ECONOMIC DIVERSIFICATION AND ENERGY TRANSITION IN IRAQ AND THE GULF

A CONFERENCE REPORT BY THE MIDDLE EAST INSTITUTE AND IRAQ POLICY GROUP

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MEI

IRAQ POLICY GROUP

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Iraq Policy Group (IPG) is a Baghdad and Erbil based organization that works with the wider Iraqi leadership and civil society, together with policymakers and analysts, to deliver actionable policy recommendations focused on good governance and economic reforms. IPG provides a platform for enhancing the nexus between the state and society, focusing particularly on youth participation in policy development, while harnessing the expertise of the policymaking community in Iraq and globally as the country attempts to regenerate and diversify its economy, reform the public sector, and execute a successful security sector reform process. IPG works closely with decision-makers in Baghdad and Erbil and has partnered with Al-Nahrain University in Baghdad, the United States Institute of Peace (USIP), the Middle East Institute (MEI), the Konrad Adenauer Foundation (KAS), the American University of Kurdistan in Duhok (AUK), and the Institute for International Political Studies in Rome (ISPI).

ABOUT THIS REPORT

The articles in this report were prepared for the Workshop on Governance and Economic Reforms in Erbil and Baghdad: In Comparative Perspective with the Region. Convened by IPG and MEI, this workshop was held on November 15, 2021 as part of the Middle East Peace and Security Forum 2021 at the American University of Kurdistan in Duhok, the Kurdistan Region of Iraq.

Cover photo: A view of the exterior of Iraq's Council of Representatives, the country's unicameral legislature, in the capital Baghdad's heavily fortified "Green Zone" on March 26, 2022. Photo by AHMAD AL-RUBAYE/AFP via Getty Images.

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Introduction

Iraq is in the midst of an unprecedented economic crisis as it grapples with a volatile post-election political environment and continued social unrest. The onset of the pandemic two years ago combined with the subsequent decline in oil prices to create added economic pressures for a state that remains highly oil-dependent and a society that is overwhelmingly dependent on the public sector for employment. The country's inability to provide jobs and services for its predominantly young population has sparked a protest movement that has added urgency to the need for major reforms. Meanwhile, the growing threat of climate change and climate-induced socio-economic challenges have raised the specter of an existential crisis, one that could potentially be hastened by Russia's invasion of Ukraine and the resulting impact on food security. And while other Gulf oil exporters are reaping the benefit of a windfall in revenues by spring 2022, disputes over revenue sharing and the ability to catalyze domestic spending and investment continue to weaken recovery prospects for all of Iraq.

To identify pathways to deal with demands for economic reform and volatility in resource revenue, in November 2021 the Middle East Institute (MEI) and Iraq Policy Group (IPG) convened a high-level workshop on the side-lines of the American University of Kurdistan's annual Middle East Peace and Security Forum, bringing together decision-makers in Baghdad, Erbil, and the wider region, as well as practitioners, scholars, and the private sector to examine the country's prospects for addressing its short- and long-term economic challenges as Baghdad and Erbil embark on ambitious reform agendas. This included discussions and debates on plans to diversify their economies away from fossil fuel dependency, the progress of reforms, regional policy goals on net zero at 2050, and the wider lessons that Erbil and Baghdad could draw from the Gulf region. This report provides the insights and analyses of a select group of participants, and forms part of a series of forthcoming Iraq- and Gulf-focused reports and initiatives that MEI and IPG will be convening.

— Karen Young and Ranj Alaaldin

Dr. Karen E. Young is a senior fellow and founding director of the Program on Economics and Energy at the Middle East Institute.

Dr. Ranj Alaaldin is a non-resident fellow in the Foreign Policy Program at the Brookings Institution, director of the Carnegie Corporation's Crisis Response Council, and senior advisor at Iraq Policy Group.

IRAQ, THE MIDDLE EAST, AND NET ZERO 2050

HOWARD J. SHATZ

Abstract

The 2015 Paris Agreement on climate change calls for limiting the warming of the atmosphere to no more than 2°C above pre-industrial levels, and preferably to no more than 1.5°C above those levels. Achieving the latter mark would require human-caused emissions of carbon dioxide to reach net zero by 2050.

Reaching net zero will not be easy, especially for poorer countries in the Middle East that may have only limited money to invest in infrastructure or technology changes. Furthermore, transitioning away from fossil fuels may harm the economies and government budgets of Middle Eastern energy exporters.

Realistic Climate Policy Steps

There are realistic steps these countries can take from which they might benefit regardless of whether the world is able to reach the stated climate change goals. These include:

Measures Needed Regardless of Climate Goals

- End flaring of natural gas and use it for electricity production or exports. This will help environmental goals, increase electricity reliability, and save government finance spent on imported fuel.
- End subsidies of fossil fuel consumption. This will reduce consumption and relieve pressure on government budgets. In addition, policies are available that are more efficient in providing assistance to the socially disadvantaged.

Measures That Would Be Beneficial Regardless of Climate Goals

- Improve project evaluation and management. This will help attract some of the trillions of dollars that are likely to become available for financing to meet global climate goals.
- Retrofit buildings and train people to accomplish this. This will reduce energy consumption and provide stable employment.

Current Opportunities That Will Help Meet Climate Goals

- Invest in alternative energies. The Middle East and North Africa (MENA) region is well placed to serve as producers of solar- and wind-generated electricity, and the cost of these technologies has fallen dramatically since 2010. Installing nuclear plants, although more expensive, can also help not only with climate issues but also with reliability.

Future Opportunities Now

- Embark on research and deployment of new technologies. Notably, all technologies that will be needed to reach net zero by 2050 are already under development or exist in the demonstration or prototype phase, but major innovation efforts are needed to bring them to market. These include efficient batteries, carbon capture, direct-air carbon capture, hydrogen production, and even space-based solar. The region could join research consortia focused on these technologies, fund national or regional research institutes, and deploy and learn from demonstration projects.

Meeting Opportunity

Financing will be needed to help pay for new energy technologies, to help build the skills of the workforce that will work on new technologies, and to retrain or provide support for workers who might be displaced by the transition. To achieve this, the countries of the region will have to ensure that international investors have confidence in national abilities to implement projects and programs. But there also could be greater scope for regional cooperation, with the wealthier resource-producing countries helping fund efforts throughout the region, not out of altruism, but from the self-interest of gaining a return on their investment and supporting a more economically vibrant Middle East.

Photo above: Members of the Iraqi delegation look at a computer ahead of the stocktake plenary on day 14 during COP26 on November 13, 2021 in Glasgow, Scotland. Photo by Jeff J Mitchell/Getty Images.

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Dr. Howard J. Shatz is a Senior Economist at RAND Corporation. The views expressed in this piece are his own. This work is not a RAND research product and does not reflect the opinions of RAND's research sponsors, officers, and Board of Trustees.

The Challenge of Net Zero

In December 2015, 196 nations adopted the Paris Agreement on climate change in which they agreed to limit the warming of the atmosphere to no more than 2°C above pre-industrial levels, and preferably to no more than 1.5°C above those levels.[1] The target date for doing this was 2100, 85 years hence.

By late 2021, the atmospheric temperature was estimated to be 1.1°C above pre-industrial levels and was on a trajectory to reach 1.5°C by 2030, highlighting the challenge the world faced.[2]

There is a path to these targets. Specifically, the Intergovernmental Panel on Climate Change has estimated that to reach the 1.5°C target, human-caused emissions of carbon dioxide would need to decline by 45% by 2030 relative to levels in 2010 and would need to reach net zero by 2050.[3]

Reaching net zero will not be easy, especially for poorer countries that may have only limited money to invest in infrastructure or technology changes. This article discusses realistic policy goals that will enable the countries of the Middle East to contribute to the global effort to reach net zero, while also helping their own economies and societies.

As of the end of 2021, 38 countries had made net-zero commitments via a declaration or pledge, a policy document, or in law.[4] Of these, one country designated the target as 2030, one as 2040, one as 2045, 29 as 2050, one as 2053, three as 2060, one as 2070, and one did not specify a date. Including these countries, 112 have made net-zero statements of some sort, and an additional 75 have made some climate-related statement or commitment, such as proposing carbon neutrality or an emissions intensity target, or publishing a policy document containing a goal for zero carbon.

Among MENA countries, five have placed net-zero commitments either in a declaration or pledge or a policy document with years ranging from 2050 to 2060. These include Bahrain (declaration or pledge, 2060), Israel (declaration or pledge, 2050), Turkey (in a policy document, 2053), Saudi Arabia (declaration or pledge, 2060), and the United Arab Emirates (declaration or pledge, 2050). In addition, Lebanon and Yemen have discussed or proposed reaching net zero by 2050.[5]

The next section expands upon challenges to reaching net zero, not only for the countries of the Middle East but also for the world. Following that, the article provides a menu of policy choices that will help meet the net-zero goal and help countries instituting them.

Obstacles to Net Zero

In autumn 2021, the nations of the world gathered in Glasgow, Scotland, in the United Kingdom, for the 26th United Nations Climate Change Conference of Parties (COP), or COP26.[6] As they convened, it was clear that meeting the 2°C or even 1.5°C targets would be difficult. It remains difficult after the conference.

The Difficult Path Before COP26

Under the Paris Agreement, parties agreed to submit Nationally Determined Contributions (NDCs) explaining how they would achieve climate goals. The climate agreement

1. United Nations Framework Convention on Climate Change, "The Paris Agreement," Webpage, 2022.
2. U.S. National Intelligence Council, *Climate Change and International Responses Increasing Challenges to US National Security Through 2040*, NIC-NIE-2021-10030-A, National Intelligence Estimate, October 2021.
3. Intergovernmental Panel on Climate Change, *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-Industrial Levels and Related Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*, 2019, p. 12. The interquartile range for emissions cuts was estimated at 40% to 60%, and the interquartile range for the target date was estimated at 2045 to 2055.
4. Net Zero Tracker, Downloadable Data File "snapshot_2022-01-03_15-05-03.xlsx, 2022. Data downloaded January 3, 2022, directly at https://download.zerotracker.net/csv/snapshot_2022-01-03_15-05-03.xlsx
5. Net Zero Tracker, Downloadable Data File "snapshot_2022-01-03_15-05-03.xlsx, 2022. Data downloaded January 3, 2022, directly at https://download.zerotracker.net/csv/snapshot_2022-01-03_15-05-03.xlsx
6. For information about the conference and its outcomes, see UN Climate Change Conference UK 2021, "31 Oct – 12 Nov 2021, Glasgow, COP26, in Partnership with Italy," Webpage, 2021.

of the Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement (CMA) at COP26 noted that implementation of the pre-COP26 NDCs would result in greenhouse gas emissions in 2030 at 13.7% above the 2010 level.[7] Furthermore, implementation of climate pledges would result in a temperature increase of 2.1°C by 2100, above even the upper target of the Paris Agreement.[8]

One effort to get the world back on track to meeting the Paris climate goals, produced by the International Energy Agency (IEA), defined a narrow path, although not the only path, to success.[9] This path includes substantial economic growth — a global economy in 2030 40% larger than that of 2021 — but more efficient — using 7% less energy.[10] But the pathway defined also illustrates the difficulty of getting there. Meeting those energy goals would require improvements in energy intensity, or the amount of energy used per unit of GDP, of about 4% per year through 2030, more than two-and-a-half times the rate of improvement from 2010 through 2020.[11] The plan would also need $90 billion in public funding to be provided through 2030 for demonstration projects of new energy technologies, when only $25 billion had been budgeted by 2021 through 2030.[12]

There will be other obstacles, including political ones. The phase-out or reduced use of some types of energy will result in job losses, and not all people who lose those jobs will find work in new energy industries.[13] Furthermore, a large share of emissions reductions will involve consumer choices, such as buying electric vehicles to replace cars with internal combustion engines, retrofitting houses, and driving and flying less.[14] So governments will need to design policies that encourage these changes without alienating their populations.

One tangible piece of evidence regarding the challenges is the level of hydrocarbon use in primary energy consumption. *Primary energy consumption* is total energy consumption, including energy used by the energy sector itself (such as that used to generate electricity), losses during transformation from one form of energy to another, and final consumption; it excludes energy used for non-energy purposes, such as hydrocarbons transformed into plastics.[15] In 2015, the year of the Paris Agreement, oil, natural gas, and coal constituted 86.0% of global primary energy consumption, of which oil and natural gas accounted for 56.8%.[16] By 2020, these figures had not fallen by much: oil, natural gas, and coal constituted 83.1% of primary energy consumption, of which oil and natural gas accounted for 55.9%.[17] At this rate of decline, extrapolating on a straight-line basis, oil, natural gas, and coal will still constitute almost 68% of global primary energy consumption in 2050.

Beyond these details, meeting net zero in 2050 will require "a complete transformation of how we produce, transport and consume energy" and "immediate and massive deployment of all available clean and efficient energy technologies."[18] Given the difficulties governments have at moving quickly, let alone the difficulties of international coordination and disagreements about who will finance all of this, staying on this pathway seems difficult.

The Difficult Path After COP26

The COP26 outcomes were a disappointment to many. Specifically, a last-minute change in the CMA agreement

7. Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement, *Glasgow Climate Pact*, Decision -/CMA.3, Advanced Unedited Version, November 13, 2021, Paragraph 25.

8. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 13.

9. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021.

10. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 14.

11. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 66.

12. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 16.

13. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 17.

14. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 17.

15. Eurostat, "Glossary: Primary Energy Consumption," *Statistics Explained*, September 3, 2018.

16. BP p.l.c., *BP Statistical Review of World Energy 2016*, 65th Edition, London, 2016.

17. BP p.l.c., *BP Statistical Review of World Energy 2021*, 70th Edition, London, 2021.

18. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, pp. 13-14.

Photo above: Attendees are pictured during the opening ceremony of the Saudi Green Initiative forum on October 23, 2021, in the Saudi capital Riyadh. Photo by FAYEZ NURELDINE/AFP via Getty Images.

regarding coal brought an apology from Alok Sharma, the president of the COP26 meeting.[19] The draft CMA text called for "*accelerating the phase-out* of unabated coal power and of inefficient subsidies for fossil fuels" [emphasis added].[20] However, in the final version the CMA modified this to "*accelerating efforts towards the phasedown* of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition" [emphasis added].[21]

However, there were other achievements. For example, a coalition of more than 450 financial institutions in 45 countries controlling more than $130 trillion in assets, called the Glasgow Finance Alliance for Net Zero, committed to transform the global financial system to support investments to reach net zero. They estimate that between $100 trillion and $150 trillion in investments will be needed through 2050.[22]

More broadly, the Glasgow Climate Pact, agreed to by almost 200 countries, completed the Paris Agreement

19. "'Deeply Sorry': UK's Sharma Offers Apology for Last-Minute Changes to Climate Deal," Reuters, November 13, 2021.

20. Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement, *Draft CMA Proposed by the President*, Draft Text on 1/CMA.3, Version 12/11/2021 07:13, November 12, 2021, Paragraph 36.

21. Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement, *Glasgow Climate Pact*, Decision -/CMA.3, Advanced Unedited Version, November 13, 2021, Paragraph 36. This language also appeared in paragraph 20 of the Glasgow Climate Pact, the main COP26 conference statement reflecting the views of the members of the United Nations Framework Convention on Climate Change (Conference of the Parties, Glasgow Climate Pact, Decision -/CP.26, Advanced Unedited Version, November 13, 2021).

22. Glasgow Finance Alliance for Net Zero, *The Glasgow Finance Alliance for Net Zero: Our Progress and Plans for a Net-Zero Global Economy*, November 2021.

implementation guidelines, known as the Paris Rulebook.[23] The Pact and associated documents included measures on mitigation, or reducing emissions; adaptation, or helping countries affected by climate change; finance, or marshalling investment to pay for the energy transition; and collaboration, or ways that countries, businesses, and civil society can work together to achieve climate goals. Most importantly for Paris Agreement goals, implementation of pledges made at Glasgow could keep warming below 2°C, and further actions could keep 1.5°C as a possibility.[24]

The next section describes policies that the Kurdistan Region, Iraq, and the Middle East can implement to help meet these goals and to help themselves.

Realistic Climate Policies for the Kurdistan Region, Iraq, and the Middle East

The Middle East faces unusual challenges in meeting any commitments to net zero. On the one hand, MENA is the site of eight low-income and lower-income countries and economies that might have trouble financing climate action.[25] On the other hand, it is home to some of the world's leading energy producers. In 2020, the region accounted for 51.3% of the world's proved oil reserves and 43.4% of the world's proved natural gas reserves.[26] These countries depend on sales of hydrocarbons to fund their government budgets and spur their economic growth. Furthermore, many countries of the region already face climate stress, including droughts that are drying up farm and pasture land and driving rural agriculturalists to cities.[27] These challenges have been summed up by Ali Allawi, deputy prime minister and finance minister of Iraq, and Fatih Birol, executive director of the IEA:

> An energy transition that fails to engage with fossil fuel-producing countries and their needs could have profound implications for regional and international security and the stability of global energy markets. If oil revenues start to decline before producer countries have successfully diversified their economies, livelihoods will be lost and poverty rates will increase. In a region with one of the youngest and fastest-growing populations in the world, economic hardship and increasing unemployment risk creating broader unrest and instability.[28]

Global success on reaching net zero will depend largely on actions by the planet's largest emitters — China, the United States, the European Union, and India — but there are steps the nations of the Middle East can take, with the benefit that many of these steps will improve the finances and economies of these countries regardless of whether the world reaches net zero. External financial assistance can help, but some measures can be taken independently.

The rest of this section provides a ladder of climate change policies that Kurdistan, Iraqi, and regional leaders can consider.

Measures Needed Regardless of Climate Goals

End flaring of natural gas and use it for electricity production or exports. In 2020, Iraq flared 17.2 billion cubic meters of natural gas associated with oil production, second in the world only to Russia. Iraq was second to Russia in 2019 as well.[29] The flaring in 2020 contributed 34.7 million tons of carbon dioxide to the atmosphere, about 20% of all of Iraq's carbon dioxide emissions.

At the same time, while Iraq is using natural gas to generate some electricity, it is also burning crude oil directly at power

23. COP26, *The Glasgow Climate Pact*, UN Climate Change Conference UK 2021, In Partnership With Italy, November 2021.

24. COP26, *The Glasgow Climate Pact*, UN Climate Change Conference UK 2021, In Partnership With Italy, November 2021, p. 8.

25. The countries are Syria and Yemen (low-income), and Algeria, Egypt, Iran, Morocco, Tunisia, and West Bank and Gaza (lower-middle income) according to World Bank classifications for July 2021 through June 2022 (The World Bank Group, "World Bank Country and Lending Groups," Webpage, 2021).

26. BP p.l.c., *BP Statistical Review of World Energy 2021*, 70th Edition, London, 2021.

27. Lizzie Porter, Mohammed Hussein, Amir Ali, Rawaz Tahir, and Staff of Iraq Oil Report, "Climate Change Comes to Iraq," *Iraq Oil Report*, November 17, 2021.

28. Ali Allawi and Fatih Birol, "Without Help for Oil-Producing Countries, Net Zero by 2050 is a Distant Dream," *The Guardian*, September 1, 2021.

29. BP p.l.c., *BP Statistical Review of World Energy 2021*, 70th Edition, London, 2021.

plants, and much of the natural gas comes from Iran.[30] In federal Iraq, this has meant occasional cutoffs of imports and reduced electricity service, especially during peak summer months.[31] Slow progress on improving gas feedstock in the Kurdistan Region has also led to power shortages and increased use of highly polluting generators by residents and businesses.[32] In fact, the Kurdistan Ministry of Natural Resources has given oil field producers an order to cease flaring by late 2022 or early 2023, but it is not clear that this will be effective.[33]

Although gas flaring contributes only about 1% of the world's carbon dioxide emissions, ending it can help meet net-zero goals by 2050. There are contributions beyond just ending flaring, like channeling gas into electricity production, that can reduce carbon emissions from that production by replacing the use of more polluting fuels.[34] And importantly from the standpoint of the Kurdistan Region and all of Iraq, ending flaring and using the gas for electricity generation can save money used for more expensive imports and increase the reliability of electricity generation, improving the population's well-being. Even if there were no environmental benefits, Iraq would benefit from ending flaring and using natural gas to generate electricity, and even exports.

End subsidies of fossil fuel consumption. Middle Eastern countries heavily subsidize the use of fossil fuels. According to data assembled by the International Monetary Fund, explicit energy subsidies — undercharging for the supply costs — for hydrocarbons and electricity in MENA amounted to $479.7 billion, or 33.6% of the world total.[35] This can have pernicious effects. These subsidies constitute an incentive to increase use of fossil fuels. They also can increase the inequality of government benefits, because if wealthier people use more fossil fuels than average, they will get more benefits, even as they need them less. Finally, they are costly to governments and reduce the resources available to pay for infrastructure, education, or support for poorer people.[36]

There are two difficulties with removing subsidies. First, companies and more influential people who receive them will be reluctant to see these benefits disappear. Although a political obstacle, this argument has little merit in a policy decision. More important, even though they benefit unequally, poorer people do benefit from subsidies, and so removal of these subsidies could hurt them.

However, there are policy solutions, including direct support to poorer people, and low pricing for initial small amounts of usage of energy, with the pricing increasing as usage grows. Case studies of subsidy removal in the Middle East show there are a variety of paths to success without sparking social unrest, drawing on policy measures that include information, dialogue, compensation to those most vulnerable or even to the broader population, strong government commitment, and even, in some cases, repression.[37]

In fact, countries of the Middle East have successfully removed subsidies in the past. One of the most dramatic achievements was Iraq's gradual removal of direct subsidies on fuel from 2004 to 2007, with the exception of a small subsidy on imported kerosene.[38] Regionwide, at least nine countries raised

30. U.S. Energy Information Administration, "Iraq," Last Updated February 24, 2021.

31. Lizzie Porter and Staff of Iraq Oil Report, "Iraq Seeks to Diversify Power Imports as Iran Tightens Supply," *Iraq Oil Report*, December 8, 2021.

32. Lizzie Porter, Rawaz Tahir, and Staff of Iraq Oil Report, "$4+ Billion Debt Compounds Kurdistan's Electricity Challenges," *Iraq Oil Report*, December 12, 2021.

33. Lizzie Porter and Rawaz Tahir, "Kurdistan Gives Oil Companies 18-Month Deadline to End Gas Flaring," *Iraq Oil Report*, July 29, 2021.

34. Jennifer Hiller and David Hodari, "How Far Have We Really Gotten with Alternative Energy?" *Wall Street Journal*, November 10, 2021; U.S. Energy Information Administration, "Natural Gas and the Environment," *Natural Gas Explained*, Last Updated December 8, 2021.

35. Ian Parry, Simon Black, and Nate Vernon, "Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates," IMF Working Paper WP/21/236, International Monetary Fund, September 2021; International Monetary Fund, Fiscal Affairs Department, *Energy Subsidy Template*, Database, September 2021.

36. Amin Mohsen-Cheraghlou, "Fossil Fuel Subsidies and Renewable Energies in MENA: An Oxymoron?" Middle East Institute, February 23, 2021.

37. Georgeta Vidican Auktor and Markus Loewe, "Subsidy Reforms in the Middle East and North Africa: Strategic Options and Their Consequences for the Social Contract," Discussion Paper 12/2001, German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE), Bonn, 2021.

38. International Monetary Fund, *Iraq: First Review Under the Stand-By Arrangement and Financing Assurances Review—Staff Report; Staff Supplement; Press Release on the Executive Board Discussion; and Statement by the Executive Director for Iraq*, IMF Country Report No. 08/303, September 2008, p. 12.

prices on energy products between 2014 and 2017.[39] Removal or reduction of subsidies would help move emissions to net zero by reducing incentives for overuse of hydrocarbons. But perhaps more important from the point of view of Middle Eastern governments and the well-being of the populations of the region, subsidy removal or reduction would improve the ability of governments to fund infrastructure, education, health care, and social protections.

Measures That Would Be Beneficial Regardless of Climate Goals

Improve project evaluation and management. The Glasgow Finance Alliance for Net Zero is one effort to mobilize project finance to meet global climate goals. The members of that coalition control assets of $130 trillion.[40] While increased public financing will be needed, it is private finance that is expected to provide the bulk of the capital for the energy transition.[41]

Although much capital will be unleashed, it will not be unlimited, and there may be many restrictions on its use. On the one hand, past climate finance goals have not been met, so money may be more limited than expected. On the other hand, the money actually spent has often not succeeded in funding projects that meet climate goals and has been confronted by waste, corruption, and inefficiency.[42] Investors will have to make choices.

Selecting the Kurdistan Region, Iraq, or the Middle East for projects will be made easier if there are assurances that they will be managed efficiently and that bureaucratic procedures — such as visas for specialist workers or supervisors, ease of importing raw materials, and honest inspections of construction sites — will be supportive. But even absent the achievement of climate goals, the region will benefit from better project management. Accordingly, improving project management is a policy that will achieve multiple goals and can be part of the region's steps toward achieving net zero.

Retrofit buildings and train people to accomplish this. One milestone in the IEA's roadmap to net zero by 2050 is the retrofitting of 50% of existing buildings by 2040.[43] Accomplishing this will require skilled tradespeople of all types, skills that are currently lacking in the Kurdistan Region, Iraq, and even much of the Middle East.

At the same time, the region faces an employment problem. In 2020, the employment to population ratio in MENA was only 40.9%, the lowest of any region in the world and well below the global mark of 54.9%.[44] It was even lower excluding the high-income countries of the region. In addition, the unemployment rate was 10.6%, the highest of any region and well above the global rate of 6.5%.[45] Underperforming labor markets are considered to be one cause of the Arab Spring protests that rocked the region in 2011.[46]

Accordingly, establishing training programs to boost skills needed to retrofit buildings will accomplish two goals. Not only will they help the Middle East contribute to meeting global climate goals, but they can also help create much-needed new job opportunities in the region.

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39. Jim Krane and Francisco J. Monaldi, *Oil Prices, Political Instability, and Energy Subsidy Reform in MENA Oil Exporters*, Center for Energy Studies at James A. Baker III Institute for Public Policy of Rice University, and Qatar Leadership Center, June 2017. The report says that 10 countries have changed policies, but shows changes only for Algeria, Egypt, Iran, and the six members of the Gulf Cooperation Council.

40. Glasgow Finance Alliance for Net Zero, *The Glasgow Finance Alliance for Net Zero: Our Progress and Plans for a Net-Zero Global Economy*, November 2021.

41. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 21.

42. Leslie Hook and Joanna S. Kao, "COP26: Where Does All the Climate Finance Money Go?" *Financial Times*, November 3, 2021.

43. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 20.

44. World Bank, *World Development Indicators*, Online Database, Last Updated December 16, 2021. The specific variable is "Employment to population ratio, 15+, total (%) (modeled ILO estimate)," series code SL.EMP.TOTL.SP.ZS.

45. World Bank, *World Development Indicators*, Online Database, Last Updated December 16, 2021. The specific variable is "Unemployment, total (% of total labor force) (modeled ILO estimate)," series code SL.UEM.TOTL.ZS.

46. Hafez Ghanem, *The Arab Spring Five Years Later: Toward Greater Inclusiveness*, Washington, D.C.: Brookings Institution Press, 2016; Elena Ianchovichina, *Eruptions of Popular Anger: The Economics of the Arab Spring and Its Aftermath*, MENA Development Report; Washington, D.C.: The World Bank, 2018.

Current Opportunities That Will Help Meet Climate Goals

Invest in alternative energies. While the Middle East is an oil and gas powerhouse, it could also be a renewable energy powerhouse, notably solar and wind. These technologies already exist and policy support can drive their adoption.[47] Furthermore, their costs as reflected by levelized cost — a measure of the revenue required to build and operate electricity generating infrastructure over a specific cost-recovery period — have declined dramatically.[48] The levelized cost of solar photovoltaic systems registered $381 per megawatt-hour (MWh) in 2010, but had fallen to $45 per MWh by 2021; likewise, the levelized cost of onshore wind generation fell from $89 per MWh in 2010 to $48 per MWh in 2021. By contrast, the levelized cost of coal-fired generation was about $55 per MWh in 2021.[49] Nuclear remains more expensive, but generates electricity without emissions and does not depend on the sun shining or the wind blowing.

The MENA region has specific advantages relating to both solar and wind.[50] A large share of the region receives daily direct normal irradiation from the sun above 5 kilowatts per hour, the level at which generation from solar technologies is most economically justifiable. One estimate suggests that the region would be technically capable, if not economically capable, of producing the equivalent of more than half of global electricity demand via solar generation. For wind generation, minimum average wind speeds of greater than 5 meters per second are needed at a height of 50 meters, and this holds true for more than 75% of the region. Although a full build-out of all solar and wind capacity is unlikely, it is clear there is great room for expansion of the deployment of these generating technologies.

47. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 14.

48. Jennifer Hiller and David Hodari, "How Far Have We Really Gotten with Alternative Energy?" Wall Street Journal, November 10, 2021; U.S. Energy Information Administration, *Levelized Costs of New Generation Resources in Annual Energy Outlook 2021*, February 2021.

49. Jennifer Hiller and David Hodari, "How Far Have We Really Gotten with Alternative Energy?" *Wall Street Journal*, November 10, 2021.

50. This paragraph draws directly from Amin Mohsen-Cheraghlou, "Fossil Fuel Subsidies and Renewable Energies in MENA: An Oxymoron?" Middle East Institute, February 23, 2021.

Future Opportunities Now

Embark on research and deployment of new technologies. Notably, all technologies that will be needed to reach net zero by 2050 are already under development or exist in the demonstration or prototype phase, but major innovation efforts are needed to bring them to market.[51] A stretch policy goal for the region could be to join research consortia focused on these technologies, fund national or regional research institutes, and deploy and learn from demonstration projects. This could also help improve higher education and scientific research. Efforts to improve exploitation of natural resources were a factor contributing to the establishment and growth of some of the premier universities in the United States.[52]

Among the future technologies that could be explored in the Middle East are more efficient batteries, carbon capture, direct-air carbon capture, hydrogen production, and even space-based solar. For example, the region could use its natural gas to produce so-called blue hydrogen using carbon-capture methods to lower the negative environmental effect of production.[53]

Some of these new technologies will need old technologies familiar to the Middle East, such as pipelines and storage facilities. Pipelines will be needed to transport captured carbon dioxide and storage facilities will be needed to retain the carbon dioxide before use. Pipelines will also be needed to move hydrogen from its point of production to its point of use, and this can include repurposing existing gas pipelines.[54] As with the development of all future technologies, even those in prototype stage, the correct investments are uncertain and not obvious. But a portfolio approach, with investments in a variety of efforts, could pay off for the Middle East region in a variety of ways.

51. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, p. 15.

52. Gavin Wright and Jesse Czelusta, "Why Economics Slow: The Myth of the Resource Curse," *Challenge*, Vol. 47, No. 2, March/April 2004, pp. 6-38.

53. Jennifer Hiller and David Hodari, "How Far Have We Really Gotten with Alternative Energy?" *Wall Street Journal*, November 10, 2021.

54. International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021, pp. 15, 113.

Conclusion

Numerous opportunities abound for the Middle East to institute realistic policies that will help the world get to net zero at some point in the future, if not by the unlikely goal of 2050. Even better for the region, many of these policies will improve domestic economies and place public finances on sounder footing.

However, they are not a free lunch — although the payoff might be high in the medium and long terms, there will be upfront costs. Financing will be needed to help pay for new energy technologies, to help build skills of the workforce that will work on these new technologies, and to retrain or provide support for workers who might be displaced by the transition.[55]
To achieve this, the countries of the region will have to ensure that international investors have confidence in national abilities to implement projects and programs. But there also could be greater scope for regional cooperation, with the wealthier resource-producing countries helping fund efforts throughout the region, not out of altruism, but from the self-interest of gaining a return on their investment and supporting a more economically vibrant Middle East.

55. Ali Allawi and Fatih Birol, "Without Help for Oil-Producing Countries, Net Zero by 2050 is a Distant Dream," *The Guardian*, September 1, 2021; International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 4th Revision, October 2021.

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THE GCC TRANSITION FROM HYDROCARBON-BASED TO NET-ZERO EMISSIONS ECONOMIES

AISHA AL-SARIHI

In October 2021, just days before the 26th Session of the Conference of the Parties (COP) to the U.N. Framework Convention on Climate Change (UNFCCC), three Gulf Cooperation Council (GCC) states announced their intent to commit to achieving net-zero emissions by mid-century: Bahrain, Saudi Arabia, and the United Arab Emirates (UAE). The announcements came amid mounting pressure from the U.K.'s COP 26 Presidency in the run-up to the climate conference in Glasgow for all countries to join the global net-zero commitment, suggesting that COP 26 is the only chance for the world to set a path to keeping 1.5°C warming within reach. It also followed the U.S. re-entry to the Paris Agreement and the Biden administration's determination to showcase U.S. climate action leadership. The administration assigned a special presidential envoy for climate, John Kerry, who paid a visit to several countries around the world, including Saudi Arabia and the UAE. The UAE's announcement of its intent to host COP 28, back in April 2021, was another driver, as a potential COP host country looking to set an example both regionally and globally. This has put pressure on neighboring Saudi Arabia to announce a net-zero target as well, as Riyadh has also been aiming to take on a regional climate leadership role through initiatives like the Middle East Green Initiative.

Vowing to continue using all hydrocarbon reserves, do these net-zero ambitions signal a real commitment to transition from hydrocarbon-based to net-zero economies? And what does achieving net-zero emissions mean for hydrocarbon-rich GCC states, characterized by their desert environments?

What is Net Zero?

Net zero refers to the process when all greenhouse gas (GHG) emissions released by humans are counterbalanced by equal removal of these emissions from the atmosphere in a process known as carbon removal. While net-zero emissions do not mean zero emissions, it does mean striving to reduce all human-caused emissions as close to zero as possible and then using carbon removal techniques like afforestation or direct air capture and storage to remove any remaining GHGs. The call for net-zero emissions has gained momentum after the release of the Intergovernmental Panel on Climate Change (IPCC) 2018 special report "Global Warming of 1.5°C," which emphasized that in order to achieve the Paris Agreement goal of keeping 1.5°C warming within reach, GHG emissions will need to drop by half by 2030 and reach net zero by mid-century. This call has been re-emphasized again with the release of the IPCC 6th Assessment Report and in the run-up to COP 26.

Which Sectors Will be Most Affected By the Net-Zero Target?

According to the Net Zero Tracker, currently 136 countries have set net-zero targets representing 88% of global GHG emissions and 90% of global GDP. While there is uncertainty on how fast countries will achieve their net-zero targets, and while there is no consensus among studies on how these targets can be achieved, some studies do suggest that for global net zero to be achieved, global energy demand will need to be reduced by 8% from today's levels, while by 2050 90% of global electricity generation should come from renewables and the share of electric vehicles (EVs) will need to reach about 86%. These aspirational targets cannot be achieved without collective global action, including from the GCC.

In the GCC, the energy sector is the major source of GHG emissions (Figure 1a), and its three highest-emitting sub-sectors are electricity generation, industry, and transportation (Figure 1b). Technically, the GCC countries have great potential to decarbonize these major emitting sectors. Firstly, advancing

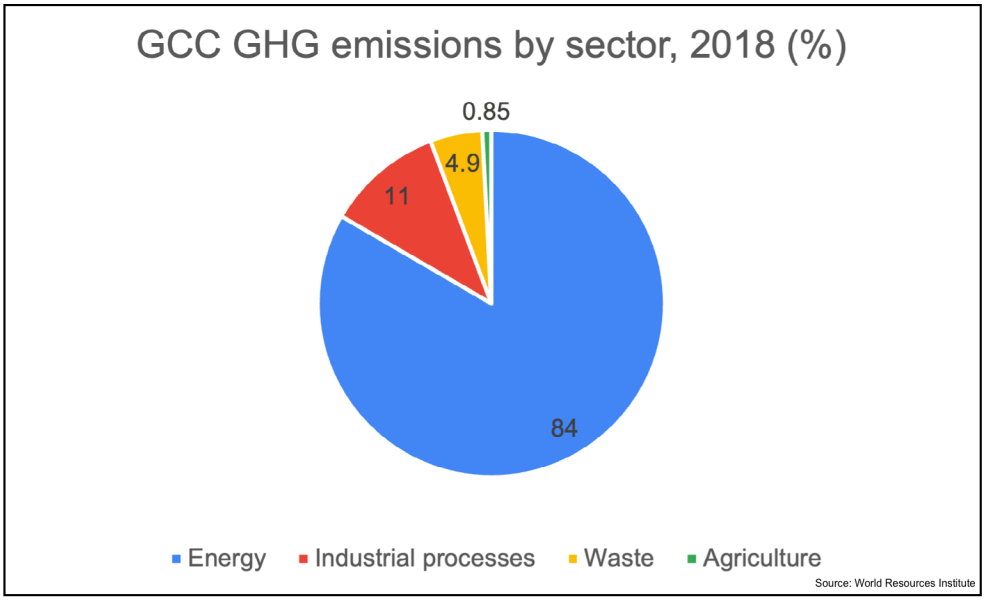


Figure 1a

the efficiency of all sectors is low-hanging fruit when it comes to reducing their energy use and emissions. When it comes to electricity generation, the GCC states are endowed with an abundance of renewable energy sources, like solar, wind, waves, and geothermal, and they have a great potential to expand the development of renewable energy. Driven by several factors, including the need to free up oil and gas for export or other industrial uses instead of burning them for power generation, the region has already shown a growing interest in adopting renewable energy technologies. The total renewable energy installed capacity increased from 17 megawatts (MW) in 2011 to 3,271 MW in 2020. Regardless, compared to oil and gas, the contribution of renewable energy in the region's electricity generation mix remains relatively negligible (Figure 2).

Electrifying the GCC's hard-to-abate sectors like industry and transportation will be technically challenging, at least in the short term, especially given that renewable energy is still underdeveloped. As both the UAE and Saudi Arabia remain committed to boosting their oil and gas production and using all their hydrocarbon reserves, the prospects of carbon capture, utilization, and storage (CCUS) technology as well as the development of cleaner fuel alternatives such as blue and green hydrogen are crucial to decarbonizing the industrial and transport sectors. Both Saudi Arabia and the UAE have taken the first steps to demonstrate the viability of CCUS and hydrogen production. Saudi Arabia currently has two CCUS plants: Saudi Aramco's Uthmaniyah CO_2-Enhanced Oil Recovery (EOR) Demonstration Project, whose purpose is to aid oil recovery in the Ghawar oilfield, and the Saudi Basic Industries Corporation's Jubail CO_2 to chemicals plant, which has the capacity to cut 500,000 tons of CO_2 per year and use it to produce methanol and urea. The UAE's al-Reyadah CCUS project, which is a joint venture between the Abu Dhabi National Oil Company (ADNOC) and Masdar, aims to capture CO_2 emitted from the Emirates Steel factory and transfer it to ADNOC's oil fields in Rumaitha and Bab for EOR. In August 2020, Neom announced a $5 billion Saudi green hydrogen plant powered by 4 gigawatts (GW) of renewable energy, which will be the world's biggest hydrogen project announced so far. The plant, jointly owned by Saudi Arabia's ACWA Power and Air Products, aims to produce 650 tons of hydrogen by 2025. The UAE is planning a $1 billion plant at Khalifa Industrial Zone Abu Dhabi (KIZAD), led by Helios Industry. ADNOC is also planning a major blue hydrogen project with Fertiglobe that will produce 1 million tons of ammonia per year. In terms of hydrogen, in July 2020, Saudi Arabia announced a $5 billion Saudi green hydrogen plant, set to be located in Neom city (north of the Red Sea) and powered by 4 GW from renewables. Jointly owned by Saudi Arabia's ACWA Power and Air Products, the plant aims to produce 650 tons of hydrogen by 2025 for export to the international market. Also, in 2022, the Saudi government signed several memoranda of understanding with local partners to demonstrate the viability of using hydrogen in the transport sector. The UAE released its hydrogen

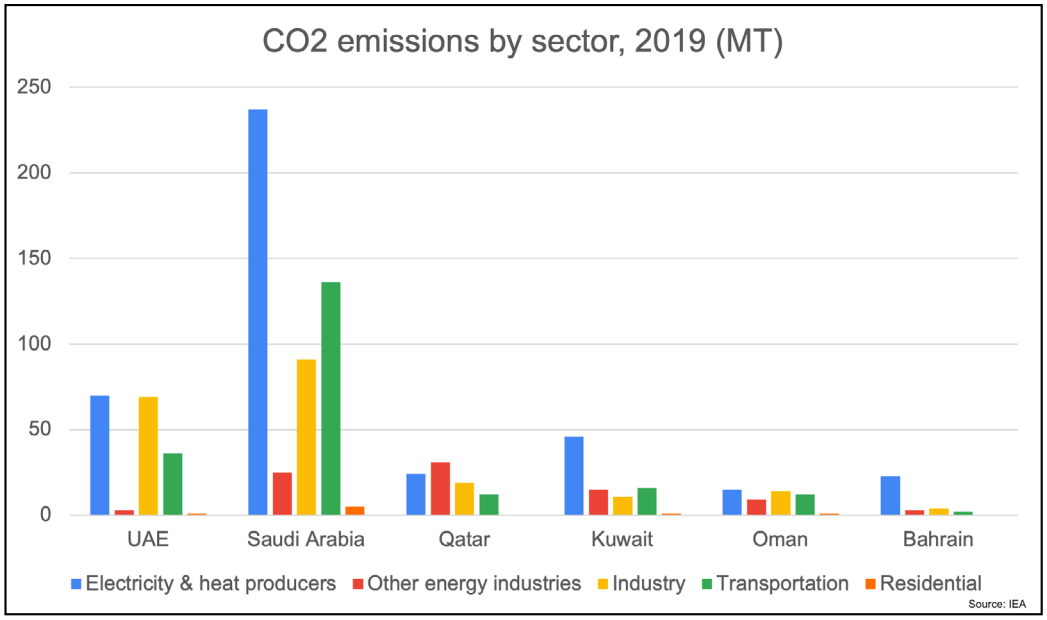


Figure 1b

roadmap in 2021, with an aspiration to capture 25% of the global low-carbon hydrogen market by 2030. To facilitate the implementation of this roadmap, in 2021, the Abu Dhabi Hydrogen Alliance was formed, made up of ADNOC, the Abu Dhabi state-owned investor Mubadala, and the state-owned holding company ADQ.

Achieving net-zero targets implies scaling up the implementation of CCUS and hydrogen development, beyond administration projects, in order to reduce emissions as quickly as possible.

Where Do the GCC States Stand Today in Their Net-Zero Targets?

Along with emerging clean energy technology investments, the three GCC states with net-zero declarations also have in place emissions reduction pledges and initiatives that pave the way for achieving their mid-century net-zero targets. For example, in its latest nationally determined contributions (NDCs) submitted to the UNFCCC, the UAE pledges to reduce its GHG emissions by 23.5% by 2030, relative to the business-as-usual scenario, and Saudi Arabia aims to reduce, avoid, and remove GHG emissions by 278 million tons of CO_2 equivalent annually by 2030. Targets that feed into meeting these emissions reduction ambitions have been put in place as well, including Bahrain's target of generating 5% of its electricity from renewables by 2025 and 10% by 2035, Saudi Arabia's goal to generate 50% of its electricity from renewable energy sources and 50% from natural gas by 2030, and the UAE's National Energy Strategy 2050 that aims to produce 50% of its energy needs from clean sources (44% from renewable sources and 6% from nuclear sources) and reduce carbon emissions by 70% by 2050.

Additionally, in pursuit of its climate mitigation ambitions, the UAE released its National Climate Change Plan of the UAE 2017–2050, which lays out the objective of reducing its GHG emissions in a way that does not interfere with its economic growth. Since its G20 Presidency in 2020, Saudi Arabia has adopted the idea of the Circular Carbon Economy, a technology-focused concept that calls for taking advantage of all available clean energy technologies to tackle emissions without giving preference to one technology over another or putting restrictions on specific sources of energy like fossil fuels. However, setting ambitious goals and plans is one thing, delivering on them another. Getting to GCC pathways to net zero will require detailed cross-sectoral plans that include concrete proposals, interim targets, timelines, and transparent reporting. Importantly, the detailed plan should expand beyond listing the technologies that help decarbonize each economic sector by specifying the needed policy interventions and regulations as well as the amount of investment needed and how the net-zero plan will be funded. For instance, the International Energy Agency's "Net-Zero by 2050" report

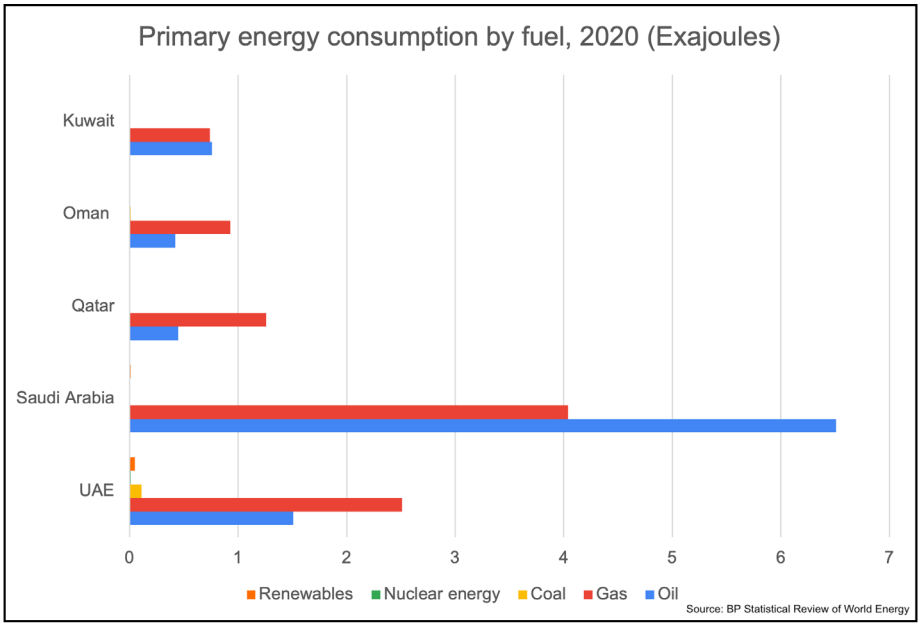


Figure 2

estimates that annual clean energy investment needs to more than triple, to over $4 trillion per year, between now and 2030. That's roughly equivalent to the nominal GDP of Germany each year. Over the next three decades, this represents a total that's well over $100 trillion in clean energy investment. Similar estimates need to be made regarding the investment the GCC states will require to achieve their mid-century targets. These details are currently missing in both the UAE's and Saudi Arabia's announced climate mitigation frameworks. Without a detailed strategy to achieve their emissions reduction targets and ambitious net-zero objectives, the three GCC states will be on track to increasing their GHG emissions between 4% and 6% annually based on historical emissions growth rates.

Offsetting emissions techniques and policies should also be detailed in the GCC net-zero plans. Nature-based solutions like planting trees and advancing coastal ecosystems such as mangroves, seagrass meadows, and tidal marshes have gained attention across the GCC states. In March 2021, Saudi Arabia announced two nature-based solution initiatives: the Saudi Arabia Green Initiative and the Middle East Green Initiative. These are aimed at planting 10 billion trees within Saudi Arabia during the coming decades, with hopes of increasing the area covered by trees by 12 times from current levels and reducing carbon emissions by more than 4% of global contributions, in addition to planting 40 billion trees across the Middle East region. For a region classified as the most water-stressed on Earth, these nature-based solutions should be approached cautiously.

What Lies Ahead?

Achieving a net-zero emission economy in the GCC states, characterized by high dependence on hydrocarbon resources — both in terms of export revenues as well as domestic energy needs — and a fragile desert environment, is not impossible but highly complex. Serious domestic commitment to net-zero economies would require structural transformations of a range of economic sectors, beyond a focus on investing in cleaner technologies, ambitious targets, and initiatives. It would require further infrastructure investments that accommodate new, cleaner energy technologies as well as changes and reforms to domestic institutions and policies that, if not managed properly, might consequently jeopardize the social contract under which rentier states operate, creating windows for domestic social unrest.

Changes in social behavior will be another dimension that needs to be integrated into GCC net-zero economic transition pathways. Rentier state-society relations have enabled the creation of a set of social and cultural norms, including those associated with patterns of consumption driven by access to inexpensive water, electricity, and transportation fuel, or people's perceptions of public transport. Changing such social and cultural norms requires the right policy interventions as well as further investments in education systems to assist top-down governmental net-zero efforts.

Additionally, creating an enabling environment for innovations should be at the heart of net-zero pathways. The GCC countries rely heavily on importing clean energy technologies from other countries while most imported technologies do not necessarily fit the region's special environmental conditions and need to be adapted to suit them. Localization of technologies will help avoid the cost of importation and adaptation of tech while enhancing the competitiveness of the GCC states in a hydrocarbon-constrained world.

Essentially, as the GCC states plan to achieve net-zero emission economies, these plans should not be treated as separate from their regular economic agenda, including the yearly planning of state budgets specifying state earnings and spending. The financing of net-zero economies should be at the heart of states' budgets and not left to ad hoc decision-making.

Finally, from a scientific point of view, GCC states will benefit from joining global forces in achieving net-zero emissions, as this will not only help to avoid the catastrophic impact of climate change in other parts of the world, but also at home as well.

Dr. Aisha Al-Sarihi is research fellow at the National University of Singapore's Middle East Institute and a non-resident fellow at the Arab Gulf States Institute in Washington. Her areas of research interest include the political economy of environmental sustainability, energy policy, renewables, and climate policies, with a focus on the Arab region. She is a former research associate at KAPSARC, visiting scholar at Georgetown University's Center for Contemporary Arab Studies, the Arab Gulf States Institute in Washington, and a research officer at the London School of Economics and Political Science Middle East Centre. The views expressed in this piece are her own.

REALISTIC REGIONAL POLICY GOALS FOR REACHING NET ZERO BY 2050

MATTHEW M. ZAIS

Regional peace and the effects of climate change were both on the agenda during the Middle East Peace and Security (MEPS) Forum held in Dohuk, Iraq in November 2021. One topic of discussion centered around realistic regional policy goals for reaching net-zero emissions by 2050. For Iraq and the Kurdistan Region, the term "realistic" was important, particularly as the country grapples with growing energy demand within a region and world that is rapidly evolving. For Iraq and the Kurdistan Region to emerge from its most recent security and economic crises, it will have to reform its current economy with a focus on available and scalable resources. This must include effectively managing its current oil production and reserves; implementing a market-based gas capture, utilization, and export strategy; and carrying out economic reforms to reduce the cost of capital and incentivize greater foreign investment.

The Kurdistan Region's current economy and its ability to withstand budget disputes with Baghdad is directly linked to its oil-based economy. In many ways the region's oil exports tell an astonishing story of economic development. Only 14 years ago the Kurdistan Region exported no oil and was economically dependent on Baghdad and international assistance. By offering international oil companies (IOCs) a globally competitive production-sharing contract model, the Kurdistan Region is now producing over 400,000 barrels of oil per day, all without investing any domestic capital. However, despite this remarkable economic transformation and its vast reserves, the region's oil production, investment, and thus revenues have plateaued. Had the Kurdistan Region maintained its production levels from April into November 2021 when prices rose above $80/barrel, it would have reaped at least $75 million in additional monthly revenues. The region's production plateau is a result of several factors, including lost export volumes following the Kurdistan independence referendum, decreased investments from debt obligations and withheld IOC payments in 2019 and 2020, and production delays due to the impacts of COVID-19.

Internal Kurdistan Regional Government (KRG) reforms were discussed at the MEPS Forum, which highlighted how many parts of the government are becoming digitized, and in the process eliminating petty and systemic corruption and increasing government revenue. However, these reforms, absent a strategy to increase oil and gas investment, are akin to repairing the exterior of an aging race car while forgetting to maintain and upgrade the engine. Despite the push for energy transitions away from fossil fuels, oil-rich nations are developing strategies to maximize the economic benefit from these resources while adopting cleaner energy sources for the future. The Kurdistan Region will need a strategy for both. It could unlock greater economic potential and accumulate necessary reserves for economic diversification by ensuring this oil production is strategically managed.

While the KRG must refocus attention on the engine of its economy, it must also develop its gas resources, which will be key to the region's future economy and connection with its neighbors. There is little time to waste to implement such a strategy. Gas in Iraq, just as in the rest of the world, is a critical bridge resource for growing energy demand. Current gas demand for the Kurdistan Region's power and industrial sectors is estimated to be 11 billion cubic meters (bcm) per year. However, the Kurdistan Region currently produces approximately 5.3 bcm annually from only two fields. This supply-demand gap either goes unmet or is supplemented through liquid fuel. Demand, primarily from the power sector, is expected to reach 15 bcm by 2030 and 21 bcm by 2040. With the right strategy in place and through the development of its associated and non-associated natural gas resources, the region could produce approximately 40 bcm per year of marketable gas by the mid-2030s. This would add at least $1.2 billion of direct annual revenues, while creating a multiplier effect for industrial output, employment, and per capita GDP. To realize this developmental potential, the Kurdistan Region will also have to implement market structures that incentivize the necessary investment.

Photo above: An employee walks at the Hammar Mushrif new Degassing Station Facilities site inside the Zubair oil and gas field, north of the southern Iraqi province of Basra on May 9, 2018. Photo by HAIDAR MOHAMMED ALI/AFP via Getty Images.

If the KRG is able to implement a comprehensive gas strategy, it would have several profound impacts. First, as noted, it would reduce the region's debt burden and increase revenues. This development, like that for the oil sector, will depend on external markets and capital. Therefore, the KRG will also have to reverse current trends that make the cost of capital in the Kurdistan Region an outlier, rather than globally or regionally competitive. Since 2014, share prices for Kurdistan Region operators have suffered more downside (-68%) than Brent (-30%) and following Brent price recoveries since June 2020, share prices have not recovered (53%) at the same rate as Brent (78%), according to Lambert Energy Advisory. To attract the necessary capital, the Kurdistan Region will have to implement policies that make it globally competitive.

Along with reforms to reduce the cost of capital, a gas strategy that enables gas-to-power sales is an additional economic opportunity for the domestic and export markets that must be seized in the short term. The Kurdistan Region currently has excess electricity generation capacity, largely from gas turbines, but lacks the necessary gas supplies. As a result, there is widespread reliance on fuel oil generators, which are both inefficient and a key contributor to emissions, and excess generation has to be shed and contributes to power sector volatility. Not only could domestic gas production supplant heavy fuel oil and maximize generation capacity, but power generation could be delivered along existing transmission lines that are connected with federal Iraq. Subsidized diesel fuel for industrial power generation also holds back the Kurdistan Region's gas-to-power potential.

Finally, the environmental benefits from developing its gas resources would be substantial. There are few actions that Iraq could take to improve its environmental impact more than reducing and eventually eliminating gas flaring. Only Russia flares more gas than Iraq and it remains the only country in the world that is simultaneously a net gas flaring and gas importing country. At the 26th annual U.N. Climate Change Conference in Glasgow in November 2021, Iraq's Nationally Determined Contribution target was declared to be 2% for the public sector and 15% for the private sector by 2030. These are modest objectives, particularly for a country that is as affected by the downstream water policies of its neighbors as Iraq is, not to mention the world's second largest gas flaring nation. According to the World Bank, Iraq burns 70% of the total natural gas produced in the country, which was nearly 17.37 billion cubic feet last year. It then somewhat inexplicably imports the same volume from Iran for above-market rates. Solving Iraq's gas flaring and developing the KRG's gas market would do more than any other measure to reduce regional carbon emissions. In the Kurdistan Region alone, reducing gas flaring and replacing oil-based power generation with natural gas will reduce CO_2 emissions by more than 10 million metric tons per year.

In summary, the Kurdistan Region will have to strategically manage its current and future oil production and investment while simultaneously and rapidly implementing a strategy to develop its natural gas resources. This would shore up government revenues and reserves, close growing gaps in power supply and demand, require reforms that would reduce the cost of capital, and set an example for the rest of Iraq's CO_2 emissions reductions. Developing its gas resources would also become the next chapter in the Kurdistan Region's economic transformation, particularly if this strategy robustly develops to meet local demand and enables connections to federal Iraq and exports to Turkey. In the near term, it is possible for the Kurdistan Region to transfer natural gas supplies to federal Iraq as soon as 2023 with existing infrastructure, and through a main trunkline by 2025. The Turkish market remains dependent on Russian and Iranian gas supplies and some of these contracts expire as soon as 2026. Furthermore, the Kurdistan Region, through increasing the cost of capital and becoming a regional leader in emissions reductions, could also attract EU funding so that these gas resources could further diversify southern European supplies. The KRG has embarked on ambitious internal governance reforms, but it should refocus on maintaining and improving the engine of its economy. In doing so, it can realize both its economic and environmental potential.

Dr. Matthew Zais is a Non-Resident Senior Fellow at the Atlantic Council and the Vice President for Government Affairs at HKN Energy. Previously he served as the Director for Iraq on the National Security Council and as Principal Deputy Assistant Secretary of Energy for International Affairs. The views expressed in this piece are his own.

YOUTH AND THEIR PROSPECTS IN IRAQ

SALAM JABBAR SHAHAB

A strong society is dependent upon two variables: The youth population and the size of the economy. Diversification in the mindset and economic practices of a nation creates opportunities for youth by generating a greater number and variety of jobs. In Iraq, there are fundamental problems with this formula, however, alongside a preference for more traditional, often unskilled roles. The Iraqi economy no longer satisfies youth demands by supplying jobs, as the rentier system is under immense pressure. The country is now at a crossroads: Either the state will pursue reforms to diversify the economy or it will face a dire economic crisis and escalating social unrest. The main issue that needs to be addressed when it comes to reforming Iraq's economy is the worn-out rentier model. Tackling this problem is made more difficult by political mismanagement, which creates additional hurdles to addressing economic challenges and establishing viable and economically sustainable conditions.

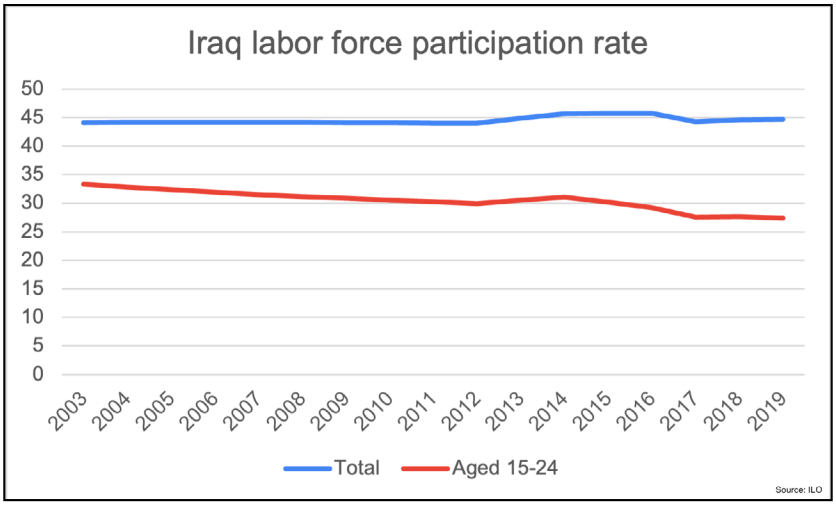
Obstacles to Economic Diversification

Economic diversification would help to provide numerous opportunities for job creation and aid in establishing a resilient economy better able to deal with fluctuations and reduce the exhaustion of natural resources. At present, there is only one revenue stream in Iraq: oil. More than 50% of Iraq's GDP came from natural resources as of 2011, although this has fallen since. The public sector also accounts for a disproportionate share of the total labor force of 11-12 million people, with 3-4 million people working in the public and government sector and 6-7 million in the private sector. Iraq's private sector plays a limited role in economic development, accounting for just 29% of GDP. It is an economic parasite, depending on government expenditures and making an insignificant contribution to economic development. Even worse, more than 90% of those in the private sector work informally, meaning data on its role in employment and economic development is not shared with the government. This means that 6-7 million people work without pensions, social welfare, or any other type of benefit. The private sector needs reorganizing, and the government must have access to private sector data so it can create appropriate policies.

Unfortunately, informal employment affects job opportunities for youth. Most prefer to work in the informal sector to avoid being tracked by the authorities, since they believe the government will deny them work licenses. Although youth account for most of the workers in the private sector, the government does not have the ability to absorb them in the public sector, as this would entail creating new jobs in what is an already bloated sector. Previous governments failed to assimilate youth into the country's economic structures, largely as a consequence of the features of the existing political order. The political system relies on patronage and thus compromises any efforts at economic reform, as a result of the perception that broad institutional reform will reduce the power of political parties and undermine the loyalty of their supporters.

Today, the principle of governing in Iraq is about the monopolization of power and centralization of authority enabled by an ethno-sectarian quota system, wherein officials view institutions not as serving the populace but as pawns in a political game of chess. For several decades, the quota system has played a profound role in shaping the Iraqi state's institutional culture. It has created a hostile environment for starting a business, ensuring Iraq's position at the bottom of the World Bank's Ease of Doing Business rankings. This is also a result of Iraqi leaders prioritizing short-term political gains over long-term economic and societal well-being, despite the fact that delaying reforms has wide-ranging, detrimental consequences for Iraqi society. Officials have neither the desire nor the will to change this, however.

Iraq's increasing population is also affecting the state's capacity to respond to rising socio-economic demands, creating added pressure. However, the economy is not equipped to handle the growing population. While the country's total population is around 40 million, only 11-12 million are



part of the labor force. This creates a problem as the number of Iraqi youth continues to grow. Youth who work in micro, small, and medium-sized enterprises (MSMEs) comprise between 60% and 70% of the private sector, per 2019 IMF figures, but these jobs are typically not sustainable. Bank loans are granted to large private or public projects, rather than small ones; according to the World Bank, only 9% of all loans went to SMEs in 2015. Banks claim that loans to smaller enterprises are not profitable and installments paid unreliably.

Including Youth in the Economy

The Iraqi government must take steps to address youth frustration. A major step toward reducing their dissatisfaction would be to elevate their agenda within the government. Iraqis aged 15 to 24 make up 70% of the country's workforce, according to 2020 figures from the Central Statistics Organization. However, most have not been provided the opportunity to join the public sector or to work in a formal capacity in the private sector. The unemployment rate among youth increased by a staggering 27.2% in 2020, according to the International Labor Organization. Therefore, improving economic conditions requires not only better data collection, but also using this data to properly correct, check, and forecast economic trends. This data would promote transparency and good governance, with more efficient and effective resource allocation to enable long-term investments.

Investment in the labor force is also vital to creating market-based competitiveness. Though improving the skills of the labor force is a basic issue, most Iraqi workers are unskilled, placing them in the bottom half of rankings for productivity. Furthermore, there are problems with managing and incentivizing workers, as the failure to develop vocational training prevents the market from expanding to absorb young workers. Another concern is that most university graduates cannot find suitable jobs, resulting in a rising unemployment rate among this group. Improving their employment opportunities requires urgent financial measures, such as increased access to financing, wage subsidies, and skills development in business management — with support in productivity and innovation, investment in education, and scientific research. Improving the financing of SMEs and agriculture and developing strategies for public works are also important.

In terms of the financial sector, spending strategies need to be re-examined and structural measures implemented. The current method of managing the public financial sector is imposing a burden on Iraq's already strained financial resources. New terms and principles regarding financial inclusion must be imposed to address socio-economic grievances and demands, tackle wider economic challenges, and move the state toward innovative, long-term, sustainable solutions. This could be achieved by imposing quotas focused on age groups or measures that boost the number of MSMEs in the lending system from 7% to 30% in the next five years. Reallocation of resources is another major aspect of structural reforms. Shifting resources from less productive sectors to more productive ones has the potential to increase GDP. Therefore, the agricultural sector should be prioritized, since

Photo above: Men walk past a sign advertising for the "Youth Career Festival 2022" employment fair hosted at the University of Mosul in the northern Iraqi city on May 15, 2022. Photo by ZAID AL-OBEIDI/AFP via Getty Images.

it can increase productivity and jobs that could alleviate other crises, such as climate change. It is necessary to develop dynamic, scalable sectors and move away from rentierism to enable economic diversification, strengthen the macroeconomy, and create and maintain the capacity to mitigate local and global economic shocks.

Salam Jabbar Shahab, Ph.D. in Political Economy, is the director of Iraq Policy Group. The views expressed in this piece are his own.

THE UNDP'S APPROACH TO SUPPORTING SUSTAINABLE LIVELIHOODS

MAHAB MADANI

Both Federal Iraq and the Kurdistan Region are recovering from a triple crisis: 1) The impact of ISIS and the resulting disruption of many lives, with some 5 million internally displaced persons (IDPs); 2) the slump in oil prices and the subsequent drop in government income; and 3) the impact of COVID-19, which hit the private sector hard, especially micro-, small, and medium-sized enterprises (MSMEs).

Both Federal Iraq and the Kurdistan Region share challenges pertaining to:

- The dominant role of the public sector in the economy and employment.
- Domination of the oil sector in the economy and exports.
- Fragile and un-enabled private sector.

In my capacity as the head of governance and economic diversification with the United Nations Development Programme (UNDP) Iraq, I participated in the Middle East Peace and Security (MEPS) Forum. I was impressed with the diverse, high-level participation from the Iraqi Federal Government (GOI) and the Kurdistan Regional Government (KRG). The international community, universities, academia, and civil society were represented, and all participants showed a high level of commitment and engagement.

The discussions were transparent, which led to realistic outcomes. Different hot topics were covered, including but not limited to economic diversification and climate change.

It was an excellent opportunity to brainstorm and exchange ideas and information. In addition, the forum enabled its participants to expand their network to further support Iraq.

UNDP inputs during the forum highlighted the following:

Among the initiatives of the UNDP, in collaboration with Federal Iraqi and KRG partners, have been: The Sustainable Livelihood Approach (SLA), which was spearheaded in Iraq by the UNDP to address the need to graduate from a short-term approach to one that takes medium- and long-term priorities into consideration.

The UNDP implements this approach through the following multi-disciplinary measures:

- Strengthening the enabling environment for employment creation and private sector development.
- Strengthening policies for economic diversification in promising sectors with potential for job creation.
- Supporting access to financing, especially targeted at the different credit schemes offered by the government and private banks.
- Strengthening livelihoods capital for vulnerable Iraqis — focusing on women, youth, and persons with disabilities (PWDs) — through inclusive and participatory programs.

At the Macro Level

UNDP and GOI

- Support the establishment of the Economic Reform Unit
- Budget restructuring strategy and roadmap
- Credit guarantee scheme feasibility study
- MSME survey in partnership with Ministry of Planning's Central Statistical Organization
- Support the government by consulting international experts — "a national advisor on private sector development and a national advisor on public policy"
- Tax and insurance reform (in progress)

UNDP and KRG

- Supported KRG with the development of Economic Reform Plan 2021-2023
- Conducted in-depth study on the agriculture sector of the Kurdistan Region as well as an agricultural cooperative

framework (in progress).
- Prepared draft electricity sector law
- Prepared investment reform map
- Prepared poverty-based social safety net framework
- Prepared public-private partnership (PPP) framework; six pipeline projects (in progress)
- Developed a process manual for the Pension Department
- Currently preparing to implement an MSME survey in the Kurdistan Region in partnership with the Kurdistan Region Statistics Office (KRSO)
- Tax administration reform roadmap (in progress)
- Tourism sector reform (in progress)

At the Micro Level (Community Level)

UNDP supports Active Labor Market Programme (ALMP)

- Cash for work
- Demand-driven employability skills development through vocational training
- On-the-job training and job placement support
- Access to finance for business start-ups or growth to create or retain employment (grants and in-kind)
- Business skills development and mentorship support to boost business sustainability
- Evidence-based programming for employment creation programs (national and local level studies and assessments)

Mahab Madani is the head of governance and economic diversification with the UNDP Iraq. The views expressed here are her own.

THE KRG'S REFORMS HAVE COME A LONG WAY, BUT THERE'S STILL MORE TO DO

YEREVAN SAEED

The Kurdistan Regional Government's (KRG) ninth cabinet, led by Prime Minister Masrour Barzani, was appointed just over two years ago and inherited a serious financial crisis as a result of Baghdad's budget cuts, the war against ISIS, the resulting humanitarian crisis, and a decline in oil prices. There were delays in public sector payments and investment projects were put on hold. Kurdistan had also racked up over $28 billion in debts to international oil companies. To counter these problems, Prime Minister Barzani established an ambitious reform agenda and a vision to guide his cabinet through the financial crisis, including imposing austerity measures, streamlining government expenditures, and implementing economic diversification policies.

The process of carrying out reforms can be inherently difficult as a result of structural challenges, resistance from political and market players, and pushback from the public. Accordingly, the status quo has an upper hand and has the potential to consolidate and become impervious to change. However, in the face of the acute financial crises, the KRG had no option but to navigate through intricate patronage networks and the crony capitalism that had taken deep root in Kurdish political culture since the 1990s. As a result, the KRG initiated several crucial reforms to rectify misguided financial and economic policies implemented by previous cabinets. These included the 2020 "Reform of Pensions, Salaries, Allowances, Grants and other Benefits Law of the Kurdistan Region" to restructure and regulate KRG payrolls. The law granted legal authority to the KRG to act using data from its biometric registration system, which had identified some 50,000 ghost employees and 105,000 double salaried civil servants, saving the Kurdish government approximately $38 million per month. Although the law has not completely addressed the unfairness of salary grades, and there are people who receive pensions from the KRG without having worked in the public sector, it was a major step in the right direction. The law could become a foundational pillar for reforms and provide the impetus for future efforts to advance social justice and improve service provision in the Kurdistan Region.

In addition, the KRG has begun an incremental rollout of electronic payment for its employees, which is a crucial step in reducing corruption in the workforce. Currently, the pilot project only includes a small number of civil servants in the Council of Ministers. If in the future the KRG can expand this to cover its whole payroll and all employees, and if it functions as promised, it will be a huge achievement that removes a major reason why the system is currently so inefficient, reforming salary distribution to ensure nobody can commit fraud and cheat the system. But it should also be noted that an electronic system still faces major infrastructural, public trust, and cultural issues. The banking system in its current form is not developed enough to support e-payments. The previous financial crisis that hit the banks in the Kurdistan Region exacerbated issues of trust involving banks. Lastly, the Kurdistan Region and Iraq are largely cash-based societies, so it will take time and a holistic approach to convince people of the functionality of the system. One way to boost trust in the banking system is to enact a law to expand the KRG's Insurance Corporation to guarantee account holders' bank deposits.

The KRG has also started to centralize government revenues and expenditure by establishing a digital financial management system (FMS) that gives real-time information regarding the government's operational costs. According to Kurdish officials, the FMS has eliminated unnecessary bureaucracies and routines, and has also streamlined revenues and transparency to help the executive and other policy-makers pinpoint areas of excessive spending and help with budgetary appropriations. In addition, the KRG has developed a digitalization infrastructure to handle electronic paperwork for services, which could have a positive effect on service delivery in the Kurdistan Region. Most of these services are not yet operational, but customers are able to find adequate information on the KRG's portals regarding the requirements needed to process their applications. In addition, the digitalization infrastructure could streamline the delivery of services to businesses. The company

Photo above: Kurdistan parliament speaker Rewaz Faiq (top C), leads a parliament session in Erbil, the capital of Iraq's northern autonomous Kurdish region, on May 25, 2021. Photo by SAFIN HAMED/AFP via Getty Images.

registration process has been expedited, which is critical to enabling and empowering the private sector so that it can play a stronger role in reviving the economy.

While the speedier registration process is transformational and a step forward, the KRG's contractionary fiscal policies at a time of economic downturn have had an inverse effect on the private sector. A 20% corporate and value-added tax levy coupled with government's austerity measures have led to the closure of hundreds of companies in the Kurdistan Region. In Sulaymaniyah alone, some 75% of the companies have gone bankrupt and over 70 strategic projects have been put on hold due to the lack of funding. All of these, along with the public sector employment freeze since 2015, have left hundreds of thousands of people without jobs at a time when employment opportunities are badly needed to address the youth unemployment crisis. Moreover, the lack of a strategic economic action plan has led to the concentration of the private sector and the accumulation of wealth in Erbil. In 2019, 2,371 out of 3,252 foreign companies were registered in the city. This and other governance factors have led to substantial vertical and horizontal inequality, fueling public resentment against the government. The situation has been exacerbated by the lack of regulation in the private sector, which has led to a worsening of unemployment in the Kurdistan Region. Local companies have imported more than 30,000 foreign laborers. They are underpaid, relative to local workers, which boosts profits for companies but also creates deep economic and financial grievances for locals. According to Kurdistan Syndicates, the number of foreign laborers went up in 2021, despite local demand for jobs. As such, the KRG needs to address the tension that exists between its efforts to create jobs and its dependency on foreign labor.

The Kurdistan Region's economy is still a rentier economy. It mostly depends on revenues derived from oil exports, the federal budget in Baghdad, customs, and other taxes. Moreover, a comprehensive and effective policy is needed to deal with cheap imports from Turkey and Iran, which have been problematic for local manufacturers and the agriculture sector. The Iraqi currency is valued higher than the Iranian rial and the decline in the Turkish currency in recent years has made Turkish products popular in Iraq. There is little the KRG can do about currency valuations as the federal government implements monetary policy, but it can tighten border controls by levying higher taxes on imports from neighboring countries. Additionally, the KRG should work with the federal government to remove the structural obstacles that impede Kurdish merchants from exporting Kurdish products to the rest of Iraq. The Iraqi government levies taxes on local Kurdish products that are delivered to other parts of the country. The lack of free movement of goods is counterproductive for both sides and results in economic stagnation.

Yet, the government still has serious issues with collecting internal revenues, from customs to taxes. One reason is the weak institutional capacity of the KRG and its inability to work as a coherent body across the Kurdistan Region. Moreover, the reforms in the electricity sector have thus far failed to deliver. The KRG invested $300 million by installing smart grid meters to better manage and eliminate wasted electricity. The privatization of electricity has led to a 20% rise in prices for consumers but no actual increase in access to electricity. Electricity is still both unreliable and expensive for consumers. This is attributable to the absence of a strong administrative system that bills consumers on a monthly basis: In some cases, households are billed every three or six months, which imposes a financial burden as they often have cashflow constraints. Cognizant of the issue, the KRG recently offered a 15% discount to those who pay their bills within three months, but the measure does not seem to have worked. This has led to a massive loss of government revenues because people cannot afford to pay the huge sums or refuse to pay as a form of resistance. They view the reforms as predatory and aimed at extracting maximum revenues from people without any immediate returns in the form of services. Part of this misperception is due to the absence of an effective communication strategy that explains the positive long-term effects of the reforms.

The KRG has come a long way in its reforms. Just two years ago, it was struggling to pay civil servants. Now, although there are still cuts and delays, it has paid employees every month, except for March 2022. It has eliminated unnecessary financial waste, setting up a digitalization process that streamlines and more effectively delivers services. During the current economic downturn, the KRG should relax taxation on the private sector and increase its budget for strategic projects that can stimulate the economy and boost job opportunities. Further, some of the reforms have not translated into tangible results for certain parts of the population. As a result, there has been a negative perception about the reforms. But the problem with these reforms, and any reform agenda more generally, is that it is often difficult to identify tangible gains and measure success, particularly if the gains can only really be achieved in the medium and long term. The KRG must deploy a strategic communication strategy to effectively explain the benefits of the reform agenda and how it can generate returns for the population. Such a campaign would increase public confidence in the reform process and address discontent.

Yerevan Saeed is a Middle Eastern affairs analyst focusing on the Kurds, Iraq, Syria, and Turkey. He received his Ph.D. from the Carter School for Peace and Conflict Resolution at George Mason University. The views expressed in this piece are his own.

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