within



Prioritize companies culture // Pinterest

6. Recognize Your Employees.

Make your employees feel appreciated and valued. You can do this by creating an employee recognition program. Although your recognition program should be fair and equitable to all employees, it's important to note that not all employees want to be recognized in the same way. Therefore, you should be strategic about how you create your program.

One way you can create an employee recognition plan that is unique and meaningful to each employee is to use a points system. For example, employees can earn points for their achievements and then spend them on the rewards they value most (e.g., gift cards, company swag, experiences). You can also survey your employees to learn which incentives are most engaging to them.

7. Prioritize Company Culture.

Company culture can impact employee job satisfaction in a big way. Many people want to work for an inclusive workplace that values and celebrates staff diversity. This all starts at the hiring process. Be intentional about whom you hire. Your company leadership also plays a huge role, as company culture usually flows from the top of the organization. For example, if your team leaders constantly show up late to meetings and talk negatively about staff members, other employees will also think it is okay to treat people this way in the workplace.

Tip

To educate your staff on diversity and inclusion, create a diversity and inclusion training program. This will help employees understand what is and isn't acceptable.

8. Monitor Employee Engagement And Burnout.

One key to retention is employee engagement. High employee engagement can reduce employee turnover and absenteeism and increase productivity and company morale. You can improve employee engagement by encouraging open communication and feedback, among many of the other tips mentioned in this article.

In addition to keeping employees engaged, you want to ensure they are not experiencing workplace burnout. Your best employees can often be saddled with the most work, which can quickly result in fatigue, negativity and reduced productivity. Bring in skilled temporary professionals to relieve overburdened staff and support resource-intensive projects.

9. Communicate Your Company Mission And Vision.

Another way you can attract and retain employees is to clearly communicate your company mission and vision statement. These are the goals and values of your organization. People want to work for an organization that they identify with. They want to know that the organization is acting in a way that they trust and support. Not everyone will click with your mission and values, and that's okay. That's why you want to clearly communicate these from the start, so you can build an organization filled with people that truly support your purpose.

10. Train Your Management Staff.

It is important that your company leaders are properly trained on how to successfully manage their teams, as good managers can have a big impact on employee retention. In fact, Gallup found that 52% of departing employees claim their manager or organization could have done something to prevent them from resigning.

Perhaps these managers were thrown into the fire without the proper tools. In a study by Udemy, 60% of respondents think that managers need more training, and 56% of respondents think that people are promoted too quickly. Effective leadership training programs can help your team build their leadership skills and better manage employees, resulting in a higher employee retention rate. Having a good workplace atmosphere also has an impact on specific factors such as:

- Employment searches
- Sense of belonging
- Financial and work-life balance
- Productivity
- Professional and personal development

The Importance Of A Good Work Environment

As we have seen, maintaining and nurturing a positive work environment has multiple benefits. Some highlights include relationships between workers and bosses, helping to establish a solid and trusting rapport. It also generates a sense of belonging to the organisation, as people can identify with the

company, which generates resilience in both directions. Moreover, it reduces the likelihood of work problems such as job absenteeism and staff turnover.

While, on the other hand, working in a pleasant and welcoming environment increases creativity, in contrast, working amid conflicts in an uncomfortable atmosphere creates mental blocks and lower productivity.

6 Tips To Improve A Company's Work Environment

Employee engagement is determined by their degree of satisfaction with the company and its management. This level of motivation has a direct influence on the work environment, as



how the employees feel will impact directly the way they work.

Therefore, the organisation's behaviour has a significant effect on the work environment and team's productivity, as business results are largely dependent on the relationship established between employees and the company.

To improve the work environment, follow these easy tips. They don't take much time, just a little bit of effort to promote a close, pleasant environment:

1. Recognise and praise employees
2. Promote employee wellbeing
3. Staff satisfaction surveys and performance reviews
4. Leadership capacity
5. Be clear and transparent

Pay Attention To Communications

Benefits of creating a positive work environment

Creating a positive work environment can help employees enjoy their work more. Employees who work in a positive atmosphere may be productive and make fewer errors. They may also be absent less frequently. Some of the additional benefits of a positive work environment include:

Increased profits: Companies that have engaged employees as a result of a positive work environment may enjoy higher profits since they're likely to work more productively.

Reduced sick leave: A positive work environment can help alleviate employee stress, which may result in employees taking fewer sick days.

Improved creativity: By helping employees feel more supported, a positive work environment can also allow employees to become more comfortable sharing new ideas

with management.



MENA Blue Programme // Worldbank



Positive work environment // Intelligent

Tips For Maintaining A Positive Work Environment

Here are a few tips for maintaining a positive work environment:

- Set a positive example. Whenever possible, demonstrate the positive traits that you hope to promote and practice positive thinking. This can help you encourage other employees to adopt a more positive attitude and take the initiative necessary to improve the work environment.
- Establish trust. Try to allow employees the opportunity to complete tasks on their own without micromanagement while still providing them with the resources and support necessary to complete their duties efficiently. Increased trust can help employees become more confident in their roles.
- Remind employees of their purpose. Remind employees that their roles are important, regardless of their particular position in the organization. During performance reviews, consider recognizing them for the value they provide.
- Offer your support. Ensure that employees understand that you're willing to support them and make an active effort to search for ways to make their jobs easier or more enjoyable. Not only does demonstrating your continued support help you promote a more positive work environment, but it can also help you increase loyalty.
- Check in with employees regularly. Meet with employees on an individual or group basis often to assess their engagement level and ask them what you might do to better motivate them. You could also send out surveys for more informal check-ins and allow employees to provide anonymous feedback.
- Practice active listening. Try to listen carefully to the concerns of each individual employee and teach employees the importance of active listening. Active listening can help reduce workplace misunderstandings and establish a more respectful environment.

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