

Green Growth Pathways for Saudi Arabia

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About KAPSARC

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This publication is also available in Arabic.

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Key Points

Green growth emphasizes that positive environmental outcomes can be consistent with economic prosperity and that greater social wellbeing can be achieved through ‘less use, more value’ policies.

While national green growth strategies share common themes, such as the transition to a more knowledge-based society, each country is different and there is no ready-made or universally applicable model.

Under Saudi Vision 2030 (SV2030), Saudi Arabia aims to diversify its economy and fuel mix to reduce its overreliance on oil. The Kingdom has already reformed energy prices and efficiency standards, contributing to the first ever significant policy-induced reductions in carbon dioxide (CO₂) emissions, even as the economy continued to expand — signs that a green growth transition is underway (Figure 1).

The large number of SV2030 initiatives could result in policy and administrative silos that impede overall program effectiveness. This is a common problem facing other countries in pursuit of similar economic transformations.

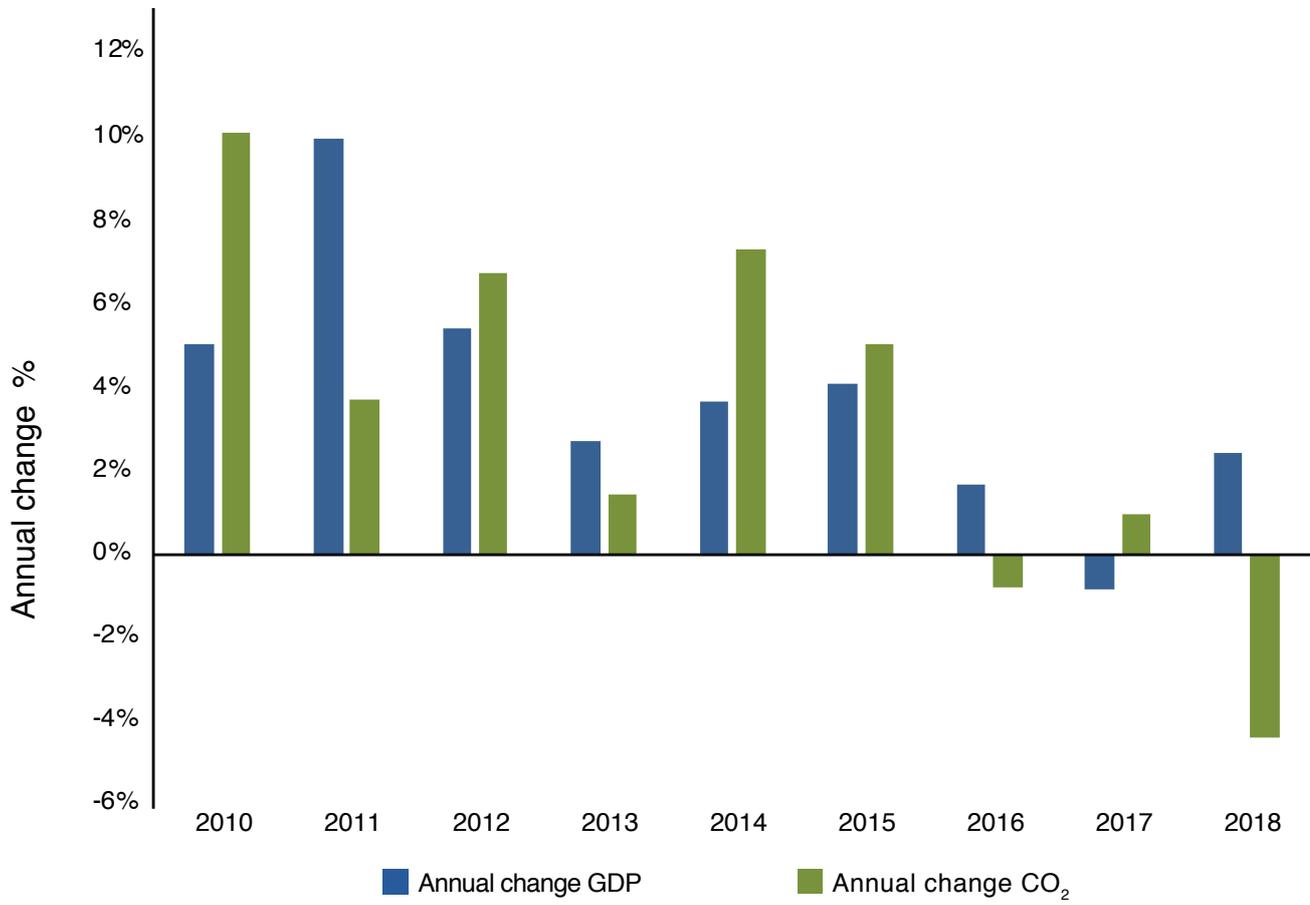
A green growth strategy could foster coordination across SV2030 initiatives, government agencies and other key players while highlighting the significance of the green transition already underway.

The United Arab Emirates provides a useful regional case study of how a green growth strategy can add value to existing policies in an oil-rich Gulf state.

As part of its G20 presidency, Saudi Arabia is developing a shared understanding of the circular carbon economy, a concept closely related to net zero emissions. This may offer scope for stronger consensus at the UNFCCC COP26 to be held later in 2020 in Glasgow.

Key Points

Figure 1. Greener growth in Saudi Arabia: rising GDP with falling CO₂ emissions.



Sources: International Energy Agency (CO₂ emissions) and World Bank (GDP).

Summary

KAPSARC convened the “Green Growth Pathways for Saudi Arabia” workshop on April 30, 2019, to explore how the development of a ‘green growth strategy’ could help the country achieve the goals of Saudi Vision 2030 (SV2030) and strengthen its sustainability policies.

The workshop brought together over 40 experts from academia, government and industry to exchange ideas and experiences around the theme of green growth. The discussions that emerged emphasized that Saudi Arabia’s pathway to a green economy will differ from those of other countries. The participants recognized that the Kingdom has a strong competitive advantage in its low cost oil and gas resources and will remain an ‘oil country’ for the foreseeable future. However, this is balanced against a strong desire — across government, industry and the general population — to move the economy beyond low value-added commodities with large carbon footprints to a broader and more knowledge-based model of growth.

Turning to production, the discussion highlighted that Saudi Arabia offers some of the lowest carbon-intensive oil extraction in the world. This advantage could be exploited through the wider implementation of carbon capture, utilization and storage (CCUS) to move toward net-zero carbon oil production. ‘Utilization’ generally involves recycling carbon byproducts into useful chemicals, while ‘storage’ traps carbon in geological formations. Given the Kingdom’s role as a leading oil supplier, these technologies could significantly contribute to the decarbonization of transport globally.

In addition, carbon utilization, for example removing carbon dioxide from industrial waste streams and converting it into petrochemical feedstocks, offers the potential to ‘green’ the Kingdom’s competitive advantage in energy-intensive industries.

SABIC already operates one of the world’s largest carbon capture and purification plants, located in the industrial city of Jubail. It converts up to 500,000 tonnes of carbon dioxide (CO₂) per year for use in fertilizers, carbonated drinks and methanol.

Downstream industries based on the Kingdom’s access to low-cost, low-carbon oil production provide another area for green growth. The petrochemical industry could increase its use of renewable energy and improve its efficiency, allowing the Kingdom to position itself as a supplier of low-carbon basic petrochemicals as well as higher-value specialty chemicals and materials.

Workshop participants discussed how the transition envisaged in SV2030 will be as much a human and societal challenge as a technical and economic one. The skilled labor required for a knowledge-based economy is similar to what is needed for a ‘greener’ energy economy, though more effort is needed to cultivate this workforce, especially attracting more Saudi women into math and science-based careers.

As public protests erupt over energy subsidy and carbon pricing reforms in other countries, the workshop also highlighted the need for citizens to share directly in the benefits of green growth policies. To help address this concern, SV2030 has implemented measures including cash payments, improvements to urban infrastructure, and subsidies for high-efficiency air conditioning units. Communication is key and a central issue is whether higher energy prices are perceived as part of a broader economic transformation beneficial to society or simply a way for the government to raise revenue.

Summary

The workshop identified several areas for future research. First, participants underscored “CO₂ neutral or net zero carbon oil” as a strategic priority, and noted the high potential for CCUS to help achieve this.

They also discussed how renewables can power energy-intensive industries, such as petrochemicals and steel, to reduce their net CO₂ footprint. Second, the dialogue identified transit-oriented development (TOD) as a way to mitigate the trend of urban sprawl in the Kingdom, which has increased the carbon footprint of cities.

Finally, the workshop drew attention to the need for improved monitoring and reporting of indicators for the United Nations (U.N.) Sustainable Development Goals (SDGs) for Saudi Arabia and the Arab region, especially in the context of G20 and U.N. reporting.

Subsequent to the workshop, Saudi Arabia adopted the concept of the circular carbon economy as the framework for its climate policy. A section covering this significant development has been added to this brief.

Background to the Workshop

Launched by the government of Saudi Arabia in 2016, Saudi Vision 2030 (SV2030) is the country's ambitious economic and social transformation plan for reducing its dependence on oil and improving the social and economic wellbeing of citizens. Less appreciated is that Vision 2030 is also bringing about a major transformation toward a green economy through policies on diversification, energy efficiency, domestic energy prices and a less carbon-intensive fuel mix.

With many of the elements of a green growth strategy already in place, KAPSARC convened this workshop to gather experts, from within the Kingdom and abroad, to discuss how green growth planning could be useful for Saudi Arabia.

The workshop also examined the green growth strategies of other countries. The United Arab Emirates (UAE) and Jordan offer informative regional case studies, while South Korea provides a model for the successful transition toward a knowledge-based society and the role it plays as the hub of the Global Green Growth Institute (GGGI) and knowledge platform (GGKP).

Sweeping economic transformations are unlikely to succeed if they do not benefit the general population. Therefore, participants paid special attention to the social dimensions of transition.

The workshop was organized around the following four themes: economic planning, financing and investment, social inclusion, and employment.

Economic Planning and Green Growth Pathways

The workshop stressed that green growth strategies should not attempt to ‘reinvent the wheel’ when it comes to government planning. In Saudi Arabia, well-established policy agendas already exist in key areas, including:

- Disentangling public finances from an overreliance on fossil fuels
- Building a knowledge-based society and system of innovation
- Promoting employment and the empowerment of women
- Industrial strategy and upgrading
- Water and desalination
- Reducing fossil fuel subsidies
- Energy efficiency and renewable and nuclear energy policies
- The reduction of oil in electricity generation
- Carbon capture, utilization and storage (CCUS).

Dialogue also brought forth the insight that solutions to environmental and developmental challenges are almost always best discovered locally. While lessons can be learned from other experiences, there is no ready-made or universally applicable model or pathway for green growth.

A fundamental issue facing policymakers is the complex relationship between government and markets. The state can, depending on its policy stances, assist with development or constrain growth; freer markets may bring efficiency but can prioritize short-term benefits over long-term value creation and social wellbeing.

The experiences of other countries demonstrate that the economic planning scene is often a crowded space with many agencies often operating in silos, which can diminish their effectiveness. Green growth planning can help ministries work together and encourage a more coordinated approach to policy planning and decision-making.

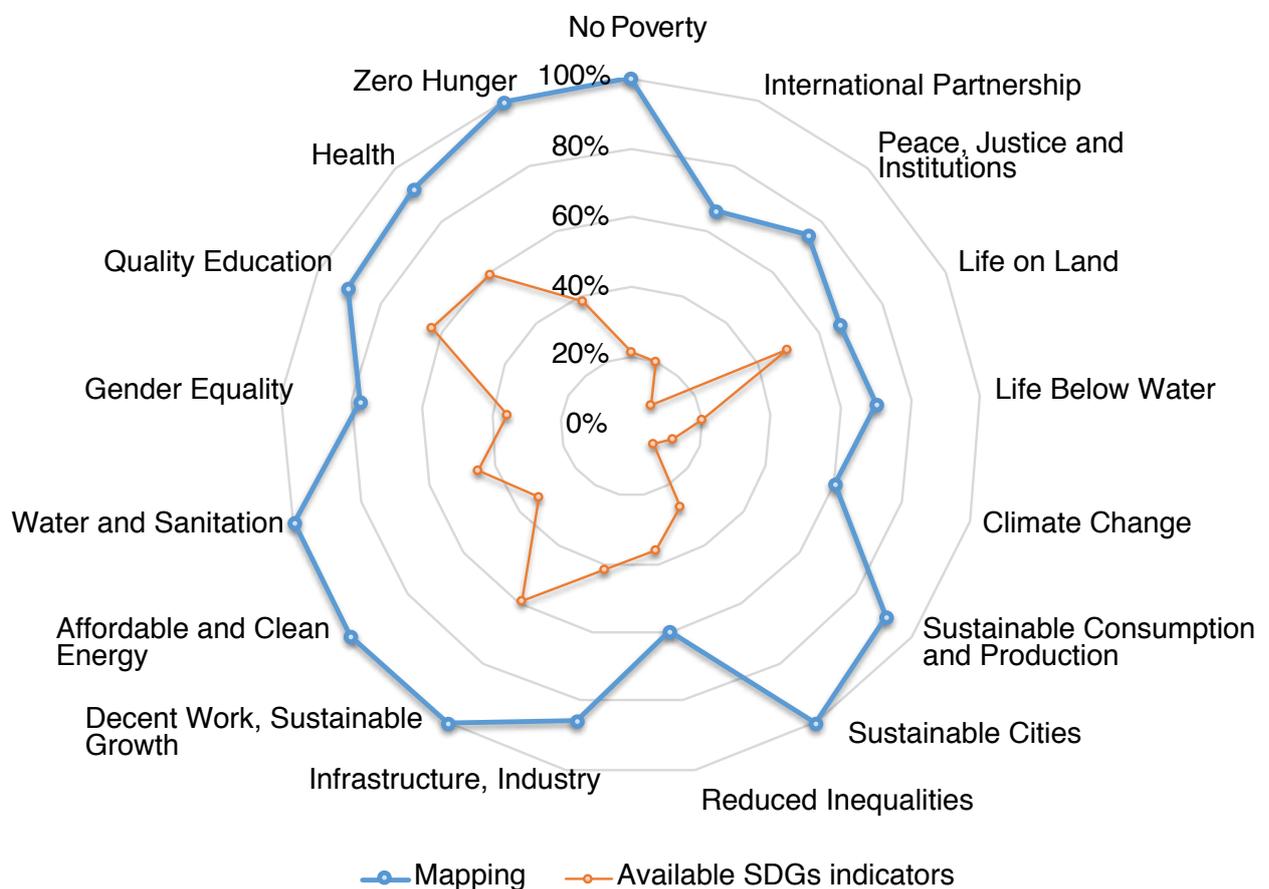
The Kingdom’s First Voluntary National Review on the Progress of Sustainable Development Goals (SDGs), carried out by the Ministry of Economy and Planning (MEP), offers an example of such a coordinated approach that draws on inputs from a number of government agencies. To measure progress toward SDGs, the review identified indicators for current performance, gaps between present status and targets, and the areas for which data needs to be improved (Figure 2). As a first step, significant effort is still needed to improve reporting and monitoring.

The MEP has linked the SDGs to the G20’s 15 Sustainable Development Sectors Action Plan, which is updated annually at the G20 summit. Saudi Arabia is also actively working within the United Nations High Level Policy Forum on Sustainable Development and aims to launch its Second Voluntary National Report on the SDGs during the Kingdom’s presidency of the G20 in 2020.

Saudi Arabia’s Intended Nationally Determined Contribution (INDC) describes the Kingdom’s strategic approach to climate policy in areas including energy efficiency, renewable energy, CCUS, the utilization of gas and flare minimization. Initiatives to help the country adapt to higher temperatures include urban planning, water and waste water management, integrated coastal zone management and reducing desertification.

The INDC states an intention to reduce 130,000 million tonnes of CO₂ emissions per annum by 2030 through economic diversification and the use of lower carbon alternatives to oil and gas. It uses a ‘dynamic baseline’ yet to be specified. It also recognizes that transitioning to a more knowledge-based society with higher-value economic activities will encourage a less carbon-intensive economy.

Figure 2. Saudi Arabia’s Sustainable Development Goal (SDG) gap assessment.



Source: MEP.

Economic Planning and Green Growth Pathways

The UAE is one of the first oil-rich nations to pursue a green growth strategy, which complements its broader Vision 2021 National Agenda. In partnership with the Global Green Growth Institute, the UAE developed a whole-of-government, inter-ministerial green growth strategy that encompasses the following: a competitive and knowledge economy; green infrastructure and workforce; natural capital and resilience; environmental goods and services; clean energy and climate action; integrated power and water management; renewable energy; sustainable resource use incorporating water and energy efficiency, municipal waste-to-resources; sustainable transport; and a green data platform. In keeping with the national green growth strategy, the implementation of the UAE's SDGs has been allocated across its ministries, with a national committee to support delivery and reporting.

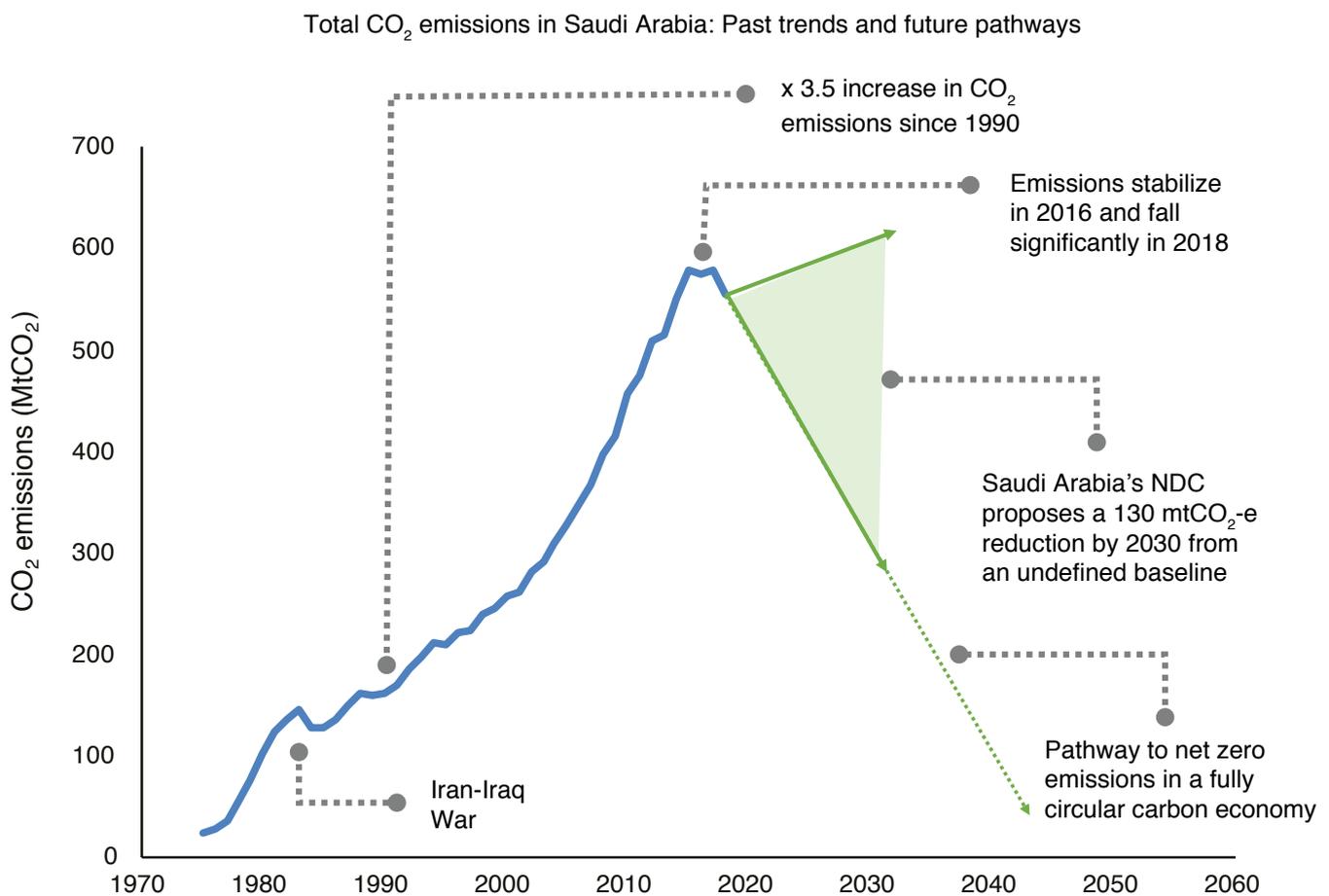
Key targets of the UAE's 2030 green strategy include: a 4% to 5.5% increase in gross domestic product (GDP) over a 'business as usual' scenario (BAU); 160,000 new jobs created; a 25-45 billion Emirati dirham (AED) increase to net exports; 235 million tonnes of oil equivalent (Mtoe) of natural gas saved, worth 376 billion AED; 4,105 million cubic metres of water saved, worth 25 billion AED; 15 gigawatts (GW) of avoided new power plant capacity through demand reductions; 2.2 million tonnes of annual landfill waste reduction; and 68 megatons of CO₂ reduction versus the BAU scenario.

Financing Green Growth Pathways

In their “Special Report on the Impacts of Global Warming of 1.5°C,” the Intergovernmental Panel on Climate Change (IPCC) warns that global emissions must fall to around net zero by 2050 in order to achieve critical climate change targets. According to the report, this will require “rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings) and industrial systems.”

The goal of net zero emissions therefore represents a massive investment opportunity, which the OECD estimates will be worth US\$6.9 trillion a year over the next 15 years, at a time of low interest rates and weak economic growth globally. So far, around US\$155 billion of ‘green bonds’, or debt instruments that can be used to finance green infrastructure projects, have been issued worldwide. However, sourcing projects can be a challenge. A powerful case exists for ambitious fiscal programs that fund new infrastructure and industrial systems along a greener pathway.

Figure 3. Potential pathways for emission levels in Saudi Arabia.



Sources: KAPSARC analysis based on Enerdata (2018 data) and IEA (2017 and earlier).

Note: Data series relates to total CO₂ emissions without land use, land-use change and forestry (LULUCF), in CO₂ equivalent. For Saudi Arabia, this is the sum of CO₂ emissions from fuel combustion and CO₂ emissions from industrial processes such as cement manufacturing.

Financing Green Growth Pathways

Global decarbonization, especially in the transport sector, will greatly impact oil demand and, in turn, the economies of oil-rich countries. Participants discussed how the Kingdom can manage this threat and perhaps turn it into an opportunity.

The government of Saudi Arabia has long recognized the risks associated with an overreliance on oil and is already taking steps to diversify its economy. These include:

- Strengthening downstream industries by taking advantage of access to cheap feedstock, especially in the petrochemical sector, and in steel and cement manufacturing.

- As part of SV2030, the National Industrial Development and Logistics Program (NIDLP) aims to leverage digital technologies to boost trade and local content focusing on industry, mining, energy and logistics.

- Developing alternative sources of government revenue to ensure fiscal stability.

The NIDLP includes the development of policies and regulations, financial enablement, infrastructure, industrial land, special economic zones, research development and innovation. Regarding this initiative, workshop participants identified the importance of the transition from a state-dominated economy to a more blended form of market capitalism that increases private sector participation.

The World Bank's Regulatory Indicators for Sustainable Energy evaluate 133 countries using 27 metrics that assess "policy and regulatory support for each of the three pillars of sustainable energy — access to modern energy, energy efficiency, and renewable energy." While the Kingdom ranks well on energy efficiency, it falls short on renewable energy.

Participants determined that "net zero or low emission oil" stands out as a key contribution that Saudi Arabia can make to the global effort to achieve net zero carbon emissions. Saudi Arabia's oil production is already among the least energy and carbon intensive in the world, and CCUS can leverage this advantage, with the greatest potential impact in the energy-intensive petrochemical, steel and cement industries. More broadly, CCUS would help achieve a circular, 'less use, more value,' economy in which waste from economic activity is recycled.

Another important pathway will be developing the 'non-combustive' use of oil and gas as a feedstock for petrochemical industries. Linked with renewable energy and energy efficiency targets, this can dramatically reduce the Kingdom's industrial CO₂ footprint.

Building on OPEC's Solemn Declaration in 2003, the Kingdom plays a leading role in the Millennium Development Goals and SDG efforts to reduce energy poverty. For example, the OPEC Fund for International Development provides energy access to developing countries in a climate-responsible manner through its Oil and Gas Industry Access Platform. Saudi Arabia also hosts the Islamic Development Bank, which has a significant climate program. This provides a strong basis for the Kingdom's international engagement on green growth issues.

Social Inclusion and Green Growth Pathways

Saudi Vision 2030 has introduced reforms to normalize domestic energy prices to international benchmarks (Table 1). This is part of the Kingdom's broader transformation of its social contract as it shifts away from low energy prices and a tax-free economy to direct cash distributions (mainly through the Citizen's Account Program) and other forms of cash payments, such as a cost of living allowance.

In addition to energy price reforms, Vision 2030 initiatives have introduced a 5% value added tax, policies to promote the 'Saudization' of the labor force, and increased fees on expatriate workers — all of which put upward pressure on the cost of living. To manage any potential public backlash, the government launched a high profile public relations campaign to directly link Citizen Account payments with increases in the cost of living. It also amended the payments program and delayed future energy price increases, based on observed impacts and citizen feedback.

Providing monthly cash payments has helped avoid the popular anger seen in other parts of the world in response to similar reforms, such as the gilets jaune (yellow vest) movement in France that began in late 2018. However, Saudi Arabia still has much lower energy prices than most other countries, and its reform process is far from complete. For example, average household electricity prices in Australia and the United States are US\$0.2485 and US\$0.1289 per kilowatt-hour (kWh), respectively, versus just US\$0.048 in Saudi Arabia, according to Enerdata.

Energy efficiency campaigns offer another policy tool to foster public acceptance of higher prices — ultimately, consumers care about their total electricity bills, not costs per unit. For example, the High Efficiency Air Conditioning Initiative offers

US\$240 per unit for the purchase of up to six qualifying air conditioners (ACs) per household. More efficient and advanced ACs can also reduce energy system and personal vulnerability to extreme weather events such as heatwaves. Similarly, the promotion of 'smart' home applications can reduce household electricity costs by up to 50% through AC efficiency and behavioral changes.

In addition to direct payments and energy efficiency campaigns, SV2030 promotes green growth through large-scale urban infrastructure 'megaprojects.' These include: two US\$500 billion 'megacities' — Neom on the Red Sea and the Al-Qiddiya Entertainment City outside Riyadh; other new business and industrial cities such as the US\$100 billion King Abdullah Economic City; US\$21.9 billion in housing developments for the Dahiyat Al Fursan New City and the Avenues in Riyadh; the US\$22.5 billion Riyadh Metro and bus network (Figure 4); the US\$7.8 billion King Abdullah Financial District; Jeddah Tower, the world's first 1km tall building; and the Green Riyadh Project which aims to increase the amount of green spaces in the city.

For such urban infrastructure projects to advance green growth, they must be designed to systematically promote energy efficiency, renewable energy, and net zero carbon emissions. For example, transit-oriented development (TOD) promotes concentrated nodes of moderate and high density living and a more balanced mix of land uses around public transportation stations where citizens can live, work, play, shop and learn. This promotes a more pedestrian-friendly environment, limiting the need for a car. District-level cooling and zoning policies can also encourage green growth through a more holistic approach that includes reflective and green roofs, cooling corridors and temperature-reducing ecological and biophysical elements.

Social Inclusion and Green Growth Pathways

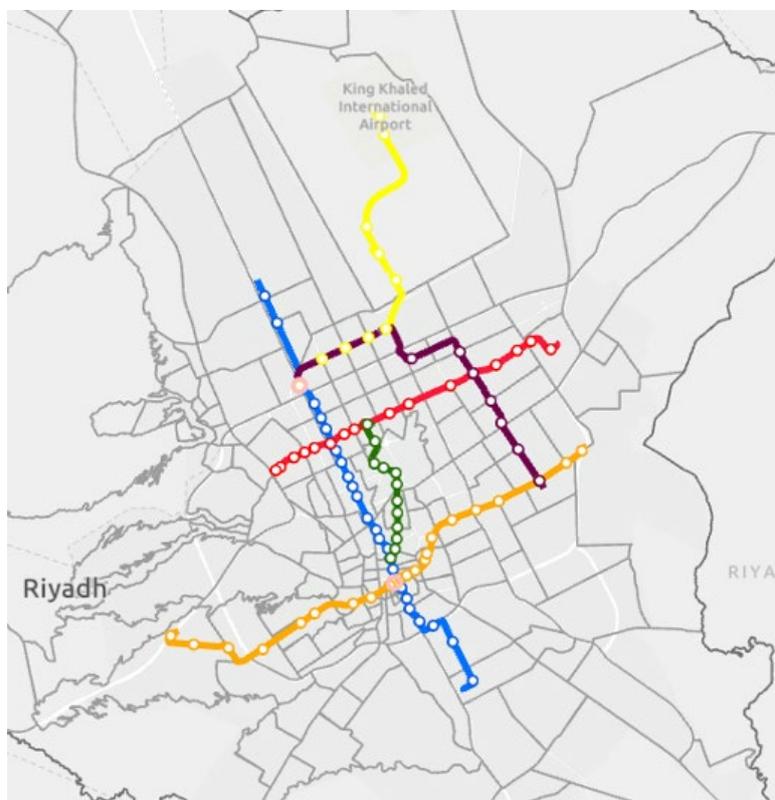
Table 1. Saudi Arabia's energy price reforms.

	2015		2016		2018		2015-2018	
Gasoline (95) US\$/L	0.16		0.24		0.54		+238%	
Gasoline (91) US\$/L	0.12		0.20		0.37		+208%	
Natural Gas (US\$/MMBtu)	0.75		1.25		1.25		+66%	
Ethane (US\$/MMBtu)	0.75		1.75		1.75		+133%	
Diesel for industry (US\$/b)	9.11		14.1		16.15		+77%	
Arab light crude (US\$/b)	4.24		6.35		6.35		+50%	
Arab heavy crude (US\$/b)	2.67		4.4		4.4		+65%	
Electricity (industry) (US\$/kWh)	0.037		0.048		0.048		+30%	
Electricity (household) (US\$/kWh)	< 6,000 <		< 6,000 <		< 6,000 <		< 6,000 <	
	0.02	0.06	0.03	0.08	0.048	0.08	+140%	+33%

Source: KAPSARC (based on Saudi Electricity Company, APICORP, Al Dubyan and Gasim [2018]).

Note: L = liter, MMBtu = million British thermal units, b = barrel, kWh = kilowatthour.

Figure 4. Riyadh's new metro system.



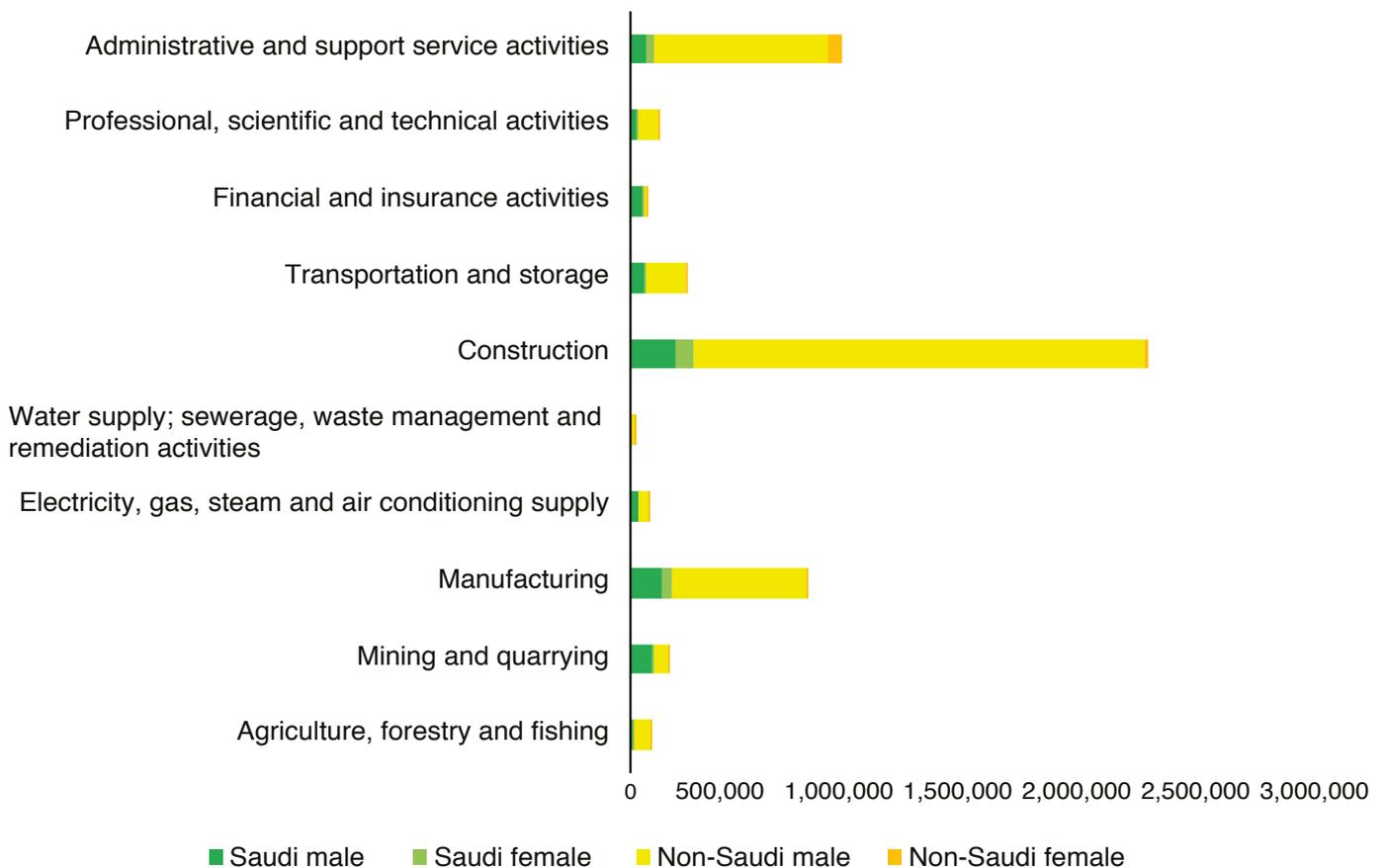
Source: Riyadh Metro.

Employment and Green Growth Pathways

The green transition can greatly boost job creation in Saudi Arabia. Globally, the number of renewable energy jobs has steadily risen over the last decade to reach 10.3 million as of 2017, according to the International Renewable Energy Agency, and swift growth is expected to continue. Solar photovoltaic (PV) technology accounts for the most positions (32.7%), followed by liquid biofuels (18.7%), hydropower (14.7%) and wind power (11.1%). Studies suggest wind and solar PV offer the highest potential for creating direct jobs as well as indirect and induced employment.

The government of Saudi Arabia is currently evaluating plans for between 60 and 200 GW of solar PV and wind power projects, implying a tremendous potential for job creation. By 2030, 100,000 jobs could be added based only on projects already announced. However, the ability of Saudi nationals to fill such jobs may be limited. For example, over the lifespan of a solar PV plant, half the jobs created are estimated to be in operation and maintenance, with the other half being construction jobs. Currently, the construction sector is dominated by expatriate workers. Similarly, due to the current structure of the labor market, any manufacturing jobs for renewable projects would heavily favor non-Saudi workers (Figure 5).

Figure 5. Saudi Arabian employment by nationality, gender and activity.



Source: Saudi Arabian Labor Force Survey, Q1 2019.

Employment and Green Growth Pathways

Increasing the participation of women in the Kingdom's labor force is a key goal of SV2030, and renewable energy jobs offer a prime area for their entry. Policies that encourage Saudi women to pursue university degrees in the 'STEM' subjects (science, technology, engineering and mathematics), which presently are heavily dominated by men, will help equip them to compete for well-paying jobs in this growing field.

More broadly, Saudi Arabia's educational system should be adapted to better prepare future workers for the green economy. One participant suggested that the skills necessary to work in renewable energy jobs are highly transferrable to other sectors, and that workers from other industries and energy technologies could seamlessly transfer to these jobs with a minimal amount of retraining.

The energy efficiency space and the growing field of energy services involving retrofits, and the operation and maintenance of energy consuming infrastructure also offer a range of growing employment opportunities.

It is important that retraining is standardized through nationally or internationally recognized certification to maintain industry standards. Universities could offer short intensive courses to experienced workers from other industries, and renewable energy methods and best practices could be added as modules to existing courses to prepare students to enter the green energy sector.

Circular Carbon Economy

Subsequent to the workshop, the concept of the circular carbon economy (CCE) (Figure 6) was adopted by Saudi Arabia as a way to advance climate policy. It is based on ‘four Rs:’

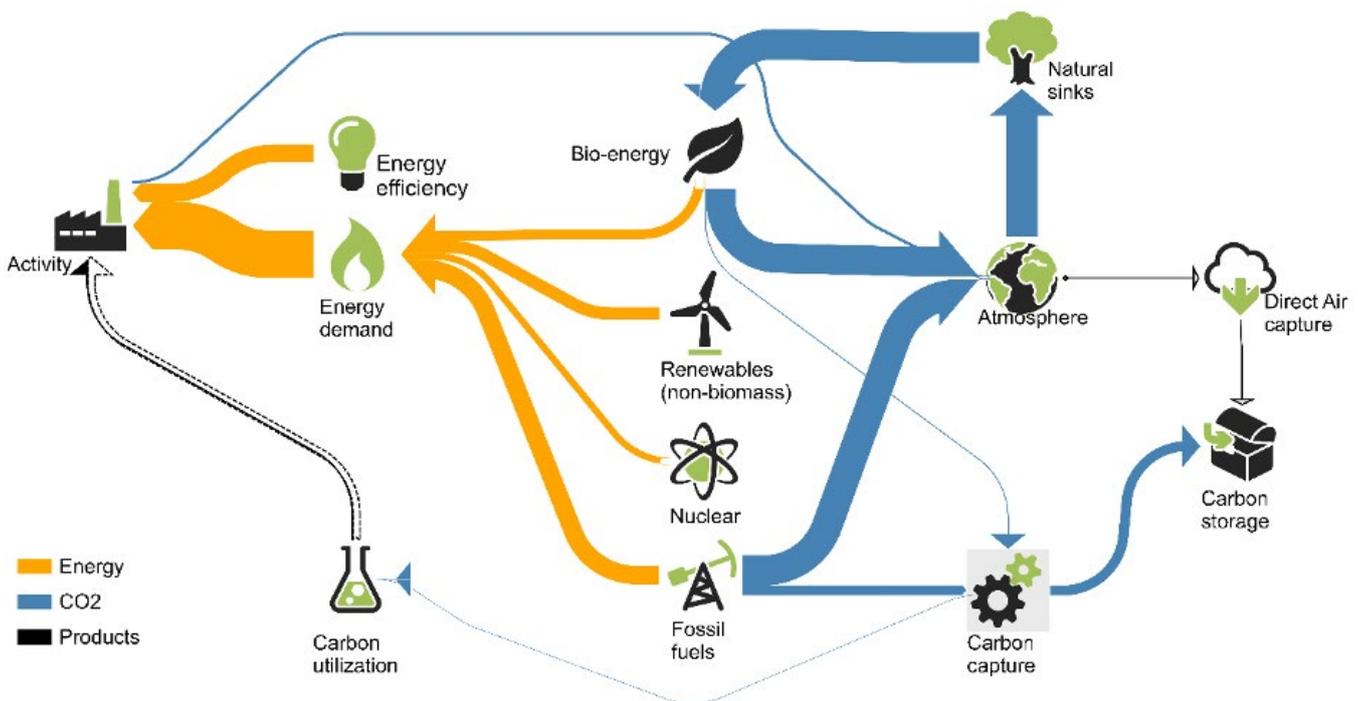
Reduce: energy efficiency, renewable energy and other low carbon energy

Reuse: carbon capture and utilization (CCU), emissions to value (E2V)

Recycle: natural sinks, bio-energy, hydrogen (crosscutting)

Remove: carbon capture and storage (CCS), direct air capture and natural sinks

Figure 6. Circular carbon economy.



Source: Williams, Eric. 2019. “Achieving climate goals by closing the loop in a circular carbon economy.” KAPSARC Instant Insight, KS—2019—II10.

The CCE puts forward a new language for carbon management by outlining how ‘fugitive carbon’ can be transformed into ‘durable carbon’ for economic uses such as recyclable polymers, including building and construction elements and cloth and paper. It should be noted that some forms of CCU, such as conversion to fertilizers (urea) or their use in carbonated drinks, create value from recycled CO₂ but may not result in an ultimate emissions reduction.

The CCE also recognizes that CO₂ from the atmosphere can be transformed into ‘durable carbon,’ such as through ‘living carbon’ in the form of biomass or direct air CO₂ capture and storage. A key insight from the CCE concept is that, rather than seeking to eliminate carbon, a safe amount of ‘working carbon’ can be utilized within the natural cycle, alongside more circular economic processes.

Circular Carbon Economy

CCE offers a complementary approach to similar concepts such as 'net zero emissions' and 'carbon neutrality,' both of which have strong relevance to green growth strategies. It focuses attention on emissions, rather than specific fossil fuels, by incorporating a range of carbon management options, including CCU, CCS, direct air capture and natural sinks. This is important, as the combination of carbon management strategies will be different in every country, based on their natural resources and access to capital and technology.

There is potential alignment between the Kingdom's approach to CCE and the target of achieving net-zero emissions by 2050, which will be a focus of the 26th UNFCCC Conference of the Parties (COP26) to be held in the United Kingdom later this year. Saudi Arabia is developing a shared understanding of the CCE as part of its presidency of the G20 in 2020. With the G20 summit scheduled to take place on 21-22 November, two weeks before COP26, there is an opportunity to achieve a stronger consensus on climate goals than perhaps has been possible in the past.

About the Workshop

KAPSARC convened the “Green Growth Pathways for Saudi Arabia” workshop on April 30, 2019, to explore how the development of a green growth strategy could help Saudi Arabia achieve the goals of Saudi Vision 2030 and strengthen its sustainability policies.

List of participants

H.E. Sulaiman Al Herbish – Ex-Director General of OPEC Fund for Development (OFID)

Princess Mashaal Al-Shalan – Founding Partner, Aeon Strategy

Dr. Fahad Al-Sulaiman – Director Renewable Energy Center, King Fahd University of Petroleum and Minerals (KFUPM)

Dr. Amjad Ali – Research Engineer, KFUPM

Dr. Mohammad Alghoul – Research Engineer, KFUPM

Dr. Malak Alnory – Assistant Professor & Provost, Effat University

Princess Noura Al-Saud – Founding Partner, Aeon Strategy

Princess Haifa Al Mogrin – Assistant Deputy Minister for Sustainable Development Affairs, Assistant Deputy Minister for G20 Affairs, Ministry of Economy and Planning

Dr. Ahmed Al Qabany – Manager, Climate Change Division, Islamic Development Bank

Mr. Osama Alyafi – Energy Economist, Designated National Authority, Ministry of Energy, Industry and Mineral Resources (MEIM)

Mr. Mustafa Alshehri – Senior Manager - MEA Sustainability, Corporate Affairs Department, SABIC

Mr. Thamir Al Shehri – Research Associate, KAPSARC

Dr. Anvita Arora – Program Director, KAPSARC

Mr. Ahmed Al Herbish – Jordan Country Representative, Global Green Growth Institute

Mr. Mohammed Angawi – Acting Country Representative for the United Arab Emirates, Global Green Growth Institute

Professor Ibrahim Abdel Gelil – Adjunct Professor, Arabian Gulf University

Mr. Abdulaziz Baras – Senior Manager - Solar Energy Cluster, MEIM, Industrial Clusters Program

Dr. Michele Bruni – Team leader, EU-China Social Protection Reform Project

Dr. Juergen Braunstein – Research Fellow, Harvard Kennedy School of Government

Professor Leila Dagher – Chair, Economics Department, American University of Beirut

Mr. HyoYoul Kim – Middle East Coordinator, Global Green Growth Institute (GGGI)

Dr. Nicholas Howarth – Research Fellow, KAPSARC (workshop coordinator)

Dr. Youn Joo Oh – University of Southern California

Dr. Mari Luomi – Research Fellow, Emirates Diplomatic Academy

Dr. Rodolfo Lacy – Director for the Environment Directorate, OECD

Mr. Benoit Lebot – Head of Secretariat, International Partnership for Energy Efficiency Cooperation

Dr. Ulrike Lehr – Senior Expert, Institute of Economic Structures Research (GWS)

About the Workshop

Dr. Noura Mansouri – Senior Research Associate, KAPSARC

Mr. Cian Mulligan – Senior Research Associate, KAPSARC

Dr. Hun Park – Head of Research, Center for Strategic Development (CSD)

Mr. Charles Phillips – OIES and Institute of Oriental Studies, Oxford University

Mr. Najib Saab – Secretary General, Arab Forum for Environment and Development

Professor Tadeusz Patzeck – Director, Ali Al Naimi Petroleum Engineering Research Center, King Abdullah University of Science and Technology (KAUST)

Mr. Hisham Sumayli – Director of Technology, Localization and Commercialization, King Abdullah City for Atomic and Renewable Energy (KA-CARE)

Dr. Ashok Sarkar – Senior Energy Specialist and Task Team Lead for Energy Efficiency, World Bank

Mr. Adam Sieminski – President, KAPSARC

Mr. Nawas Peerbocus – Program Director, KAPSARC

Mr. Eric Williams – Acting Program Director, KAPSARC

Mr. Christof van Agt – Senior Analyst, International Energy Forum, KAPSARC

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Notes

About the team



Nicholas Howarth

Nicholas is a research fellow at KAPSARC and an applied economist specializing in energy, technological change and climate change. He obtained his D.Phil. in Economic Geography and M.Sc. in Environmental Change and Management from the University of Oxford and has a Bachelor of Economics with honors from the University of Adelaide, South Australia.



Noura Mansouri

Noura is currently a senior research associate at KAPSARC, a visiting scholar at the Massachusetts Institute of Technology (MIT), and an observer/expert at the World Energy Council (WEC). Before joining KAPSARC, Noura worked for a nuclear energy company and completed a postdoctoral fellowship at MIT. Noura earned a Master of Business Administration (MBA) in clean energy transition, and a Ph.D. in clean energy transition from the University of London.



Cian Mulligan

Cian has been part of the Energy and Macroeconomics team at KAPSARC since early 2018. His current work focuses on economic diversification in Saudi Arabia, labor dynamics in Gulf Cooperation Council (GCC) countries, gender employment gaps in the GCC, and policy recommendations for Saudi Vision 2030 goals. Before joining the center, he worked as an energy analyst in Vienna and most recently served as the editor of *Intereconomics Review of European Economic Policy* in Hamburg, Germany.



Thamir Al Shehri

Thamir is a research associate in the Energy Transitions and Electric Power program, currently focused on creating data-driven tools to identify and evaluate different energy market scenarios, as well as using 'big data' technologies to better understand the impact of behavior and the environment on energy consumption. Thamir is interested in using technologies to facilitate better energy public policy and energy economic systems. He previously worked as a lecturer in Australia and also has entrepreneurial and industrial experience working on award-winning projects such as the Burj Khalifah Building Management System.

About the Project

KAPSARC held the workshop “Green Growth Pathways for Saudi Arabia” to explore the relevance of green growth as a planning framework in the Kingdom. Saudi Arabia’s economic transformation plan, Saudi Vision 2030, has already impacted the country’s energy consumption and CO₂ emissions through a combination of economic diversification, energy efficiency policies and energy price reforms. However, a large number of Vision 2030 initiatives covering mega projects in urban infrastructure, industrial policy, domestic fuel mix changes, employment and local content could result in the formation of policy and administrative silos, reducing their overall effectiveness. In this context, a green growth strategy could help foster improved coordination while highlighting the significance of the green transition underway in the Kingdom.



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