

Launch Report

Top 50 MEA Sustainability Voices

Energy Transition – Smart Cities – Circular Economy
Green Technology – Climate Finance





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Chapter One

Energy Transition



1.

“It just takes a few projects on carbon circularity for them to become mainstream”

H.H. Princess Noura bint Turki Al-Saud
Founding Partner
Aeon Strategy



The evolving dialogue on carbon circularity

Coming from a major oil exporting country, many rolled their eyes when we talked about carbon management and mitigation. It was hard for many to see the opportunity in carbon management, whether it was carbon capture or for the deployment of renewables to achieve a more diversified energy mix. It was hard to push for that narrative at the beginning, but we are glad to see the dialogue has evolved over the years. Major developments such as the Saudi Green Initiative and the Ministry of Energy endorsing the G20 framework have taken place and have considered carbon circularity.

The case for energy service companies (ESCOs)

The problem with carbon circularity projects is many people think there are not proven technologies to implement them. It would just take a few projects to make these proven technologies become mainstream. Energy service companies (ESCO) are a good example for this aspect. At the beginning, ESCOs struggled operating in Saudi due to the existing infrastructure and the component requirements. Access to finance was also complicated as banks were not very well versed on the sector. The creation of a super-ESCO by the Saudi government helped develop this. Banks began to understand the sector better and started issuing loans. The increase in energy prices also led the private sector to think more about energy efficiency. As result, we are seeing now ESCOs operating with investors obtaining returns of their investments.

Coming up with common tools to measure sustainability

The conversation has shifted from implementing a global carbon tax to harmonizing different policies across borders, language, taxonomy, and classifying efforts on a scale from zero to ten. We are still very early in this dialogue because we are seeing a fragmented approach to taxonomies and Environmental, social, and corporate governance standards. I think we are still far from reaching an ideal situation. As time goes by, there's going to be more convergence between different entities and countries.

2.

“There is a real gap between the commitments made by countries at COP and the actual implemented solutions.”

Nadia Maïzi
Principal Author of the 6th IPCC Report
Director of the Transition Institute 1.5



The gap between commitments and actions must be bridged

There is a real gap between the commitments made by countries at COP and the actual implemented solutions. According to the latest IPCC report, the projected temperature rise is over three degrees under current policies and those that were implemented in December 2020. Based on the findings from the report, we need to peak global greenhouse emissions by 2025 and then reduce them rapidly if we want to limit global warming at 1.5 degrees. We need to reduce fossil fuel use

substantially, including cutting coal use by 90 percent by 2050. We need to reduce emissions from industrial buildings, shipping operation and move towards EVs when electricity is decarbonized, and we need to use less energy and materials. And even if we do all of that, we will still need to use technology to remove CO₂ from the atmosphere to compensate for emissions that cannot be eliminated entirely. I would hope that all these elements are understood and taken into account during COP negotiations, because we need to find a balance between urgent action with all these points and the policies carried out by countries.

Pathways to COP 27: balancing the influence between developed and developing countries

With 16% of the world's population, developed countries emitted more than a quarter of global emission in 2019, while the least developed countries, with a similar share of population emitted 3%. Similarly, the 10% of richest people globally are emitting 45% of greenhouse emissions, while 50% of the poorest do not reach 15%. At the same time, the second group of IPCC, which worked on adaptation and vulnerabilities, emphasized the fact that the most vulnerable population to climate change are in the least developed countries. All these elements must be part of the discussion, and I think Egypt's position will be very helpful to try to have an equity in terms of balance between development and fight against climate change.

3.

“Driving for purpose attracts and retains employees. Be clear in your intention and set ambitious goals.”

Dr. Bob Maughon (Ph.D.)
Executive Vice President, Chief Technology Officer and
Chief Sustainability Officer
Saudi Basic Industries Corporation (SABIC)



Pathways to achieving carbon neutrality

Most companies in the industry have made commitments related to the path to carbon neutrality. We are at a critical juncture in declaring ambitions and needing them to be executable into a roadmap. The execution of our aspirations is connected to strong business cases and affordability. I am very excited about the opportunity in Saudi Arabia to be part of the energy transition. With the availability of low-cost solar and wind, carbon capture and storage opportunities, Saudi Arabia is extremely well-positioned to play a key role in that transition. Saudi Arabia is extremely well-positioned to play a key role in that transition. At SABIC, we committed to carbon neutrality in October of last year at the Saudi Green Initiative launch. It was built on a very clear 18-month path and ahead of 2030, working with our businesses to define a roadmap. It was based on real projects and initiatives which are tied to clear

business cases for implementation. Going beyond 2030 will require more significant breakthroughs such as a significant ramp-up of blue and green hydrogen, carbon capture capability, and electrification of new parts of our processes.

The importance of connectivity and breaking down verticals

It is critical to break the verticals down internally and externally. To me, you break down the barriers to building an innovative culture by setting a clear aspirational objective, giving ownership of those targets to the broader company, and you tie in compensation to delivering against it. Those are all the elements that help immediately remove barriers and provide shared accountability for the pathway we are on.

Overcoming the challenge of retaining talent in the Kingdom

We need the best minds engaged in this challenge. When you look at the investments required to drive carbon neutrality, the energy transition of the petrochemicals and the oil and gas sectors, or managing plastic waste, it is clear we need the best engineers, the best chemists, the best materials scientists, and the best computer scientists.

Driving for purpose attracts and retains employees. It is important to be clear in your intention, set ambitious goals or ensure that your strategy and senior leadership are aligned on driving these initiatives. Today, employees want to see that they can contribute to big global initiatives. They want to use their capabilities not just for bottom-line profit but for broader stakeholder engagement. In the Kingdom, we can clearly see the advantages that our broader sustainability messaging and investments are driving.

4.

“Saudi Arabia had a competitive advantage in traditional energy, and it could develop a competitive advantage in areas such as green hydrogen and low carbon fuels. There is good reason to think they can succeed.”

Ben Cahill
Senior Fellow at Energy Security and Climate Change Program
Center for Strategic & International Studies



Advantages for Saudi Arabia in energy transition

Major resource holding countries and national oil companies are changing their mandates with the energy transition. It is fascinating to watch the Gulf states, specifically Saudi Arabia, over the last couple of years. Saudi Arabia has big advantages. Saudi Aramco and other state companies are pivoting in major ways towards sustainability and changing their business lines. They are trying to make these new areas profitable and innovative. They are capable, capitalized, and have

strong state support for new energy such as renewables and both blue and green hydrogen. I see many advantages as well for carbon capture and sequestration. They are the best laboratories to do it. Saudi Arabia's ports, export capacity, and links with customers in Asia are big natural advantages as well. Looking at energy flows of the future, I see them around the East of Suez and Middle East-Asia axis. It is about being a partner to companies in countries such as Japan, South Korea, and China, as they try to lower the carbon intensity of their fuels and procure cleaner energy.

Does oil and gas still matter?

I think we need everything. We are going to continue to invest in oil and gas for a long time. There's a critical role for big oil producers and the low-cost producers to play there. However, all companies need to have business strategies and plans that are aligned with the changing world—a Paris Agreement aligned world, a low carbon world. This means that national oil companies must pivot and develop new business lines. Saudi Arabia had a competitive advantage in traditional energy, and it could develop a competitive advantage in areas such as green hydrogen electrolysis, and low carbon fuels. There is good reason to think they can succeed, and the pace is definitely picking up. It is impressive.

5.

“If countries are going to be truly committed to net zero, it is important that the Scope 3 Emissions are part of the discussions. The problem is that most of the net zero commitments are insufficient as they only cover Scope 1 and Scope 2, leaving out the third, which is biggest and the most challenging part.”

Daxita Rajcoomar
Chief Sustainability Officer
ENGIE



GCC countries have the reputation of getting things done

Saudi Arabia has been transparent when it says that fossil fuels will still be part of its diversified fuel base, yet it has made these ambitious commitments. It is clear though that despite these huge ambitions, we have seen in the region especially in the UAE and Saudi Arabia, that when they announce bold statements, they are

committed to achieving it and it eventually gets done. Roadmaps and strategies have started happening in the background as we see in KSA some pilot projects such as NEOM and the Saudi Green Initiative, which has already achieved the planting of 10 million trees. In the coming COP27 and COP 28 where we would need to do the global stock take, I believe we will see a lot of materialized pilot solutions already in play.

Saudi Arabia will have to maintain balance and address scope 3 emissions

If countries are going to be truly committed to net zero, it is important that the Scope 3 Emissions are part of the discussions. The problem is that most of the net zero commitments are insufficient as they only cover Scope 1 and Scope 2, leaving out the third, which is the biggest and the most challenging part.

This is the same case with Saudi Arabia which made a net zero commitment by 2060. They still want to be an oil producer and that is understandable. However, it is the largest element of the whole circular carbon economy. It envisages mitigation in the form of reducing and recycling in various innovative ways or reusing that whole CO₂ through carbon capture technologies while still being able to produce oil. The biggest challenge for Saudi Arabia will be to maintain balance. This will become part of the conversations in the upcoming COPs. It is crucial to understand what are strategic methodologies that can ensure an efficient and effective circular carbon economy.

6.

“At the end of the day, it’s our future, we’re fighting for our future, for our children, for our grandchildren. We’re fighting because we really want to make a change.”

Lydia Sanz Lozano
Masdar Future Sustainability Leader
IRENA Youth Representative



Youth Participation in ongoing sustainability forums

I think COP 27 and COP 28 really should be an opportunity to bring to light these issues and more importantly solutions. These are large scale events that bring together countries, puts them all at a table and forces them to listen to each other to collaborate and think of proactive solutions that can be in place. I think

that some of the things that we really must utilize moving forward is how can we really maximize the potential that these events can have and how can we really promote meaningful youth engagement? How can we really have young people sat at a table being listened to, and their ideas put forth to make proactive change in policies? I think that needs to shift. We’ve taken steps forward in that young people speak up and we’re listened to, but we really must strive for that. With the conversations that I’ve been having about COP 28, I think that something that the UAE is really focusing on is how can young people be brought to this event? How can they be active participants and active stakeholders? At the end of the day, it’s our future, we’re fighting to see our future.

Target goals are not the end of change

These targets that have been set, 2050, that’s the start of the target. It’s not that we get there, and we don’t do anything else. It should be how do we get there? How do we trial a test run within these periods? How do we overcome the challenges that we face and the obstacles that could happen within this period? And then when we get to that target date, it’s important that we look back and realize how much progress we have made and consider how to go further?

7.

“Companies are sitting on projects which they could easily share with the academics, in the right environment and within the right governance framework. There needs to be more action on this aspect which is critical for the success and sustainability of the industry.”

Dr. Satyam Priyadarshy
Technology Fellow and Chief Data Scientist
Halliburton



We need energy 4.0 standards

Despite claims by the energy sector that they have lots of data, specifically the oil and gas industry, it remains to be seen how all the underlying data can be leveraged. There is dichotomy that needs to be addressed as we are seeing that when data scientists want the data for this transformation, they do not have the data. While there has been progress over the last nine years where people started leveraging Big Data, the sector is still far from adopting and integrating data for energy transition. For example, there were interests in 2020 to adopt the cloud and

in February 2022, they do not want to do it. This reflects a big strategic inflection point in terms of thinking.

If we want to leverage and increase our digital maturity, we need to work on some key areas, specifically maximizing the use of all the data that we have even though it may not be complete. Energy transition is a very complex landscape in respect of the different geographical locations, and the composition of these sources of energy and consumption patterns are going to be complex. Energy transition needs to have much more integration, and as a result, standards, which I would call Energy 4.0. This would not only be at the technology level, but also at the business level.

Strengthen partnerships for talent transformation

Talent transformation is not only about individual students, but also training for senior leadership within companies. It is the time to act and bring the right resources, both from the industry and the academics under a single platform.

We also need to focus on strengthening the partnerships for this new generation of education. Faculties cannot generate data, and if they do, it is synthetic data that does not solve real world problems. However, companies are sitting on all projects which they could easily share with the academics, in the right environment and within the right governance framework. There needs to be more action on this aspect which is critical for the success and sustainability of the industry.

8.

“Energy is at the heart of the Sustainable Development Goals. Without energy, we cannot have quality education. We don’t want to just have negotiations and talks. We want decision makers to understand that energy is crucial for economic and social development. If you really want to have quality education or empower the younger generation, you should invest in energy.”

Asma Rouabhia
SDG7 Youth Representative
United Nations



COP success means youth takes part from policy design

Success at COP (Conference of Parties) 27 for young people would mean more meaningful youth participation, not as nonparty delegates but as party delegates who have the right to attend any session they would like, the right to negotiate and the right to vote. It means being given the space to be listened to from their point of view and the right to push decisions. It is not about young people who are simply listening to what has been done or what are the projects and agreements, but those who are part of the designing of those agreements and policies. We want youth to be considered as the key stakeholders of COP from the start. The youth should be a partner of COP and not only as beneficiary. We want to be given the chance to meaningfully participate in COP and to truly have a seat at the table as future decision makers for the MENA region and globally.

Building capacities for the next workforce

Reaching the targets of the past and upcoming COPs means focusing on the younger generation and building their capacities because they will be the next workforce and the next decisionmakers. This can come through both formal and non-formal education. They should also be given more opportunities through financing of their projects and enabling the SMEs that they lead. Young people are an untapped potential for their communities, their countries, and the world. Sometimes, they may only need some push and more support from different stakeholders and be made more aware of climate and energy crisis.

9.

“If we are going to have a shot on climate change, then an energy security crisis becomes an opportunity that you can leverage into the kind of investments that you need to accelerate the transition.”

Dr. Julio Friedmann
Non-Resident Fellow, Center on Global Energy Policy at
Columbia University SIPA
and Chief Scientist, Carbon Direct



Getting Carbon Capture to the market: a matter of policy

The costs for carbon capture have dropped 50% in the past few years and they are poised to drop another 50%. Nonetheless, you need market aligning policies in order to get this to market. We have seen market aligning policies for every other kind of clean energy technology. On a cost basis, carbon capture for many applications is in fact the cheapest and cleanest way to proceed, especially in heavy industries such as steel and cement. Until those market aligning policies appear, it will be hard to get lift off.

Integrating carbon capture and storage infrastructure:

You need dedicated infrastructure in the form of pipelines, capture units in the form of conversion units and storage sites. This is something that Saudi Arabia and other countries in the gulf are taking the lead in. They are building the infrastructure that is needed to capture and store CO₂, and increasingly building the infrastructure to re-use CO₂. This is different than in the power sector, we already have electricity power lines, and you can just add electrons to the grid. Here you need this additional infrastructure. That will come in the form of export terminals for blue hydrogen, or chemical plants to upcycle carbon dioxide and hydrogen. Once these are built, they will de-risk investment for people who want to get into this market.

De-risking renewable energy:

When working at the loan program at the US Department of Energy, they made the first commercial loans to large scale solar projects, specifically industrial scale solar. As soon as those were built, the market de-risked those and we went from having five, that were secured by the government, to now having hundreds of these around the country and around the world. Going from zero to one is a hugely important step. That is a province of innovation and investment, as well as a question of policy.

10.

“Necessity is the mother of all innovation. In Saudi Arabia, we have the resources, technological know-hows, partnerships, and the collaborative attitude that could help us to become the transformative engine of the region.”

Dana Dabbousi
Corporate Sustainability Strategist
Saudi Aramco



The energy transition and the role of hydrocarbons

A few years ago, these discussions around the energy transition were not happening. The role of hydrocarbons was not even in the equation of the energy transition. Today, we are aware we need to move away from emitting high amounts of carbon into the environment and that we need to control our emissions carefully. We are also mindful that the energy transition will not happen overnight. Hydrocarbons will continue to play a very important role in powering our economies and nations. We cannot live without hydrocarbons at this moment.

Developing and investing in low-carbon technologies in Saudi Arabia

Saudi Arabia is a very technocratic society. Technology is extremely valued in the Kingdom, especially in companies like Saudi Aramco. We heavily invest in developing innovative technologies, especially when it comes to planning for a sustainable future and for the energy transition. For example, carbon capture unlocks another understanding of the energy transition. The problem was never hydrocarbons but the emissions going into the atmosphere. Managing these emissions at the source is a really powerful tool in the energy transition. Developing some low-carbon technologies can be pretty expensive. However, given the enormous benefits, governments and industry leaders must find ways to incentivize stakeholders to invest in these technologies. Carbon markets can be used to provide incentives to develop new technologies for the region and beyond.

The unique ecosystem and climate of Saudi Arabia position the country as a leader in developing net-zero technologies. Necessity is the mother of all innovation. In Saudi Arabia, we have the resources, technological know-how, partnerships, and the collaborative attitude that could help us become the region’s transformative engine.

Building collaborative ecosystems and raising awareness

Saudi Arabia strives to develop collaborative ecosystems. At Saudi Aramco, for example, we constantly establish partnerships with schools like MIT or Stanford. We need to increase youth awareness and opportunities to make more environmentally conscious decisions as a generation. Whether by enabling technologies or creating incentives to waste less energy, industry and governments must work together for the more significant benefit.

Chapter Two

Smart Cities



1.

“Vision 2030 is the best thing for Saudi Arabia because it has defined a path and there is a destination. We have the vision, the leadership, and the resources.”

H.E. Gloria Guevara Manzo
Chief Special Advisor, Ministry of Tourism, Saudi Arabia
Former Minister of Tourism for Mexico



The vision for a smart and sustainable city

When talking about sustainability, we need to ensure we meet our current needs without compromising our future needs. There are three components to consider in a sustainable and innovative city: (1) the framework and policies to develop an innovative city effectively, (2) the technology to foster innovation and ensure the city is ‘smart,’ (3) the stakeholders who sit at the heart of the city which include the governments, corporations, small to medium enterprises (SMEs).

Building cities from scratch versus transforming existing cities

Sometimes building cities from scratch can look easier by learning from past mistakes while innovating and coming up with the newest ideas. That is happening in NEOM and with the other giga projects in the Kingdom, transforming the concept of cities. It is more complicated to transform a city that has existed for many years that did not have the proper framework and policies into a sustainable city. It takes more work, more engagement, more partnerships, and more time, but it is doable. In this context, Saudi has a fantastic opportunity because the transformation in the country is unique and elevates the new concept of sustainable cities. Saudi could be used as a role model for other destinations.

The role of the public-private partnerships in developing smart cities

For a country to be successful, you need three things: you need the vision, you need the leadership, and you need the resources. And this is undoubtedly the case in Saudi Arabia. The transformations happening in the Kingdom are unique, and opportunities are everywhere. When the public and the private sector develop partnerships, we can leapfrog and create change faster. Everyone is moving in the same direction. Vision 2030 is the best thing for Saudi Arabia because it has defined a path and there is a destination. We have the vision, the leadership, and the resources.

2.

“The main the progress of smart cities is the combination of governance and technology”

Miguel Eiras Antunes
Smart Cities and Urban Transformation, Global Leader
Deloitte



Making cities more human

A smart and sustainable city is a human city. Cities thrive on happiness by ensuring people’s well-being, fostering economic development, protecting our environment, and developing resilience. Amongst these drivers, over the last two years, resilience has been the one in the spotlight, mostly due to COVID-19, as 95% of cases occurred in cities.

Additionally, the concept of a smart and sustainable city is one with an integrated view of all city domains, for example energy and environment, mobility, education and economy. This approach ensures a sustainable future for our kids and future generations. However, as there is no one-size-fits-all approach to follow, we need to consider that each city is different, with the needs of a brownfield city being different from the ones of a greenfield city.

Developing smart cities requires both top-down and bottom-up approaches

We need both top-down and bottom-up approaches to advance smart cities. Considering that cities currently account for 70% of global greenhouse emissions, in order to reach the net-zero targets we need national strategies for smart cities focusing on a top-down approach. Elsewhere, focusing on a bottom-up perspective, we brought together several city stakeholders to identify which actions are needed regarding an urban transformational project.

Digital and governance is key for smart cities

Smart cities progress through a combination of governance and technology. However, the smart cities concept has been taking longer than expected to mature. There are many pilots being built, nonetheless, sometimes we do not know exactly what we want to achieve. Moreover, until now, we did not have the governance in place to execute the projects at scale.

The key change happening nowadays is that people understand elements such as artificial intelligence, blockchain, and the internet of things. If cities can combine this know-how with the right governance, proper goals, and needed change management, I strongly believe cities will thrive much more than just towards a digital transformation, reaching the next level, much like how Saudi Arabia projects its digital economy coming 2030.

3.

“Tourism in the Kingdom is not just about environmental sustainability. It is social sustainability, economic sustainability, cultural sustainability, and, dare I say, spiritual sustainability. You cannot have tourism for tourism’s sake.”

Anita Mendiratta

Advisor Board Member, The Royal Commission for AlUla
Special Adviser to the Secretary General,
UN World Tourism Organization



Tourism in the Kingdom is not just about environmental sustainability. It is social sustainability, economic sustainability, cultural sustainability, and, dare I say, spiritual sustainability. You cannot have tourism for tourism’s sake. People can often get lost in the scale of Vision 2030 for tourism. The scale of the vision, aspirations, investment, and targets. The beauty of what the Kingdom is doing is focusing on the details. At AlUla, for example, we look at sustainability in its purest form.

People and local communities at the heart of sustainable tourism in Saudi Arabia

AlUla has become a case study for community development through tourism worldwide. However, it is not just about its history, culture, and tradition. One of the greatest beauties of AlUla is the people. One of the critical stakeholders and sustainability partners has been the local communities. We work with them very carefully and recognize that they are the primary beneficiaries of the development. The people behind AlUla are the ones who will keep the traditions and culture alive.

Benefits of promoting sustainable tourism in Saudi for the region

Tourism development has to be for the benefit of Arabia as a whole because Saudi has become the front window for Arabia. However, the positive impacts of tourism go far beyond those in the industry. A localized example of the positive effects of tourism is the partnership AlUla has with Piaget, one of the world’s greatest luxury design houses. Piaget was brought into AlUla to work with local artisans, primarily women, in teaching them jewelry skills, working with metals and rock, and utilizing the local design.

This example illustrates that it is not just about the Kingdom investing outwards but attracting and inviting worldwide stakeholders to become partners of Saudi Arabia. It is not just the investment into tourism, but the importance of the return on investment, inspiration, and participation. That is where the real symbiotic value comes out of tourism development. It is not just about the Kingdom investing. It is the world investing in tourism in the Kingdom to benefit the region and the world.

4.

“At the Red Sea project, we are determined to establish new standards for sustainable development. We aim to be unique and hope to become a model for regenerative tourism.”

Raed Albasseet
Chief Environment and Sustainability Officer
The Red Sea Development Company



Establishing new standards for sustainable development

We are determined to establish new standards for sustainable development at the Red Sea project. We aim to be unique and hope to become a model for regenerative tourism. Therefore, we started planning for the Red Sea project in a unique fashion. We did not begin to plan with the engineers or the architects; instead, we started working with the scientists. Our first partnership was established with the King Abdullah University of Science and Technology (KAUST) to work with scientists and terrestrial and marine ecologists. Once we had enough information, we started planning and conducted the Marine Spatial Planning exercise. We brought in all the experts to limit the negative impacts the construction of the

development could have on the environment. The engineers, master planners, architects, operations, and tourism experts.

Our ambition is not only to minimize the negative environmental impacts in the construction phase but, more importantly, to leave a significant and positive impact on our planet. The mandate of the board, headed by His Royal Highness, is to achieve a 30% net conservation benefit by 2040.

Integrating local communities to promote Saudi Arabia

Integrating local communities and the Saudis into the tourism offering is crucial. We are training and sponsoring locals for hospitality at the most prestigious universities in the world. During the construction phase, we have management systems in place to ensure the uptake of locals into our contractors to ensure that they are directly benefiting from the development.

Cutting-edge smart technologies are an integral part of sustainable tourism

We need skilled and reputable regional and international partners to work with us in developing cutting-edge technologies to make informed decisions in the development of the Red Sea project. Microsoft, for example, is a big player in developing smart technology applications. These applications will not only be implemented at the company level to run our operations but also will be an integral part of our future guests' experience. Smart technologies will allow our guests to learn more about their carbon footprint, the impacts of their choices, and how they play a role in advancing our regeneration ambitions.

5.

“Having those external investments coming in provide confidence for others (investors) to follow. Saudi Arabia is a highly attractive market. Most of our members across the whole industry, whether cruise, aviation, tour operators, or even the religious tourism market, which is already mature, have huge potential and great opportunity to work in many partnerships and for all to thrive.”

Virginia Messina
Senior Vice President Advocacy and Communications
World Travel and Tourism Council (WTTC)



Great Opportunities in Doing Tourism Right

Saudi presents great opportunities in travel and tourism as it brings everything together from the product to the culture, and the natural beauty of its environment. It is opening to the world while doing it the right and embedding concepts of

stewardship and regeneration. Saudi has the partnership of the biggest companies and are investing in technology and sustainability. More importantly, the approach is concerned about not just developing tourism, but also enhancing the quality of life of the communities involved. This defines the success of any destination.

Raising the Bar on Training

Jobs and skillsets demand are global challenges that the industry faces especially on aviation side. There is a big role that the industry can play in terms of perception as an employer and should see travel and tourism roles beyond being low-skilled jobs. To deliver and capture the exquisite taste of Saudi cuisine, for instance, demands chefs to have good skills. Partnerships and education are necessary, and the government can integrate the community into the sector. Young people should be taught to appreciate travel and tourism as a force for good and one that could transition the country's economy and improve the lives of the community and everyone visiting these tourism areas.

Investments

Saudi Arabia's advantage today is that investors are looking at commitments of cities on sustainability and climate action targets, which have huge impact in their decisions to invest. As most funding are locally driven, external investments provide the confidence for others to follow. There are many attractive areas for investments across the industry from aviation to cruises, tour operations, and even in the religious tourism segment.

6.

“According to several resources worldwide on financial habits, Millennials are increasingly aware and sensitive about sustainability and moral values. This generation looks at ethical, moral, and green banks.”

Kemal Payza
Director of Investment Relations, Fonbulucu
Top 10 Fintech Influencers, Middle East



Fintech is bringing green finance into the mainstream

Since the pandemic, the world has been focused on how to build and run sustainable companies. Fintech providers have the flexibility to bring complex services to end consumers and can turn green financing into a mainstream financial service. Fintech can help customers invest their money with ESG funds or companies that aim to create a positive impact on the planet. In addition, it can help gain insights into their spending and daily habits, whether they are sustainable or not.

Fintech can shape and direct our behaviors regarding sustainability and the green economy because we use financial services constantly in our daily lives. Therefore, fintech providers can build the bridge between green financing and the green economy.

The importance of young talent

Supporting and coaching newer generations on the benefits of fintech is critical. According to several resources worldwide on financial habits, Millennials are increasingly aware and sensitive about sustainability and moral values. This generation looks at ethical, moral, and green banks. Since 2015, this trend has dramatically increased because the Millennials, Gen Z, and younger generations have started to use financial products. Therefore, sustainability should be used as a global cultural method. Sustainability will allow the youth to make an impact. It could be moral or environmental, but this generation aims to propel positive change.

Investing in ESG funds and the progress of fintech

Many entrepreneurs constantly question if they want to invest their money in crowdfunding or other platforms. Today, investors are increasingly interested in investing in ESG funds. With ESG funds, investors can see results and analyze whether the funds are providing similar earnings or returns. Some research has shown that ESG funds are chosen by customers because they are more sustainable and offer higher returns.

7.

“On the long-term, we will keep capturing data that will help enhance safety and efficiency in the transportation sector and improve and protect our environment.”

Hajar Alolah
Chief Data Officer
Transport General Authority



Gathering data is critical to achieving sustainable mobility in the Kingdom of Saudi Arabia

We have been using data to monitor the movement of vehicles in Saudi Arabia. Ride-sharing platforms, such as Uber and Careem, give us some insights into the demographic using these technologies. For example, it can give us an idea of the peak time residents move around cities in the Kingdom. However, we still miss some data and encounter difficulties catching the data that could deliver benefits. At the Transport General Authority (TGA), our role is to support operators in the Kingdom to help them understand the requirements they need to meet to be

aligned with TGA's objectives. This will allow us to help operators enhance mobility and improve the quality of the data or technologies being used.

Adopting a digital and sustainable culture within Saudi transport operators

Big cities in the Kingdom face various challenges, but we can take steps to overcome them successfully. One of the main issues we face is making sure that existing technologies are being used by operators and that they are implementing them correctly. Creating a digital culture within companies is a challenge, but we can achieve great things once it is established. Once the individuals and operators understand the importance of digital culture, then we will significantly benefit from it. Implementing a sustainable culture is much easier when considering the new cities being built in Saudi Arabia, but there are steps to take to support the transition within established big cities.

Capturing data and promoting sustainable mobility initiatives in cities

Most of the community and operators want to implement sustainability initiatives in cities. We capture all types of data to make sure everything is in the right place. On the long-term, we will keep capturing data that will help enhance safety and efficiency in the transportation sector and improve and protect our environment. In addition, we can use new technologies to improve mobility in and between cities. TGA is updating its strategy to make sure we are getting closer to achieving sustainable mobility. It is part of our vision, and it is something we need to do to create sustainable smart cities.

8.

“The whole world is currently a laboratory. We are charting into unknown terrains, and every city has its own experiment with the way of doing things”

Rony Hobeika
Senior Urban Planner
Atkins



Smart Cities: shifting from a linear to a circular model

The linear system we have used has to be transformed into a circular economy paradigm and approach to everything we do. Smart cities are built upon six pillars: governance, mobility, energy, utilities and living services, buildings, and all that engulfed in data. With the smart cities model we are trying to reduce the need for material inputs-doing more with less-then tapping into renewables and trying to find the parity between these two.

Sharing global experiences and adapting to local challenges

The whole world is currently a laboratory. We are charting into unknown terrains, and every city has its own experiment with the way of doing things. For instance, Paris is experimenting with the concept of the 15-minute city, relying on public transport services, proximity convenience stores or encouraging walkability. These concepts have been tested in other places too and are applicable in cities like Jeddah, where we are looking to implement these concepts at their masterplan, and Riyadh. Because these are unknown fields and the scale of the challenge is global, we benefit from shared experiences and lessons learned from different places, as well as global partnerships, while keeping a ‘glocal’ approach: a global phenomenon with local self-applications.

Governance is essential for vision and execution

I would personally like to commend the way Saudi is doing this transformation from a governance perspective. The kind of transformation that is needed at this level is an urgent one, which requires a visionary leadership to be forward thinking when setting goals, while ensuring different stakeholders feel they are a part of the project. This is the kind of model that you want to recreate in other places in the world, given the urgency of the smart city transformation that is needed.

9.

“The word ‘riyadh’ itself means ‘green oasis’ so our purpose is to return to that identity in a world that experiences rapid transformation and urbanization.”

Yvonne Lynch
Urban Greening and Climate Resilience Strategist
The Royal Commission for Riyadh City (RCRC)



Interwoven initiatives under the direction of Vision 2030

Nothing that’s happening in Saudi Arabia right now is standalone. Everything is governed under the framework of Vision 2030, which is an incredibly holistic plan for the country. There’s a focus on existing cities like Riyadh and there’s a focus on developing new urbanization. There’s investment and innovation on a scale that’s unparalleled.

Urban change backed by long term funding

Some parts of the world are only now learning what drought is. Saudi Arabia has some of the most arid cities in the world, and Riyadh is probably the largest of them. If we can adapt the city to develop a healthy, thriving ecosystem in the face of climate change, then it can set an example for other cities that will face similar climate risks to which Riyadh is already accustomed. What sets Riyadh apart is the scale of what it’s doing backed by the necessary investment. These projects are not only fully funded, but they are also fully funded over the long term beyond the next decade, so that the city is able to set the standard into the future.

What change looks like in practice

Part of change means planting millions of trees and creating thousands of new parks and recreational spaces within the city. We’re creating these spaces at a level that hasn’t previously been seen. And underpinning these newly created spaces will be sustainable water networks to reform the identity of the city and recall its past. We aim to solve many of the modern city’s problems with integrated programs that respond to continued urban growth.

10.

“Collective action really works. For example, during the Covid-19 pandemic, we were asked to wear masks, socially distance, and get vaccinated. Tomorrow, we will be asked to use public transportation, electric cars, and renewable energy to proactively solve climate change.”

Kevin Chalhoub
Founder and Chief Executive Officer
EV Lab



The future of sustainable mobility in the region

There is a huge potential to achieve sustainable mobility in the region, particularly in Saudi Arabia and the UAE. In reality, many of these countries' wealth comes from the oil and gas industry. Today, wealth funds are shifting their strategies to diversify their economies. Investing in clean mobility and energy is a great way to achieve some of these goals. It is fascinating to be in the region, and I am a true

believer that the region wants to lead in transforming sustainable mobility. For example, everyone is very excited about NEOM in Saudi Arabia.

Stakeholders in the region are doing things differently, but there is a clear ambition to create clean cities. We have different infrastructures than in Europe or other places worldwide. So, we are bound to do things differently. Regional stakeholders are leapfrogging towards sustainable mobility rather than catching up to other parts of the world.

Electric versus hydrogen vehicles: who will win the race?

I would qualify hydrogen cars as electric cars too. With that being said, hydrogen engines are very dense in the application and are very heavy. They fit brilliantly for trains and trucks, but it might take a bit more time to produce large amounts of individual passenger hydrogen cars. For hydrogen vehicles to compete with the price of electric vehicles (EVs), we will need to see a lot more scale.

Historically, EVs lost the race against hydrocarbon cars because the technology was unavailable. We are now at an inflection point where electric cars are not only better for the environment but also better technologies. For the longest time, consumers believed that buying an electric car was a compromise on lifestyle. Today, the reality is that electric cars are the one type of sustainable product that is much better than non-electric cars. They are faster, safer, and more reliable. Additionally, consumers are focused on implementing sustainable solutions in their daily lives.

Chapter Three

Circular Economy



1.

“We have moved beyond looking at sustainability, circular economy, or addressing climate change as more than just something ‘nice to have’ or an additional cost.”

Ann Rosenberg
Senior Vice President for Sustainability Solutions
Wood



Private sector is changing and moving forward

Sustainability is driving a trend that is pushing public-private partnerships to be established in a way that we have never seen before, both in respect to the finance flows and the role that everyone plays in the sustainability agenda. It has become clear for many that this is what we need to solve the climate crisis, implementing strong sustainability frameworks and adopting new behaviors.

Companies are communicating about partnerships, pitching to the 1.5 degrees target and to the 17 Sustainable Development Goals. Whatever they are doing in

between as an organization, be it digital transformation, investment, or they may be a startup, any business is looking at integrating sustainability as part of the design principle. There is a fundamental shift happening.

In fact, I think we have moved beyond looking at sustainability, circular economy, or addressing climate change as more than just something ‘nice to have’ or an additional cost. Having an environmental, social, and governance (ESG) framework is good business. More companies are also looking at the pace of their commitments and are measuring them, and I see this is becoming more mainstream.

What is even more fascinating is the cross-collaboration among sectors such as oil and gas and shipping for example. They are coming together in consortiums, creating joint roadmaps, and working with the ambitions to achieve the 1.5 degrees target.

I believe we could see this even more because there is a lot to be learned across various industries. This is the way going forward because there would be a lot of disruption in the way we do things. The next step would likely be moving towards more certification. While we share the same understanding on the ambitions of a 1.5 degrees target, it does not mean the same thing for every single country. I think in 2022 to 2023, we will see more standards, more audits, and many more certifications.

2.

“Many governments see sustainability investments today as costs. If we flip the narrative, these costs would be perceived as investments for the future.”

Wael Ismail
Vice President Corporate Affairs, Middle East and North Africa, Pakistan
PepsiCo



Minimizing water consumption in a water stressed region

We are looking at everything across our value chain and trying to minimize environmental impact. Agriculture is the backbone of PepsiCo’s value chain, where we particularly have a strong footprint in the Middle East. Given the region’s water scarcity, we try to minimize water consumption across our value chain. We are working closely with farmers to improve irrigation techniques, as well as with the rest of our partners to reduce water consumption as much as possible across our producing cycle.

The key word is momentum

Momentum is really the key word, because not everybody has targets for 2025, 2030, 2040. Besides the long-term goals, we all want to fast-track this process. Knowledge management and expertise sharing will play a critical role in this regard. We take what we have learned, for instance, in Saudi, and do it in another country, so we do not have to start from scratch to tackle a similar issue. Moreover, we have two back-to-back Conference of the Parties (COPs) happening in the Middle East. The two next years are going to be very important for us to use that momentum to drive those strategic really objectives and bring in investments where required.

Looking at sustainability investments as future investments

Many governments see sustainability investments today as costs. If we flip the narrative, these costs would be perceived as investments for the future. If we do not invest today, this is going to impact how we operate in the future. Saudi Arabia and other countries are looking at the issue from that perspective, while looking at how can you explain the green economy and put enablers to drive sustainability forward, such as the creation of the Saudi Investment Recycling Company or the Waste Management Authority. The private sector needs to identify what role has to play to really accelerate the journey and partner with these government entities.

3.

“We can shift towards the circular economy paradigm when companies, social enterprises, and governments work together through the multi-stakeholder approach. This can unlock up to \$4.5 trillion in economic output.”

Kristin Hughes
Member of the Executive Committee &
Executive Director Global Plastic Action
World Economic Forum



Role of businesses to achieve circularity

There are a lot of companies that are already doing really great things to help the world transition towards a circular economy. However, there are so many things that businesses can still do. People find the transition to a circular economy a bit overwhelming. When you think about the dearth of recycling and collection, there is a significant downstream need in the circular economy. But there is also an upstream need. So, we need to focus on innovating around material design, new business models, or reuse.

Businesses can incentivize consumers to shift away from that linear economy. And then, within their own products, they can look at the recyclability of products or

consider using biodegradable raw materials. At Global Plastic Action Partnership, we believe businesses have a huge incentive and opportunity to move towards the circular economy.

From a linear to a circular economy: Saudi Arabia's leadership position

Some first-mover businesses are creating the momentum to shift towards a circular economy. Yet, a lot of the change will only happen with strong government leadership. I do not believe we can achieve significant change through self-regulation. With COP27 and COP28 happening in the region, Saudi Arabia is in a great position to be the region's leader in the transition to a circular economy and is enabling stakeholders to connect all the dots through Vision 2030. The country is focused on innovation and technology to help support both the top-down and bottom-up strategies.

The role that government institutions play in transitioning from linear to circular economies is crucial. Government must create policies and regulations that incentivize action and support first movers. This would also bring the laggards on board, whether within waste management or recyclability.

The importance of private and public partnerships to achieve circularity

The Global Plastic Action Partnership was born from the concept of governments and companies wanting to do something together. There is a huge opportunity and a gap for certain governments to engage in developing regulatory frameworks to redesign the global value network. We can shift towards the circular economy paradigm when companies, social enterprises, and governments work together through the multi-stakeholder approach. This can unlock up to \$4.5 trillion in economic output.

4.

“Certain infrastructure does not exist today in the region which might seem to be a weakness from a circularity perspective, but it is in fact is a strength because there is no infrastructure that was invested, and which would have depreciated. We can make commitments to circularity and simply put the infrastructure for circularity in place right away.”

Samer Kamel
Chief Sustainability Officer
Averda



Smaller Scale Solutions for Future Cities

While cities are becoming megacities, it is important to understand that the solutions to their needs are not going to be mega-size ones but will be tackled on smaller scales. Urban design in relation to circularity will take a distributed

infrastructure approach which can increase its circularity and lessen the environmental impact. Simple things like distributed waste facilities to better manage them closer to home and make it easier for people to recycle or compost their waste. This will be more immediate as solutions. This trend where infrastructure for healthcare, shopping, and education are being located within a short distance is being done in cities like Paris. It is redefining urban design and giving people the ability to walk or cycle in about 15 minutes to reach to their needs, doing away with cross-city transportation challenges. As cities rapidly expand, we cannot solve problems with a single solution because that becomes inefficient and takes longer to implement.

Greater Opportunities for Middle East

Certain structure that does not exist in the Gulf and across the Middle East today may seem to be a weakness from a circularity perspective, but it could be seen as a strength because the government will not have to deal with the depreciation of those infrastructure which was invested at the time of the linear economy. The region can take advantage of opportunities to invest in infrastructure adopting new building materials and implementing better energy services. What is encouraging is the huge shift and the ground reality that has emerged surrounding circularity. Today, there are several large-scale corporations dedicated to the environment which tells us how the region has changed as compared to 17 years ago when recycling was a relatively new concept.

5.

“There is an appetite for a strategic perspective at different levels of governments to tackle climate change, and the private sector’s voice is welcome.”

Yasmine Berbir
Head of Sustainability, Middle East and North Africa
Nestlé



ESG is taking hold in the Middle East

The topic of environmental, social and governance (ESG) is starting to emerge in the Middle East and North Africa (MENA). This year the region is hosting COP 27 in Egypt, and next year’s COP 28 in the UAE. Many private sector companies in the region are increasingly advocating for policies and regulations on sustainability, from Jordan to Morocco. Building on our regional and global expertise operating in different markets, we can help public sectors with insights and best practice

cases from other countries. Governments are more interested in tackling climate change and sustainability, and they are usually open to listening to private sector voices. For instance, in Saudi Arabia we are advocating jointly with MAWAN for national strategy on waste management, to expand producer responsibility (EPR), which will tackle the end life of waste and is fundamental to enable the circularity of waste.

Addressing carbon emissions throughout the value chain

Down our value chain, the largest share of emissions sits in our supply chains, but essentially in agriculture. We are carrying out many projects with many of the farmers and suppliers that we deal with. We are advocating and allocating funds to help farmers transit towards a regenerative agriculture model that is less intense in carbon emissions. For example, dairy involves 50% of our ingredients. We are conducting interventions to help dairy producers move towards net zero. Another bucket is the one related to our production facilities. By 2025, we aim to operate 100% on renewable energies in our factories, and make 100% of our packaging recyclable, refillable and reusable. We want to make sure none of our packaging ends up in oceans, rivers or even landfills. By 2025, we aim to complete the shift towards 100% renewable electricity. Our ultimate targets are to cut 20% of our emissions by 2030 and reach net zero by 2050.

6.

“Sustainability and circularity is about three pillars: people, planet and profit. It is not only about protecting the environment, but also about developing profitable business models based on circularity.”

Dr. Hashem Stietiya
Director of Research and Development
BEEAH



We need one and a half planets to sustain our current consumption model

By 2050 the global population will have reached almost 10 billion people. We can debate whether there will be enough resources during that time to meet people's needs. But what we know for a fact is that we are consuming the Earth's resources at 1.5 times the rate at which the planet can sustain it. That means we need one and

a half planets to provide us with the resources and services at our current rate of consumption. The current industry model is linear. We buy products that are meant to end up in the landfill. If your toaster breaks down, you are probably going to buy a new one rather than sending the old one to repair. We need to make a shift from the linear economy to the circular economy model. This is where research and development comes into play, especially tackling the mindset of individuals and industries. We need to focus on changing the mindset of the entire manufacturing and urban settings as well. To do that, we must stop looking at sustainability and the circular economy from a corporate image perspective that is divorced from financial goals.

Circular business models are profitable

At the end of the day, sustainability and circularity are about people, planet and profit. Business models based on circularity are profitable business models. Many companies around the world are making a lot more profit by being circular. Waste at one point in the value chain is actually input at another point. We have a construction demolition waste recycling facility where more than 95% of construction waste is converted into products that are sold back into the market. The same applies for our tire and vehicle recycling facilities.

7.

“The younger generation is in many ways driving the change towards making sustainable choices. The sustainability student group is one of the biggest and most active groups in the university.”

Dr. Ana Margarida Costa
Head of Sustainability
King Abdullah University of Science and Technology (KAUST)



Circularity institutionally embedded

Vision 2030 includes improving carbon circularity where countries can cooperate to manage carbon movements. KAUST's very logo underscores its research on carbon circularity by incorporating the four principles of sustainability that are

water, food, energy, and the environment. We seek to empower students to be part of the change so that after leaving the university, they provide significant, positive impact in society. Meanwhile, we also support an ecosystem of innovative startups that have circularity as part of their principles, which correlates with how we live and work on campus.

Universities as incubators for sustainable solutions

Universities play a role in allowing society to have a testbed of solutions. We allow different industries to come and test solutions by partnering with our faculty to develop new technologies. For example, we have established our own desalination plants on campus. The water that is used in our facilities gets treated on site and a wastewater treatment plant fully reuses it to irrigate our green areas. This aspect of circularity brings additional value to a resource.

8.

“Saudi Arabia’s government is more committed than ever to working towards sustainability and achieving a circular economy, especially regarding carbon and climate change.”

Dr. Sultan Alshareef
Director of Sustainable Development
Saudi National Center for Environment Compliance



Implementing a circular carbon economy in Saudi Arabia

The circular economy is a relatively new concept in the region and worldwide. Saudi Arabia’s government is more committed than ever to working towards sustainability and achieving a circular economy, especially regarding carbon and climate change. Saudi Arabia positioned the circular carbon economy at the center of its presidency of the G20 in 2020. The circular carbon economy is one of the key strategies of the Kingdom to implement sustainability on the ground. Vision 2030 aims to drive global partners and local implementers to head in one direction with one roadmap in mind. The Saudi Green Initiative, for example, focuses on the circular economy approach and aims to reduce the impacts of climate change. These ambitions are not limited to Saudi Arabia. The Kingdom seeks to include countries and stakeholders from the Middle East to implement green initiatives, circularity, or carbon reduction.

Stakeholders must be environmentally compliant

We work closely with the private and public sectors at the Saudi National Center for Environment Compliance. For example, we work with NEOM or the Red Sea Project to ensure that the environmental impact in the development of the giga projects is compliant with national standards throughout the strategies, operations, and implementation. In the water sector, for example, we ensure that the water is well treated and recycled to be used in the irrigation systems. Circularity is embedded in the strategies of all the new giga projects.

Existing cities and municipalities are becoming greener to reach sustainability and net-zero targets shortly. For example, initiatives such as Green Riyadh or the King Salman National Park will uplift Riyadh. These developments will transform Riyadh into a greener and more responsible city, contributing to its residents’ and visitors’ quality of life.

Investments directed toward net zero pathways in the Kingdom

There are a lot of investments being directed towards sustainability. This capital is directed toward Saudi giga projects and the transition to renewables. Saudi has committed to being powered by 50% of renewable energy by 2030. Additionally, there is an encouragement to enhance and introduce Environmental, Social, and Corporate Governance (ESG) standards into the market through Saudi Exchange Tadawul. The organization is building awareness amongst stakeholders in Saudi Arabia to highlight the benefits of complying with ESG standards. Stakeholders can obtain loans and increase investments in renewables through the banks by implementing ESG strategies.

9.

“We need to build a bridge between government organizations, the private sector, and academia to ensure that we all speak the same language and are on the same path to achieving circularity.”

Habiba Al Marashi
President of the Arabia Corporate Social
Responsibility (CSR) Network



Circular economy and the policies set to achieve net zero targets

You need all the players implicated to go in the direction of a circular economy. We need to build a bridge between government organizations, the private sector, and academia to ensure that we all speak the same language and are on the same path to achieving circularity. We need government institutions on board the circular way, with adequate laws and policies. But we also need the experts from academia and the private sector to implement these policies.

The expertise and dynamism lie within the private sector. Each individual and entity must focus on its role to achieve a circular economy. Each entity must first wonder: Do we have the right action plans? Short, medium, and long-term? Are they sustainable? What are the environmental, social, and governance (ESG) procedures in place? Once we have understood these issues, we need to be aware of crucial questions during our operations: How are we managing our resources? Where are we sourcing our resources? What do we do with the resources after consumption? The process of taking a resource, producing a product, consuming it, and then throwing it away has to be null and void. The materials we are throwing to waste must be seen as new resources. We need to think innovatively during this process. All of this will bring us much closer to the circular economy concept.

Short-term initiatives to achieve circularity

Short-term initiatives are absolutely necessary to achieve circularity. These initiatives have to make sense for businesses. We have to show that protecting the environment and acting sustainably is actually very profitable and cost-effective. At Emirates Environmental Group, we are constantly trying to increase the recyclability rate in the region and show retailers how recycling can be profitable. As an example, we first started to recycle aluminum cans in 1997. Since then, the technologies have evolved, and we are much more efficient in recycling cans. Today, we can produce more with fewer resources. It is very important to understand that all the stakeholders must work together to achieve short-term and long-term goals.

10.

“We really need to maximize the value of water that we are using. With the limited amount of water that we have in the Kingdom, we need to be using it very intelligently and very strategically.”

Professor Mark Tester
Co-Founder and Chief Scientist
Red Sea Farms



Transitioning the food system to reduce the Kingdom's carbon footprint

The food system is arguably one of the most polluting sectors of all human activity. People tend to focus on decarbonizing the transport or energy sectors on our journey to net zero by 2060, but the food sector is enormously problematic. This is particularly the case in Saudi Arabia, where we need to import a large fraction of our staples and perishable goods. A lot of our products are brought in by air freight and the carbon footprint of transporting food in Saudi Arabia, especially fresh produce, is enormous.

We should be maximizing the importation of our staples because they can be transported by surface, in bulk, with a very low carbon footprint. We need to be transitioning our farming systems away from the production of staples and increasing the production of perishables. We would be reducing the transportation of perishables by airfreight into Kingdom. This would significantly contribute to reducing our food sector's carbon footprint.

Necessity is the mother of innovation

There are tremendous opportunities for technology and innovation to significantly contribute to reducing the environmental footprint of our food production systems. Young Saudis are really good at deploying digital technologies to increase efficiencies and reduce waste. The Kingdom has made tremendous efforts in promoting and encouraging the research and innovation realm. The establishment of King Abdullah University for Science and Technology (KAUST), for example, has allowed Saudis and others to seed a lot of research and innovation. We do not only conduct research but truly focus on delivering innovations into a whole range of sectors, including the food sector.

The Red Sea Farm spun out because we were doing research at KAUST and were encouraged to get through the 'valley of death' startups suffer and are now in a rapid growth phase. In the Saudi context, we are doing what we are doing because there is a market here and a need. The stressed environment is stimulating and enables us to develop and deliver inventions. To give a few examples, we are trying to substitute freshwater with saltwater and incorporate solar energy into the structures of greenhouses.

Chapter Four

Green Technology



1.

“The use of technology is at the heart of Saudi Arabia’s water strategies. We need to utilize technologies for everything related to water; from management, resilience, production, to detection of leaks and distribution.”

Dr. Abdulaziz Alshaibani
Deputy Minister for Water Affairs
Ministry of Environment, Water and Agriculture of Saudi Arabia



Saudi Arabia takes the topic of water scarcity very seriously

We have always adapted and found solutions to challenges. With the announcement of Saudi Vision 2030 came the development of the National Water Strategy, new laws, and policies. In Saudi Arabia, we have addressed the water challenges in a systematic way. We leverage the right tools and technologies to manage our water resources correctly and to increase the opportunities for sustainability.

The importance of technologies to enhance water resilience in the Kingdom

The use of technology is at the heart of Saudi Arabia’s water-security strategies. We need to utilize technologies for everything related to water, from management to resilience and production, to detection of leaks and distribution. The National Water Strategy has five main dimensions and objectives: Availability; Quality; Environmental Sustainability; Economic Sustainability; and Affordability.

Among the enablers of the Kingdom’s strategy framework are Integrated Water Resource Management, supply chain policies, and of course, technologies to monitor and manage our resources. The Saudi Water Conversion Corporation (SWCC), for example, leads activities worldwide in innovation by developing desalination technologies, minimizing the environmental impact and reducing the carbon footprint of desalination.

Enhanced collaboration and the support of the private sector in Saudi Arabia

Many people think that water challenges are local, but I believe they have global dimensions. During Saudi Arabia’s presidency of the G20 in 2020, we engaged in very interesting discussions with countries from around the world. I am glad our views on tackling water scarcity convinced our colleagues that we must discuss water challenges and issues on a global stage. We need to learn from each other about technologies, investments, creative financing solutions, and engaging with the private sector for water projects.

The development of water projects, such as the ones led by ACWA Power, are partially a reflection of the programs and initiatives put in place by the Saudi government. We have a government that is very supportive, agile, and adaptive. At the Ministry of Environment, Water and Agriculture, we believe that technology and innovation will provide the best solutions to the challenges related to sustainability. We created the National Center for Water Efficiency, which develops guidelines and awareness programs. We are trying to implement multiple methodologies to maximize, develop and manage the resource.

2.

“To implement artificial intelligence in any organization, we must define first the goal and the problems that want to be solved, which is the most challenging part”

Melda Akin
CEO at D14.AI
Forbes Top 20 Women in Tech MENA 2022 and
United Nations Mentor



Steps to implement artificial intelligence (AI) into organizations

Many companies approach us saying they want to have a digital assessment made and want to apply AI. There are three steps that can be applicable to any type of organization in any region. First, we must define the goal and the problems that we want to be tackled, which is the most challenging part. For example, our

business is mostly about optimization. We spend a lot of effort defining the main problem and how we're going to solve it. Once defined, the second step is to define whether we are ready to implement AI, in terms of being aware of what can be done and having the right skill set. Once implemented, business owners must be on the same level in terms of skills. That's when we start organizing workshops and seminars to improve the technical skills. The third step is ensuring the maturity of the infrastructure, in terms of being able to collect data.

Artificial intelligence (AI) to accelerate Sustainable Development Goals (SDG)

According to Nature magazine, 75% of Sustainable Development Goals (SDG) could be achieved through AI. Saudi Arabia is a good case for this, where AI and technology will play a key role in sectors such as agriculture or healthcare. In agriculture, Saudi is already able to produce its own crops, which was unthinkable some years ago. Meanwhile, Saudi's healthcare sector has the opportunity to improve medical services for the population drastically. At D14.AI, we had many clients from the healthcare industry, and we have seen firsthand the interest and potential to implement AI. There are many things that can be optimized and the country can benefit due to its fast growth. We can see what is happening in the country, the projects they are rolling out and their budget. I think many of the SDG goals can be quickly achieved.

3.

“AI systems are accelerating the capacity of our healthcare workforce, whether it’s in diagnosis, doing digital health activity, whether collecting data, or whether these are aspects around remote patient monitoring. We are in that transition phase just like we have digital transformation. We will see a lot of AI-driven transformation in the next phase.”

Shameer Khader

Senior Director, Artificial Intelligence (AI), Machine Learning (ML),
Data Science, Digital Health, and Bioinformatics
AstraZeneca



A trifecta of factors boosting the adoption of AI

Just like how it is in biomedicine where an innovation or invention from experiments to bedside can take 20 years, AI also took its own sweet time to reach where it is now. The technologies today have been perfected as we have

faster algorithms, more data, and we can do more computing. This trifecta is coming together which is also being referred to as digital transformation. The sector has now started thinking about building end-to-end AI systems. Earlier, five years ago or ten years ago, we asked how can we take a subprocess to solve a complex process and make it faster, a little bit more intelligent? Going forward, we are looking at systems that are end-to-end AI driven. We are in that transition phase just like we have digital transformation. We will see a lot of AI driven transformation in the next phase.

Leveraging AI in Saudi healthcare

Healthcare is becoming natively digital because we capture all the data in the digital format. But there is also data that we capture which is not part of machine learning. This will require a huge amount of processing, pre-processing, and post-processing for this data to become ready for machine learning. What is happening in the field is that systems are accelerating the capacity of the healthcare workforce; be it diagnosis or doing digital health activity, collecting data or remote patient monitoring. The combination of AI and digital is hastening the activities of healthcare staff. Saudi Arabia can most effectively make positive change using AI and support its sustainability by gaining more access to healthcare data in a more meaningful way, where it is not just about access but also where AI driven data can improve the health of the population.

4.

“The private and public sectors need to work together to build the digital workforce ahead of 2030. The gap between the two sectors needs to be addressed and bridged.”

Shahad Alarenan
Environmental Responsibility Manager
Saudi Telecom Company (stc)



Developing the digital workforce for a sustainable future: investing and retaining talent

Since 2017, STC has established development programs for its employees and is investing massively in retaining talent. Whether employees are fresh graduates or have a few years of experience, STC retains talents who focus on various pathways and have different expertise. One of them is technology. The company does not just look at technology or digitization from a general perspective. Instead, they dig deep into software engineering, AI, network performance, and data science. These programs are directly dedicated to retaining employees, building loyalty, and creating this network of specialized individuals.

Digital transformation: increasing digital literacy and inclusivity in Saudi Arabia

Companies in Saudi Arabia are heavily investing in incorporating the youth within their systems. They focus on developing very rigorous and long-term training programs for their employees. They also take the responsibility to go beyond their employees and support the communities for a sustainable future. At STC, we take social investment quite seriously and want to give back to the community. We are a digital company, and we want to ensure that there is digital inclusivity for everyone that is within the Kingdom. For example, the Technical Enablement Program aims to enable the non-profit sector to catch up to the digital transformation that other sectors in Kingdom are experiencing. Other programs target communities who live in remote areas to improve the digital literacy rate of the population.

Private and education sectors will build the digital workforce ahead of Vision 2030

The private and education sectors need to work together to build the digital workforce ahead of 2030. The gap between the two sectors needs to be addressed and bridged. Working in isolation is not very sustainable. They need to collaborate to enhance education to provide the right skills that the industry and the corporate world needs. Conventional education at the moment is not serving the industry's needs, and the private and education sectors need to bridge the gap.

5.
“Since the movement towards decarbonization and sustainability has gained attraction in the Kingdom – aligning with Vision 2030 – we see a significant drive towards increasing the investment of R&D in green technologies.”

Dr. Ahmed Alfadhel
Chief Technologist
Research Products Development Company (RPDC)



Since the movement towards decarbonization and sustainability has gained attraction in the Kingdom, aligning with Vision 2030, we see a significant drive towards increasing the investment of research and development in green technologies. The adoption of technologies by the different sectors and the support we have gotten for start-ups focused on sustainability is huge.

Commercialization of green technologies

There is a funding gap between the low readiness level technologies and the mature technologies that are ready to be deployed in the Kingdom. This is known as the ‘valley of death,’ where technologies are stuck in the lab and do not receive further investment and support. Less than 1% of patented technologies have merit to be deployed across the market.

Research Products Development Company (RPDC), government initiatives, and universities in Saudi support the advancement and commercialization of technologies. At RPDC, we look at the feasibility of technologies and try to build a business case around them. Not all R&D projects can become start-up companies. We believe in co-innovation, where we match different entities to develop solid technologies. It is a challenging road, but we are getting significant support from various government entities.

Cutting-edge opportunities to retain and develop talent in the Kingdom

It is important to nurture and develop talent in the Kingdom to achieve the goals set out by Vision 2030 and to retain that talent. It takes a village to raise a child; it takes a country to raise a start-up or an innovative technology. Therefore, we must increase the quality of education, the direct investment toward research and development, technology development, and gain support from the industry.

The ambitious plans set out by organizations such as NEOM, Saudi Aramco, or SABIC are very promising. Some are leveraging autonomy, robotics, and artificial intelligence (AI) in the smart city of NEOM. Others like Aramco are adopting cutting-edge technologies. However, the basic skills required to develop green technologies are no longer sufficient. We need to create high-tech jobs and create opportunities aligned with the demand of the current projects and initiatives being launched in the country. I believe the long-term investments in education are the main building blocks to building the curiosity and innovative mindset of the youth.

6. “Innovation and technologies are constantly being adopted or implemented in the healthcare sector. These transformations can lead us to a greener future on the path to reaching net zero carbon.”

Dr. Sara Al Dallal
President of Emirates Health Economics Society
Emirates Medical Association



Achieving a more sustainable future with a healthier population

The healthcare sector emits carbon daily, reaching over 4.4% of carbon emissions globally. Innovation and technologies are constantly being adopted to reduce the sector's carbon footprint. These transformations can lead us to a greener future by reaching net zero carbon. Improving the healthcare industry is of utmost importance. We can achieve a more sustainable future for all with a healthier population.

Creating a common language in healthcare to reduce the industry's carbon footprint

For public-private partnerships to be effective, we need to set the expectations on both ends. We need to develop feasible plans and establish a common language.

Innovative solutions to reducing the carbon footprint of the healthcare industry exist, but we need to build a hub to foster and understand these innovations. The positive environmental impact of innovations needs to be more precise for all partners. For example, telecommunication is playing a critical role in improving the healthcare sector. The effect of telehealth was accelerated during the Covid-19 pandemic. Still, we need to better highlight the positive impact it had on reducing carbon emissions.

Upskilling and preparing the future generation of medical professionals must happen simultaneously.

It is essential to bring together the current healthcare providers to ensure they understand the purpose of implementing innovative technologies in the industry and are being used efficiently. For example, gathering doctors in virtual medical cities can help them understand how these new tools contribute to a green and sustainable future.

Listening to patients' needs to develop more effective partnerships

Healthcare industry players must increase their engagement with patients or customers to better understand their needs. Tools exist to better communicate with patients, and it is crucial for the end users to be happy. Countries worldwide are moving towards implementing AI, predictive tools, or automation to create more effective patient processes, which also contributes to reducing carbon emissions globally. We need to ensure end users understand that these new processes can lead to a greener future and increase their awareness of the benefits of telehealth, for example.

7.

“We must start cascading the high level goals set by long term strategies into small, achievable targets across all healthcare stakeholders.”

Eng. Mohamed Sindi
CEO, Philips Healthcare Saudi Arabia
Philips



Healthcare must not be overlooked

The environmental impact of healthcare is often ignored. The healthcare industry contributes globally to 4.4% of global net carbon emissions, more than the shipping or aviation industries. It is important that we focus on the initiatives and measures that we are trying to implement in collaboration with governments, healthcare providers and manufacturers. The recent announcement of the Saudi Green Initiative has been an important step. It is fundamental that the government sector takes the first steps to define the goals to be reached nationwide and

collaborate with the private sector towards accomplishing them. For the next steps, we must cascade those high-level targets into smaller, achievable milestones over the coming years, across all levels and involving all the stakeholders in healthcare.

Pathways for healthcare to pivot towards sustainability

Reducing dependency on natural resources and cutting energy consumption are two major areas the healthcare industry can work to improve on. Technological developments are providing a pathway towards sustainability. The difference between currently available medical equipment and the equipment available ten years ago is notable. For instance, magnetic resonance imaging (MRI) equipment used to consume between 1500 and 2000 liters of helium in normal operations. Today, it only consumes 7 liters. Telemedicine solutions are another area with great potential to improve sustainability in healthcare. These can reduce dependency on visits to healthcare facilities to receive medical attention, which can cut emissions from patient displacements to hospitals and reduce the use of medical disposables from physical checks. This is what the Saudi Ministry of Health is pursuing by investing in the creation of ‘virtual hospitals’ and setting annual targets to reduce disposables from hospitals. We must continue exploring ways to develop best practices and incentivize stakeholders to adopt measures and tools to improve sustainability in healthcare.

8.

“There is a willingness in Saudi Arabia to add more flexibility to test new technologies, to push forward potential areas of innovation regardless of success or failure.”

Dr. Mohammed Mahmoud
Senior Fellow and Director of the Climate and Water Program
Middle East Institute



Climate change will stress water supply and demand

There is a need for urgency to achieve water security. Climate change will increase Saudi Arabia’s already existing challenges in accessing water supply, whether having to rely on desalination or limited groundwater supply. Water scarcity and drought will become more severe and constrain available water further.

As temperatures increase there will be more demand for water, both in urban areas and to meet agricultural requirements. This underscores the importance of developing

new technologies and for enhancing the adoption of existing green technologies, which will better equip Saudi Arabia and the region to meet the challenges of climate change and its impact on water supply.

A testing laboratory for water technologies

Saudi Arabia has a unique opportunity to become a testing environment for pilot projects that can potentially take water technologies to the next level. Many countries have restrictive regulatory and policy checks in place, which delay approvals and become barriers for experimental technology tests to take place. The willingness and flexibility of the Saudi government towards trying out new technologies makes it easier for such trials to take place in the Kingdom, while the country’s water-scarce environment makes it an ideal location to test water-stress technologies.

The short-term pathway: leveraging existing technologies

For example, when we think of agricultural water use, which accounts for the largest water usage in the Kingdom, we can look at ways to improve drip irrigation technologies for more efficient use of water while reducing water loss in the system. In the urban environment, we have systems in place that can transform wastewater to non-potable water standards, and water treatment technology that can convert non-potable water to drinking water standards. Given the willingness and flexibility of the Saudi government, the Kingdom has a unique opportunity to become a leader in testing and enhancing existing water solutions.

9.

“Compared to 15 years ago, the desalination industry has reduced its energy consumption from 20 to three kilowatt hour per cubic meter.”

Tariq Nada
Chief Technical Officer, Saudi Arabia
Vice President of Water
ACWA Power



Saudi world capital of desalinated water

The kingdom has historically influenced the desalination industry since its inception in the country back in the 1960s. Saudi Arabia has become the world capital of desalination by number of plants, assets and volume of desalinated water produced every day. Water scarcity, a historical challenge in the country, has been the main driver in the development of the industry and desalination has become the main source of water for human consumption rather than water-intensive activities like agriculture, as in other geographies. This has meant that Saudi Arabia

has been one step ahead in the industry and it has influenced the direction of the market.

Technology paves way for enhanced energy efficiency

The desalination industry has reduced its energy consumption between 50% to 75% in the last 15 years, reducing power consumption from 20kWh to 3kWh per cubic meter. That has been a huge step and was possible thanks to the shift from thermal energy-powered desalination plants to the implementation of reverse osmosis in large, commercial projects, mainly driven by the private sector. The next step to meet Vision 2030 will be about shifting to a new technology. This is where decision makers will influence the market to go next.

Innovation essential for future of water

Technology innovation has been one of the main pillars that has led ACWA Power to become a major private sector player in the industry. We do not limit ourselves to using the same technology from previous projects. After completing the Raghbi plant, one of the world’s most energy efficient, we moved into a new project in Jubail, which will be partly powered by renewable energies. In the future, we aim to build plants fully running on renewables. For existing facilities, we leverage digitalization to optimize processes. This can play a key role in reducing the industry’s power consumption and carbon emissions and also make brine less chemically hazardous.

10.

“Data is the real asset that we must utilize to get to the next level. We can’t properly use AI if we don’t know what’s going on, and in order for that to happen, we first need data.”

Fawwaz Mohammad Alshammari
Senior Vice President, Country Head of Digital Industries
Siemens Saudi Arabia



When the public sector moves faster than the private sector

The Crown Prince has set a clear map for the country with Vision 2030, which is a rare example of a case where the government is moving faster than the private sector. Sometimes the private sector even struggles to keep up. Even so, quick movement only from the government is not enough. Every stakeholder must be

involved in rethinking economic and environmental goals so that the ecosystem is built together. The government has helped to avoid private sector delays by initiating privatization of some of their sectors which is meant to enable faster adoption of new technologies. The regulation is now in place which we aim to complement from the private sector. We don’t want to be late to the game and we’re moving fast.

Cross sectoral development that requires knowledge sharing

There’s a race for transformational change that drives government agencies. While oil and gas is booming, so is the drive to adapt new technologies. The water sector is one of the most important for Saudi because we all depend on its generation and it’s already leveraging new technologies like AI for predictive maintenance. The telecom sector is developed and booming, even comparable to its counterparts in very advanced countries. This entire ecosystem is still developing in terms of collaboration between sectors that permits knowledge sharing for utilizing best practices. We are beginning to see initiatives that use this idea of bringing sectors together for collaborative action. This is meant to include both sectors that are already developed alongside those that are lagging.

Chapter Five

Climate Finance



1.

“COP 27 in Egypt is going to push the finance agenda because it is critical for both reducing emissions, but also building up resilience to the consequences of warmer temperatures.”

Zoe Knight
Group Head of the HSBC Centre of Sustainable Finance
Head of Climate Change, Middle East, North Africa, and Turkey
HSBC Group



ESG Implementation

If you think back to the origins of ESG, driven by the UN Principles for Responsible Investment, it was very much an emphasis on looking at how companies managed their environmental, social and governance responsibilities. If you fast forward to today, it's much more about the outside in, how climate as a driver is really shaping end markets. It's shaping trade flows; it's shaping all sectors across the economy.

One of the issues that the financial sector is really looking at very closely, is how those transition pathways play out in different markets and this taps into this emerging market point, because each economy is coming from a different starting point in terms of its competitive advantage in resources, its capacity, its financial firepower to be able to make changes, the willingness of the population to want to get involved on the changes that are going to be needed. We're really talking about a global economic thinking shift in the context of energy markets that are in turmoil at the moment. Investors have got a tricky job to navigate on the ESG agenda and building these coalitions and making sure that they are working in harmony with each other on this topic is important.

Developing ESG frameworks

One point to raise is that investors are really thinking about the just transition for emerging countries. What the UAE and Saudi can benefit from is innovation in financing structures and technology enablement and a high talent pool of finance professionals that can really fast forward the thinking. We know that innovation is happening at a rate of knots in all different kinds of sectors of the economy. And finance is no exception. This is about having a look at other markets, taking what works well in those markets and maybe leaving what doesn't work quite so well in other markets and coming up with the best of the best.

2.

“A couple of years ago ESG was a fast growing, but not necessarily a hugely prominent part of global finance, but it is a prominent part of global finance now.”

Dr. Anthony Berkley
Head of Investments
Future Investment Initiative Institute



De-risking ESG investments

I think when you shift into Saudi Arabia, you shift into Egypt or you shift into Brazil, India, China, or any other more emerging market, you can see how this kind of capital, it's new capital. It's capital that brings a certain mindset and accountability to the corporates and the issuers. You can see how that will be powerful and important in these markets. That is where we are today. And then you're right to

say how do we call this activity more energetically larger numbers into these into these geographies? And again, I would first start by saying the ESG side of this and sustainable finance side, is not seeking risk. For example, if I invest in a proven renewable energy technology like solar, there are ways to structure these projects which have the risk that any financial investment has. Your coupon, your interest rate compensates you for that, we hope. But they're not highly risky. The technology is proven, the pricing is global, the operators exist, you can get offtake agreements from large utilities and other large uses of energy that de-risk you into the future. There are ways to build these projects that will appeal to this typical risk off ESG mindset.

The growth of the Saudi market

When you're outside of Saudi Arabia and paying attention to the kingdom, what I hear from my colleagues and friends is just a sense of excitement. The giga projects have landed for people mentally, they understand that there's big things going on, whether it's NEOM, or a specific hydrogen project, or sustainable tourism, or a new financial offering from the sovereign. They hear it and they see it. It's coming at enough of a rhythm now where there's a sense globally that the Saudi Arabian market is exciting. There are big projects happening. It's a place where you can make things happen. That's not that's not characteristically how people will think of every market anywhere.

3.

“Move fast, break things. If you’re going to fail, fail quickly. Adopt, pivot, and move on. I think the fintech model really lends itself very well to that.”

Dr. Saeeda Jaffar
Senior Vice President and Group Country Manager – GCC
Visa



Three elements to help fintech scale up

First, there needs to be demand from consumers that are willing to try something new, that have a critical scale and spending power. Secondly, there must be a supply of the right talent in the market trying to do things differently. Finally, you need an enabling ecosystem, including regulations, access to capital, providing the right coaching and mentoring partnerships to help scale those quickly. What we are now starting to see in Saudi is all three are very much there. They’re coming together and there is a very much focused effort on making sure that they work together and that they deliver results.

Education is the way to unlock further solutions

Education is a journey. I don’t think any of us can say we are there; and the minute we feel so, I would start worrying because it means we stop wanting to do more. Some parts of the world are much further along the journey, others are just starting on that. What is important is once we start, we then try to leapfrog and try to get to our goal as quickly as we possibly can. There’s still a lot more learning that needs to happen not only on the issues side, but on the solution side and more specifically on what’s the best way to both partners to cooperate, but also just coexist in an ecosystem that is so different than what we have been traditionally used to.

How can fintech help advance the ESG space?

There is a group of fintech that helps consumers reach their sustainability goals. One of our partners provides scores at the end of every payment, which helps people understand the carbon footprint of that particular transaction. That is incredibly powerful because it creates awareness, which can then help people take actions setting their own behaviors as consumers. As we go forward, we will see more and more of these fintech and new techs that will drive changes and behaviors.

4.

“The reduction of carbon emissions must start at the marketplace. All stakeholders must be involved in net zero initiatives.”

Suhail Shatila
Senior Energy Specialist Strategy Energy Economics and Sustainability (SEES)
Arab Petroleum Investments Corporation (APICORP)



Climate finance to spur sustainable development in Saudi Arabia

Saudi Arabia has been playing a leading role in attracting and promoting climate finance by launching various initiatives over the past two years. In line with Vision 2030, Saudi is striving to diversify its energy generation mix by having 50% renewables in it by 2030, which amounts to around 58.8 GW of installed capacity. And that is a huge number compared to the current installed capacity of 1.5-2 GW. As a result, Saudi announced its net zero target by 2060 and pledged \$180 billion toward reaching that goal.

Last year, the launch of the Saudi Green Initiative and the Middle East Green Initiative came with the announcement of Saudi’s carbon emission reduction and

methane reduction targets. Saudi also pledged \$1 billion with the establishment of the Regional Climate Fund—a total pledge of \$10.8 billion—to reduce carbon emissions in the region. Most recently, PIF announced the establishment of a carbon trading platform which should be launched by Q4 2022. The initiative will see the participation of big energy players in the Kingdom, such as Saudi Aramco, Acwa Power, Ma’aden, Saudi Airlines, and Neom. The launch of all these new initiatives, driven by policy and the Ministry of Energy, sets the scene for promoting sustainable finance and driving more investments towards climate finance in the Kingdom.

At APICORP, we issued green bonds by Q4 of 2021, and we have seen a lot of interest in them. It was three times oversubscribed. We hit \$750 million in green bonds, which will finance the green energy projects, low-carbon technologies, wastewater pollution prevention, green buildings, and energy efficiency.

The importance of financing carbon capture, utilization, and storage (CCUS)

The reduction of carbon emissions must start at the marketplace—i.e. all the stakeholders must be involved in the net zero initiatives. Public Investment Fund (PIF), APICORP, or Islamic Development Bank are the financiers, investors, and lenders. Still, you need the commitments of industrial players such as SABIC and Aramco to reach our targets. In Saudi Arabia, CCUS technology development is fundamental. It will be key to monetizing the oil & gas assets, while decarbonizing the industry as a whole and promoting a sustainable future.

5.

“Organizations are leveraging transparency to demystify their appearance in the market and to provide facts to investors so that stakeholders no longer have to make decisions based on perceptions that come from opaque sources.”

Eelco van der Enden
Chief Executive Officer
Global Reporting Initiative



Taking the first step towards ESG transparency reporting can be difficult

ESG just means doing good business. With ESG transparency, it takes an extra step to be open and transparent, and taking that step for the first time can be difficult.

Many organizations I’ve dealt with that voluntarily report under our standards all went through what I call psychology of disclosure. For them, it means “If I publish this, what will be the market response? Will I get more questions that I can’t answer?” The fact is that most organizations get positive responses for being transparent. British Petroleum and Anglo American, who published transparency reports under GRI standards, received praise from activist NGOs and their own internal employee work councils.

Greenwashing as on par with financial fraud

Greenwashing is one of the biggest dangers for the investor community and for business itself. Some still see ESG as a marketing gimmick and not as doing good business. If you provide stakeholders, be it investors or work councils, with false information or with inflated information to try to influence their decision-making, then it’s equivalent to blowing up your balance sheet or providing inaccurate data on profitability. We call that financial fraud. To me, providing inflated data on ESG or providing information about net zero commitments that is false is on par with financial fraud and should be treated as such.

6.

“Investment institutions in Saudi Arabia need people inside their organizations that have knowledge. For instance, what does a solar farm look like beyond the financial models?”

Patrick Horend
Head of Investment Structuring
Climate Endowment Group



Addressing the skills challenge

Roadmaps are exactly what they say they are. They give you a vision of where you want to get to, and then you have to fill it with concrete steps. The challenge with Saudi Arabia is they probably have to solve the capital challenge the government has committed to. You can probably assume that money will be made available.

Nonetheless, what needs yet to be solved then is the technical skills challenge on the financial side. PIF and other investment institutions in Saudi Arabia need people inside their organizations that have knowledge. For instance, what does a solar farm look like beyond the financial models? The government may say they want to put various billions into the ecosystem, but the actual investment professionals inside PIF should make the most out of that fiduciary. Therefore, they need to build these teams, so the funds can be available for the right people with the right ideas.

Combining carbon capture, utilization, and storage (CCUS) developments with other approaches

Most people may argue that Saudi Arabia should not invest in CCUS, and they should instead invest in reforestation in other parts of the world, such as Australia or Brazil. Then, they should be able to exchange that investment with carbon credits. That would be much more affordable for Saudi Arabia, although we are not quite there yet in transferability. I think the smart thing is to do both CCUS and reforestation. Do you have the technology? You should work on it, but you should also have a champion challenge a model. It should be looked at from a cost-effective and climate-effective perspective. What if I invest in forests in Tanzania and install one CCUS facility and then I run a long-term test against each other? It is always good for everyone to have these comparables.

7.

“Whether it is in Saudi Arabia or at the global stage, emitting entities need to be at the heart of the conversation.”

Oliver Phillips

Associate Director of Sustainable Finance, Middle East and Africa
Standard Chartered Bank



\$95trn Needed to Reach Net Zero by 2060

We recently produced a report called ‘Just in Time,’ and we reckon that emerging markets need to find an additional \$95trn to be ready for transition to net zero by 2060. This is really the challenge now. Some of the greatest risks from climate change, such as rising sea levels, are going to be felt by emerging markets and many of those markets in the region, the UAE, Kuwait, Bahrain will see some of the

biggest impacts. My hope is that with having Conference of the Parties 27 (COP27) in Egypt and Conference of the Parties 28 (COP28) in the UAE, we are going to have that conversation focused on emerging markets. The Middle East has this great conduit role to the rest of emerging markets, to southern Asia, to Africa and beyond. Putting that discussion in the heart of it where it matters most is going to be key to make sure commitments translate into action.

Hope for carbon capture and storage (CCS) and blue hydrogen?

Whether it is in Saudi Arabia or at the global stage, emitting entities need to be at the heart of the conversation. In Saudi, you have a unique context which is not seen anywhere else in the world. The amount of carbon emissions to get a barrel of oil out of the ground is lower than it is in the Gulf Cooperation Council (GCC) in general and it is lower than it is anywhere else. The good thing about Saudi is that it has been doing carbon capture and sequestration (CCS). This is not a new thing as Aramco has already been using CCS for enhanced oil recovery. This is not going to be a complete revolution. What is going to be a revolution is the way that this is used, looking at how it can be used for blue hydrogen production. This changes the economic model because you are taking the cost from doing carbon abatement and using that to create a blue hydrogen product that potentially might be a premium against grey hydrogen. This whole picture becomes very different.

8.

“ESG can be viewed as a risk assessment tool for investments, or it can be viewed as a sustainability impact tool. Once there is a consensus on that, we could move onto the next stage of the discussion.”

Jaison John
Partner-Sustainability and Environmental, Social, Governance
Avia & Co.



ESG can be a risk assessment or sustainability impact tool.

ESG can be viewed as an investment tool for risk assessments, or as a sustainability impact tool. Many of the voices pushing against the ESG narrative have rather political narratives, which I don't think business and government leaders should be drawn into. For a country's concern, the debate should revolve around their sustainable development. Under corporate concerns, ESG is purely a risk management tool, setting apart the scores and the mechanism that goes into how particular companies are ranked in a given sector.

Challenges for ESG: data compatibility

One of the primary challenges for ESG is the access to data in terms of compatibility. In terms of data compatibility, today there are about 23 different certifications for ESG reporting standards. Since COP26 in Glasgow, we have had two main leaders in that aspect: the Global Reporting Initiative (GRI) and the International Sustainability Standards Board (ISSB). In terms of compatibility, Saudi Arabia and the GCC countries have a unique opportunity for companies to capacitate, build and understand what these reporting frameworks are all about. The digital transformations that are taking place in the region present a window to use technology to capture ESG-related data effectively and improve the quality of datasets. These two areas would help global investment decision makers bring in sustainability-embedded investments into the region.

Innovation is the key for decarbonization

The key to mitigating climate change is innovation in decarbonization and clean technologies. Thought leaders such as Blackrock's CEO expect the next hundred unicorns to be from the clean tech sector. If you look at the track record, 500 startups -one of the largest venture capital firms globally- has been extremely active in Saudi Arabia. Additionally, various partnerships and initiatives are taking place to expand the Saudi startup ecosystem, involving stakeholders from public, private and non-profit sectors. In order to promote an ecosystem of innovation, we must nurture a culture and a safe environment where companies - and especially young entrepreneurs - can startup, regardless of success or failure.

9.

“Saudi Arabia is one of the G20 countries and one of the world’s largest economies. The transformation the country is going through right now is a massive opportunity for investors.”

Bandar Al Blehed
Head of Client Relations Development
Saudi Exchange



Voluntary disclosure guidelines will help improve Environmental, social, and governance (ESG) transparency

We are helping listed companies to voluntarily disclose their ESG practices. Saudi Exchange issued its first ESG voluntary disclosure guidelines back in 2021. They were received very positively by the market. Additionally, we are working with government entities to help them shape the ESG landscape in the Kingdom. We

play a unique role in connecting international investments, experts, and best practices to the local market.

It’s usually smaller companies that need guidance from us and other entities to help them achieve their goals and aspirations to go net zero, similarly to the steps taken by several listed companies. We have seen many Saudi companies do fantastic things on the three pillars of ESG, but they do not disclose them through the right channels. We have organized various training sessions with ESG and sustainability experts to help these companies. Our next step is to start our own advisory services. We aim to leverage our data on companies to benchmark their position on ESG compared to other peers and help them improve from that point onwards.

Saudi Arabia’s competitive advantages to attract sustainability investments

Saudi Arabia is one of the G20 countries and one of the world’s largest economies. The transformation the country is going through right now is a massive opportunity for investors. Besides giga-projects like Neom or the Red Sea complex, there are exciting opportunities in areas such as renewable energy, hydrogen, hospitality, and other sectors that are being targeted to diversify the economy away from oil. Additionally, Saudi Arabia has one of the most liquid stock exchanges in the region, which means the market is trustworthy and it’s easy for investors to access.

10.

“Frameworks on sustainable finance can help bring raise awareness and improve investor confidence. That is what we have seen for Islamic finance.”

Bashar Al-Natoor
Global Head of Islamic Finance
Fitch Ratings



The environmental, social and governance (ESG) landscape is still at an early stage across the region

ESG can be found in varying degrees in the region. Some companies are at their infancy, some are starting to crawl, others are going at a faster pace. That is a challenge on its own. Not only on ESG but on awareness, understanding and drive. Developments in this area may take either a top-down approach, such as the goals set by Vision 2030 or a bottom-down approach, such as the recently announced Sharia compliant index in Saudi. Additionally, the Islamic finance industry could do more to attract investors beyond Sharia sensitive profiles, and be more appealing to international ESG investors

Sustainable finance must go hand in hand with Islamic finance in Saudi Arabia

Saudi Arabia is a central player in the global sukuk and Islamic finance industry. Fitch Ratings mapped global outstanding sukuks to be around \$130 billion in the first half of 2022, from which Saudi Arabia accounted to 47% of that figure. ESG-related issuance accounted for 10% of that amount.

More than 83% of financing in Saudi Arabia takes place under Islamic finance formats, while corporate issuance is close to 100% in sukuk. The actual driver for 84% of financing happened through a bottom-up approach over the last decade, through corporates, retailers and customers. Yet, sustainability is not on the top of the agenda of that 84%. The profile of ESG sensitive investors remains fundamentally international. It is important to raise awareness on sustainability issues to educate the massive customer base for sukuks. At the same time, if we want to expand ESG in Saudi Arabia, we must add ESG elements under Islamic finance structures to attract both Islamic investors and ESG sensitive investors.

Strong frameworks will lead to higher volumes of sustainable investments

The trend for ESG and Islamic financing in Saudi Arabia and the region has been on a growth trajectory. This has been built to a large extent on Islamic finance. Bringing to the ground the different strategies and roadmaps launched in the region could help expand these investments. Awareness, frameworks, and guidelines will be fundamental to mobilize larger volumes of sustainable finance.

